

## ACARS

ACARS is the acronym for Aircraft Communications Addressing and Reporting System. It is a data transmission between airplanes and ground stations. The purpose is to handle many types of traffic that would normally be done by voice in the past. ACARS transmissions are on VHF. The following frequencies are commonly used:

129.125 MHz  
130.025 MHz  
130.450 MHz  
131.475 MHz  
131.550 MHz

As with all other VHF-Aeronautical transmissions, AM mode is used. Most scanners automatically change to AM mode when tuning the 108-136 MHz aircraft band, but you may want to verify your scanner does this.

The transmissions sound like data bursts ranging from about 0.2 second to 1 second in length. Due to the high altitude of aircraft, transmissions from aircraft may be monitored for several hundred miles. Those living close to airports may also hear the ground transmissions sent to aircraft.

Tuning in ACARS transmissions is fairly easy - just select ACARS mode and adjust the radio's volume for proper decoding. Please note - it is very important to have the squelch of your radio completely off, that is, so you always hear the background static. The squelch action of any radio is too slow, and you'll miss the packet!

he incoming audio is displayed in the Signal Window. You want the normal static to be at a low enough level so that bursts of noise are not interpreted as data packets. When an ACARS packet is received, that portion of audio is marked by two gray vertical lines, for your reference.

here is an LED type indicator under called PACKET in the Signal Window which lights up green when a good ACARS packet is received, and red if a packet is received but it is bad. In addition, statistics are displayed for the number of good and bad packets received, along with the percentage of good packets. This is useful for adjusting your radio setup, obviously you want to maximize the percentage of packets which are good.

licking the X button will reset the BAD/GOOD packet counters back to zero.

You will find that some transmissions are garbled or not decoded. This is a very difficult mode to demodulate without external hardware, so good reception quality and strong signals are required.

MultiMode displays the transmitted packet, and parses out some of the information, such as the plane's wing number, flight number, etc. It does not attempt to parse out other specific information in the text portion of the packet, which is displayed on the second line. A timestamp is also displayed on the first line.

Here is an example of a received ACARS transmission:

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.N227AA 5Z 2 [13 Sep 97 20:57:06]
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5651 AA0742 OS LGA /ALT00000122

N227AA is the aircraft registration, note the leading periods, to force it to 7 characters.

5Z is the message type

2 is the downlink block identifier

[13 Sep 97 20:56:51] is the date and time, added by MultiMode

5651 is the message sequence, minutes and seconds past the hour

AA0742 is the carrier and flight number (American Airlines flight 742)

OS LGA /ALT00000122 is the text message sent, for those modes which include a message

You may create a file called ACARS.LST, which is a listing of plane registration numbers, along with text that you may enter. This file is read in when MultiMode first starts up, and must be located in the same folder as the MultiMode application. When a packet is decoded, the plane registration number is compared to the registration numbers of the planes in the ACARS.LST file. If a match is found, the text from that line of the file is displayed after the timestamp. You may use this file to display text or comments about each aircraft.

An example of the file format follows below:

.N814US This is plane number 1

.N320US This is plane number 2

.NIM5AA This is plane number 3

.N781NC This is plane number 4

.N609AA This is plane number 5

Note that the first 7 characters of each line are the plane registration number, followed by a space. The rest of the line contains the text to be displayed. Leading periods are required to force the registration number to be seven characters long.

If you are not interested in using the ACARS.LST file, you may simply remove it from the MultiMode folder.

Here are some Web Pages devoted to ACARS which you may find of interest:

<http://www.grove.net/~acarslink/>

ACARS-Link

<http://patriot.net/~jetset/acars.html>

Northern Virginia ACARS Page

[http://www.euronet.nl/users/bart\\_b/](http://www.euronet.nl/users/bart_b/)

Bart 'Beaver' Hoekstra ACARS Page

<http://web.inter.NL.net/hcc/Hans.Wildschut/>

ACARSWeb

There is also the ACARS mailing list, which is handled by (but not run by) Grove. Requests to join should be sent to [majordomo@grove.net](mailto:majordomo@grove.net) with the text "subscribe acars" in the BODY of the e-mail.

There is a book out on ACARS, called "UNDERSTANDING ACARS, 3rd Ed." written by Ed Flynn, with Robert E. Evans. This book should be available at your local shortwave store. I bought my copy from Universal Radio. It does a good job of explaining the formats of the various messages.

Robert E. Evans also writes the column "ACARS Downlink", which appears bimonthly in Popular Communications

magazine.