



The Ultimate Newbie Guide To Testing  
By The Test Tickler – Written 4-2002

## Introduction

Testing - V. the act of employing alternative methods to obtain digital satellite programming.

Welcome to the world of DSS testing. This is a hobby in which security infrastructure is circumvented and subscription programming is obtained free of charge. This is a guide that is designed to give the newcomer a crystal-clear explanation of how to be a part of this high-tech hobby.



In my opinion, the biggest barrier of entry to this hobby is the lack of availability of pertinent information on exactly *how* to become a tester. This is a six year old hobby, and the internet is saturated with obsolete testing information. This just confuses the new comer because there is no starting point in the sea of information madness. Testing sites classify their files with respect to *time*, not level of difficulty. They do this because the state of testing can change so quickly that brand new files can reach obsolescence

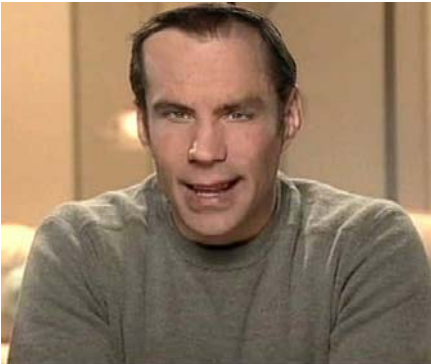
in less than one day.

This hobby is vast and technical, encompassing several access cards (including some which are no longer in existence), different methods of hacking each card, different kinds of hacks for each card, and two separate satellite providers. For this reason, this guide will be limited to the best testing method available at the time of this writing [2002] for the HU card only (pictured to the right). The majority of this information should remain valid for about 1 year. Although this guide is a shortcut, it is not meant to be brief. It is a shortcut through the obsolete information that is out there, since all the info you need to get going is right here. Let's take a look at what we will cover:



- Perspectives: this section will address ethical issues, law, and economics in an objective manner so that an informed decision can be made.
- Vocabulary: In this section we'll define our technical terms and ideas.
- Before we Begin: The bare necessities. This will cover what hardware, software, and tools you will need to get started, and where to obtain them.
- Procedure: Here we will get in to what you will actually need to do in order to get TV. We will discuss how to use the software, how to operate your hardware, and how to maintain your system.
- Troubleshooting Guide: What went wrong? This is where you will need to go when things aren't operating properly.
- Quick Guide to Dish Installation: How to get your dish up and running.

### Perspectives



*"The general rule is that an unconstitutional statute, though having the form and name of law, is in reality no law, but is wholly void, and ineffective for any purpose; since unconstitutionality dates from the time of its enactment, and not merely from the date of the decision so branding it... No one is bound to obey an unconstitutional law, and no courts are bound to enforce it." –*

16 American Journal of Jurisprudence 2d, Sec 177 late 2d, Sec 256:

Before we talk about testing methods, I encourage you to take a moment and examine your intentions, moral turpitude, and the laws of your land. This is for your own information as well as your protection. I want you to make a well-informed decision if and when you decide to become a tester.

Some argue that DTV has no more of a right to broadcast their signal on private property than those who dwell on the property have to decrypt the signal and watch it. After all, the satellite is in space, where many believe is no-man's-land (which isn't land to begin with). It becomes murky territory to distinguish who owns what where. Can someone actually *own* an intangible electronic signal that is beamed to an entire continent? Do you still *own* something if you choose to blast it 22'000 miles off the ground?

On the other hand, DirecTV has a high overhead. It costs ridiculous amounts of money for DTV to launch satellites into orbit, pay the engineers to operate them, pay interest on billion-dollar financing, assume the financial liability of the business not succeeding, insure their investments, pay US Income Tax, hire firms such as NDS to create secure access

modules (more on these later), and re-hire NDS when their security system fails. These high costs explain why the basic programming subscriptions for DirecTV start at \$32 USD per month.

It is left up to you to find out what the consequences will be if you happen to get caught. Typically, it is a lesser offence [sic] to watch free TV for your own personal use than it is to get into business and make money off of DirecTV's signal by selling "free" TV to people in your area. History has shown that dealers and manufacturers in the US have been DTV's target. Regardless, in the US the potential for both criminal and civil suits exists. Be careful.

Another important decision to make is whether or not you can commit to being a tester. There is much information to learn, plus it requires extreme patience, determination and a love for technology. If you aren't *fully* computer literate, don't even try this, you'll just waste a ton of time and money. A background in electronics and computer science is very helpful but not necessary. If you have a decent income and not a lot of time to spend, then ask yourself if it is more economical for you to actually *buy* it than go to the effort of hacking it.



### Technical Vocabulary

*"The only bad 'f-word' is FCC"* -Tom Morello, Rage Against the Machine

Let's acquaint ourselves with some of the basic terminology used in testing. Using abbreviations can save time communicating, but are useless until the terms are actually defined. If you already know some of this information, great. But remember, everyone has to learn sometime. Since some definitions are

built on others, these are not in alphabetical order.

An **IRD** is an "Integrated Receiver / Decoder" and just means the video decoder box where you put your card.

An **LNB** is a "low noise block" converter. This is the waveguide and small box that rests on the end of the satellite dish. This is what the coax cable plugs into and converts the 12 GHz signal to a lower frequency for your receiver. A "dual feed LNB" is an LNB having two coax cable connections, enabling two receivers to run from one dish.

A **CAM** means "conditional access module" and is simply the term for the smart card. The words CAM, smart card, HU Card, test card, and access card can all be used interchangeably.

A **sub card** is a CAM that is legitimately subscribed to DirecTV.

A **CAM ID** is a unique serial number for the CAM printed on the back of the card. If you had a virgin card and called DirecTV and actually paid for a subscription, you would read them

the CAM ID of the back of your card, then they would activate it through the downstream. DTV knows all CAM ID's including which ones are subscribed and which ones aren't.

A **blacklist** is when DTV sends a list of invalid CAM ID's through the stream and tells the IRD to compare the CAM ID of the card to all the ones in the blacklist. If there is a match, you will have a "Call ext 745" message on your screen, and a denial of video signal.

An **ATR** is a sequence of 20 numbers that the card transmits back after its RESET pin is toggled. The values of these numbers aren't important yet, but they do have meaning. For the newbie, one would think learning about an ATR is irrelevant. However, the ATR is actually a health indicator for your card. If your card is broken, it will not give you an ATR.

The **downstream** is the data and computer instructions coming from DTV's satellites. This consists of encrypted video data and instructions that are routed to the CAM. However, the **stream** usually means just the CAM instructions. Common testing news is, "New CMD82's found in the stream," and this is referring to certain instructions found going to the CAM.

An **ECM** is short for "electronic counter measure". This is a sequence of computer instructions put in the stream that are then sent to your CAM. These instructions examine data on your card to determine if it has been "hacked" and if so, erases the hacked data area, making the card temporarily non-functional. Once an ECM is conceived, it appears constantly in the stream, so that if a tester re-applies the same hack, the ubiquitous ECM will immediately return the card to un-usable state.

A **looped** card is a CAM that had instructions written to a location in memory critical to the card's functioning. This term comes from the earlier version of cars wherein an ECM would write a "loop" of computer instructions, making the sequence continue forever (thus not completing the rest of its duties and not decrypting video), i.e. at location B it will read "jump to C", and at location C it will read "jump to B". This broke the card, but it could be recovered by "unlooping" methods described later in this section. Nowadays, a "looped" card just means any card that has a critical problem far beyond that caused by most ECM's.

**IVAC** is an abbreviation for "insert valid access card" which is one message an IRD returns when something is wrong with the CAM. The CAM may have been hit with an ECM, it may not be married to that IRD, or it may be looped. It usually means the IRD knows that something was inserted, but whatever it was, it is not acting like a regular CAM.

A **Hack** is a general term that can be applied to a variety of things. Typically, in the context of testing, it will refer to a small file that is programmed into the CAM enabling free channels. In abstract, a hack is an item, method, or procedure, tangible or intangible, that, when applied to a system, produces a preferred or desirable effect, or suppresses negative effects or states of that system.

A **virgin card** is a CAM that has no testing information, i.e. no "hacks", applied to it. It is a card that receives preview channels. A test card can be returned to "virgin status" by putting its original information back onto the card, although a purist may disagree.

**Dave** is the entity at DirecTV (aka Signal Integrity) that monitors testing and formulates ECM's by disassembling the hacks posted at testing sites. Dave does not speak to testers, but he definitely browses almost all freeware locations. You can tell Dave what you really think of him here: [si@directv.com](mailto:si@directv.com) (suggestion: don't use your real email address).

A **cardswap** is a major event that has only happened 2 times in DTV history. This is when Dave succumbs to defeat and mails ALL his millions of paying customers a new version of access card. After all his legitimate customers have new cards, the only people left using the old card are testers. At this point the entire stream of instructions for the old card is discontinued, leaving testers with invalid cards. This is a last resort for Dave since it costs tons of money to produce the new cards (plus it hurts his morale), mail them, and provide phone support for the technologically illiterate generation of people who can't figure out how to put their new card in.

**Activation** is a form of hack that enables most channels, but not all of them. This enables about the same amount of channels as a DTV paying subscriber. This hack works by modifying certain memory locations on the card so that they look just like a subscriber's card. This enables as much programming as a subbed card. If you want to watch pay-per-view you will have to use the remote and "buy" it.

A **3m** is a hack that enables absolutely every channel, with the exception of local channels, as it is only possible to receive local channels from one region at a time. This hack works by going to the channel authorization area of the card and making the card answer "yes" whenever the IRD asks for authorization.

**Freeware** is a class of computer software that is available to anyone who wants to download it. The files include programming software, utilities, text articles, and other tools of the trade. Most importantly, freeware includes activation files and 3m's that are available to the masses, including our buddy Dave. Dave formulates ECM's by downloading freeware from the same sites the tester uses. For this reason, freeware hacks do not last long.

**Private files** are hacks applied to a card, just like freeware, except the files are obtained for a fee or are traded amongst private groups with the intent of keeping Dave out of them. These files usually come from dealers or pay-testing (an oxymoron) sites. Once a tester releases a private file to the public, it becomes freeware and it will be counter-measured soon. This is disadvantageous to all the other people using that particular file because they all will experience denial of service due to the one bastard that leaked the file. Because of this, private files are heavily guarded and only traded among mutually trusted groups of testers.

A **Hex file** is a hack applied to a card. This file consists of a sequence of hexadecimal characters that change specific locations in a card's memory enabling access.

A **bin file** is also a hack for a card, but this hack is a complete image of another card. Typically, a CAM ID gets copied along with it, making it an easy target for Dave. There is a way, however, to apply your original CAM ID to another card image which will increase this hack's lifetime. More on this later.

An **unlooper** is the actual piece of hardware that communicates to the smart card. It is a simple interface that connects via a COM port. Since legitimate access to HU cards is protected by a mathematical sequence similar to a password, cards cannot be directly written to and read from. Instead, they are accessed by severely confusing the card with random abnormal electronic signals such as variable clock timings and voltage levels until the card gives up its defences [sic]. Unloopers can be purchased from dealers or can be built yourself if you are very experienced with building electronic circuits. If you build your unlooper, you will also need to “flash” the controller on it, which is easily done using DOS-based flash software available from freeware sites.

**Glitching** is the electronic process used by the unlooper to gain access to the card. See above.



### **Before We Begin**

Here is what we need before we can get going:

● A complete DirecTV system and TV. This includes a dish, IRD, HU card, coax line, and the lightning arrestor with grounding wire (yes do it right guys. Being cooked alive is barbaric and excessive punishment just for testing, even Dave himself would grudgingly admit to this). The system should be installed, pointed, and receive channel 100. If you want basic info about using your DirecTV system you can also tune to channel 201. For a quick guide to dish installation, see the end of this manual. Ebay seems to be the cheapest place to obtain equipment, with the exception of the HU card itself since that's where testers go to get them. Check pawn shops, thrift stores, and garage sales; places where people don't understand what a HU can be used for or what its value is. If you can, just steal the card right out of the receiver since DirecTV will mail its legitimate customers new access cards free of charge (i.e. you will not be doing a disservice to the store owner or the buyer of the receiver by lifting it unless it is purchased by another tester).

● A computer. You should have a windows Pentium PC, I recommend NT 4, Win2k, or windows XP for stability, although the programming software will run on all versions of windows. You will not need internet access on this particular PC, but ultimately you will need to get the files from the net. All testing files are small enough to fit on a floppy. You must have WinRAR or Winzip installed. I recommend WinRAR. You should be familiar with this software; know how to use it. You need at least one COM port and a COM port cable, commonly called a DB9. I would recommend buying this cable used at a garage sale or thrift store, since retailers charge ridiculous amounts for new cables (\$5 vs. \$30 USD in some cases). You don't need to worry about hard drive space for this hobby, but I would worry about organizing your files neatly. You will need a designated area to put numerous versions of your files you accrue, which are always growing since new files are released almost daily. I recommend making one master directory somewhere convenient for you, then putting subdirectories inside each containing software, bins, documents, and whatever else you end up using. Organization is imperative come the day when you need your

original bin back. I would also recommend backing your files up to another directory or on another computer.

Access to a good freeware testing site. Check out sat50.com for a list of high ranked freeware and payware sites. Remember, just because a site is number one doesn't mean it's the best. Also, try searching yahoo for terms like HU3M, dss + testing + freeware, etc. Once you find one that has updates to its news or files at least twice a week, bookmark it and stick with it. When you have success testing I recommend donating to help the cause. Don't search yahoo for generic subject terms such as DSS TESTING because pay sites will pay yahoo for poll space and you will just get a bunch of hits for pay sites. Fuck that.

Programming software. This is the software your computer will use to talk down the COM port cable to your unlooper. There are two programs that are absolutely necessary. These would be **Winexplorer** and **Extreme HU**. We won't worry about what these are yet or how to use them, just download them and put them in your testing directory. Since version numbers change every month or two, just get the latest version you find. Besides, most hacks don't depend on version number. Neither of these programs use windows installer, they are just simple exe's and just run when you click them. This software is tried and true, and pursuant with the true ethic and camaraderie of testing, no testing software contains malicious code or virii. We trust each other and work together to keep our community clean.

An Unlooper! This is the most important thing. You have two choices, you can either buy one or make one. I would recommend researching reviews from freeware sites and asking around to find the best dealer available. There are scammers out there so be careful who you send your money to. I built mine from a schematic available on a great freeware site. Either way, count on spending about \$100. If you build one you will need an oscilloscope. For the schematic, just search yahoo for mikobu + schematic or "unlooper schematic" with the quotes. This is challenging, but it can be done. And you get a rewarding feeling from success. Remember to use *HIGH SPEED CMOS* chips, with the "HCT" or "HC" in the middle (i.e. 74HCT04) NOT low speed schottkey (i.e. 74LS04). The parts list will be included with the schematic and all the parts, including the smart card socket, are available from digikey, inc. ([www.digikey.com](http://www.digikey.com)) (FYI I am sure digikey does not support or condone questionable usage of its products).



## Procedure

Here we will talk about what you actually need to do to get free TV. The first thing to do is make sure all your equipment is hooked up and functional. During this section, many unexpected errors may occur. The most common of which are deferred to the troubleshooting section of this manual.

Verify you are getting channel 100 with your HU card.

- 2) Plug the data and power cables into your unlooper, plug the other end of the data cable in the COM 1 port of your PC. Open up **Extreme HU** and take a look at its features and options. Look at the bottom indicator bar where it says "Device:", it should say "Detected". If it says its not detected, you need to stop and figure out why.
- 3) Insert your access card into your unlooper and. Click "card", then "check card info". This will send a reset instruction to your card and you should get an ATR. This is a critical point, as it will tell you whether your unlooper is good to go or not. If not, go back and troubleshoot your connections, make sure its getting power, etc.

**Caution!!! – You are now performing card read-write operations. Careless actions may result in permanent damage to cards. It is imperative that you never remove a card when an unlooper is using it. This is especially important when using later versions of Extreme that can keep the bootstrap continuously active so don't forget about it. Check the activity light on your unlooper before insertion or removal. You have been warned.**

- 4) Now the unlooper is verified to work, lets click Card->Read Card. This is a **CRITICAL** part of your testing because this is the first read you will do on your virgin card, and you will want to save this bin for later use. And I guarantee you WILL need it again, so save it several times with a clear filename on your hard drive and back it up on a diskette or on another computer some place. The unlooping procedure doesn't happen instantly, so be patient. If, on your first time, you do not get a read after 15 minutes you have a problem, but generally most card operations will take between a few seconds and five minutes depending on the design of your unlooper. While ExtremeHU is attempting the read, check the lights on your unlooper to make sure the red activity light is on. Once you have a confirmed card read, you wont need to pay as close attention to it from that point on.
- 5) Now that you have saved and backed up your virgin bin file, you are ready to load an activation file or a 3m, depending on what is available in the testing community at that particular time. Once you find a HU 3m or activation file, open it up, read the readme for additional info, and see what file type it is. Its either a BIN file, an xvb script, or a hex file.
  - i. If it's a BIN file, in ExtremeHU click File->Open EEPROM and select the file you downloaded. Again, the file you downloaded will be zipped and it remains your responsibility to understand how to decompress it and where you put it. Once Extreme has loaded the file, go to Card->Write->Current EEPROM. Watch the progress bar and wait for it to confirm it has completed the write. Once it has done this, remove the card, insert it in your receiver, and watch TV.
  - ii. If it is a hex file, click Card->Write->Extreme hex file and go through the same process as above, one error you might get is that the file wasn't extreme hex. If that's the case, just click Card->Write->Normal hex file. Then go relax and watch TV
  - iii. If it was an xvb script, try double clicking it to see if WinExplorer comes up. If not, since you already downloaded winexplorer, just load that program and then click File->Open Script and browse for your file you downloaded. Then click Card->Execute Script and wait for the procedure to complete. Some scripts will prompt you for input.

Congratulations, you have learned the general procedure for programming test cards. Take some time to browse through ExtremeHU's features and notice all the options it has. You can set your time zone, and you can set locals byte information that will enable you to receive local programming for many cities throughout the US. You can also wipe pay-per-view debts from subscribed cards, clear that password you forgot, or unmarry the card so it will work in another IRD. If you have a buddy who is a legitimate subscriber, you can safely read his/her card and apply the information to your card. If you want to be a weasel, tell your neighbor you just bought a used dish at a pawn shop but you don't have a card and all you need to do is use their card for 2 minutes to see if the receiver you bought works. Also, when you apply activation or 3M files to a subbed card's image, it will last a lot longer against Dave's ECMs. Always make backups of the original BIN in case something fails. **CAUTION** : do NOT send a subbed customers BIN file to anyone on the internet you don't absolutely trust, unless you want to disconnect this person's service. As soon as Dave gets a hold of the file he will send an ECM that will end that person's service and could potentially trigger an investigation directed at the subbed person.


Note: The "set to virgin" option in ExtremeHU does not wipe the card to virgin status as defined in this document, but sets the card so that it will work in any IRD you put it into (but only the first one). DirecTV made CAMs marry their IRD so that you can't share your programming with Joe Neighbor just by plugging your card into his IRD. Now you can.


Once you are up and running for a while, it won't be long before you will be hit by your first ECM. When this happens, be patient. The first few times you should load your card back to virgin status, and make sure you still can get preview channels. Browse the freeware areas, but don't be surprised if your TV's down for a day or two. You will experience periods, especially on weekends, when ECM's are heavy and Dave is busy. Other times, freeware hacks will run for a week or longer. Also, don't just download fixes. Check the news area of your site for valuable information about breaking news, what the experts are saying, etc. Don't expect everyone to support you, you will need to try and fix problems yourself. Also, try to donate to a good freeware site. Even if its just a few bucks it will help them pay for their enormous bandwidth costs, since tons of people download their files.

## Troubleshooting Area


You might ask, "Hey, I followed your instructions to the 'T' but I still can't seem to get it working." So here we will attempt to cover the most common testing problems for you.





 I can't find the programming software you asked for. Keep looking, search yahoo for "winexplorer" and "ExtremeHU" or browse freeware testing sites until you find it. If you're looking for the flash files to program your atmel, it may be more difficult to find. I recommend going to testing chat areas and forums and asking for help finding the file.


 ExtremeHU says the device is not detected even though I have the unlooper all set up. Check to

see if other programming applications are running. If two applications are loaded simultaneously, such as Winexplorer and ExtremeHU, only one can use the com port, so make sure all com port applications are closed. Check power and data connections and make sure your cable is plugged into the com 1 jack, or change the port settings for extreme by clicking File->Settings->Com port and switch it to com 2 if you like. Also, make sure the bios does not have a com port disabled or a baud limit. You also may need to *flash* your unlooper. This process programs the microcontroller onboard your unlooper so it knows how to process the commands that unlooping software such as ExtremeHU send it. This is freeware that usually needs to be run in PURE DOS, not a DOS prompt box. Nowadays, the only way to get to pure dos is by booting to a boot floppy, which many testing sites now provide as a courtesy. Then just run the flash software and let it configure your unlooper. The flash program is pretty standard and should be found easily from a freeware site. Be advised that some scripts that are designed to unloop BROKEN HU cards might require a different flash for your unlooper. Keep the boot floppy handy if you need to reflash again. One more thing, this is also called “reflashing your Atmel” since Atmel is the company who manufactures the microcontroller used on all unloopers.


 I downloaded some software and when I tried to run it, it threw a windows “16-bit subsystem” unhandled exception (i.e. an error). You were trying to run certain COM port software under windows NT, 2000, or XP. These OS’s only permit COM port access through the communications API, which your software didn’t use. In other words, you need to boot from another computer or a boot floppy and run under pure DOS mode. Your program will execute, but if it still doesn’t do what you want it to, change the COM port settings in your BIOS.


 When I click “check card info” in ExtremeHU I get “Invalid ATR returned”. Make sure the card is inserted securely and that Extreme says “device: detected” in the lower indicator bar of the window. Put the card into an IRD and see if you can get preview channels. If it says anything other than IVAC, the card should be ok and the problem is with your unlooper. If you get a partial ATR and the card does not work in an IRD you have a looped card. For this, you need to download HU unlooping software to try and get your card back up.


 ExtremeHU gets an ATR, but it never loads the bootstrap for a read or write operation. Are you waiting long enough? Have you gotten it to work before? This may be because you aren’t being patient, or because you have the wrong power supply. Try just letting it run for up to an hour. If the progress light is on and it appears to be trying to load your card but can’t, I recommend getting a different power supply. I use a 9V, 500 mA supply on a mikobu clone unlooper and I get the bootstrap loaded usually in under a minute. Keep in mind, glitching is not an exact science...the whole point is to dramatically and randomly disturb the card’s clock input and innards. Sometimes a glitch will load instantly, sometimes it will take 5 minutes. If it takes a long time, I stop the glitch process and start over again. This may or may not help; it might just be psychological. You can also change the DAC timing inside ExtremeHU’s settings, if this just makes matters worse, click on File->Settings then “defaults” to restore the original settings. Once you have your system working, don’t mess with it, and remember how it was set up in case you have a future problem.

 I successfully loaded a 3m or activation file but I still can’t watch TV! A few things can cause this. The most probable cause is that there is already an ECM targeting that specific

hack. If this is the case, it may show video for a brief period then quit, or it may not show at all. What you should do is look at the message your IRD is giving you. If it says “to start service please call customer service ext...” that is most likely an ECM that just deactivated your card. Same goes with “this access card has expired” or sometimes you’ll even get an IVAC. If this hack is ECM’d you just need to wait and find another hack. Be sure to clean your card with ExtremeHU’s Card->clean card option. Another problem can be that your card needs to take down an update from the stream. This is indicated by a part of the card known as the update status word, or USW. This is a number indicating the number of revisions DirecTV has sent all of its access cards. Most the time, you will need to simply load your virgin card’s image and then leave it in your receiver for 15 minutes. This will let it take the update, then re-apply the hack and it may work. A third problem can be that you need to unmarry the card from the IRD, and a fourth thing to try is to reset your IRD.

 I have some channels, but others say “press INFO for ordering information” or “for ordering information please call customer service, ext xxx”. This means you most likely have an activation script and those channels are not activated. It would be like if you bought their basic service, you could only watch some channels but not all of them. Others are pay per view and if your equipment lets you order them then go for it. If you do further reading into tier activation, you can change the tier data using Extreme or other BIN editing software and try to activate those channels yourself. Writing your own activations and 3M’s is an advanced topic and won’t be discussed here. The information is out there though.

 I loaded a rogue script and I’m only getting a partial ATR, I think I looped my card! OK, we can get through this. Just relax, and connect to a good freeware site and look for HU unlooping software. The best software out there at the time of this writing is called UL4S, but there are bound to be new versions that will come out. For HU unlooping, you will need to reflash your unlooper, again, done from a DOS boot disk. This is totally safe, you will not damage your unlooper provided you follow all directions. Then just run the program until you get a result. There are different symptoms of a looped card, usually marked by an ATR of 00, or 4B, etc., so you will need to diligently try all software out there. Nothing is hopeless, so if you don’t have any luck just put the card away and wait for other software to be released. You may have luck later. Also, try posting your problem in testing forums for other people to see. Someone there may have had the same problem and found a way to fix it. Be sure to take a minute to help someone else out with testing problems if you can.

 I have a thousand channels and there’s **FUCKING NOTHING** on!!! Well, I cant do much to help you on that one, just be glad you didn’t pay for it! There are a lot of reruns, especially on some of the specialty networks. I like listening to their digital music channels while studying or hanging around the house. Its always fun to watch the local news from a distant city, or try and learn a foreign language watching Mexican channels. One thing you may want to do is become familiar with all the features of your IRD, like try to make your own custom favorite channel lists. If there are children in your house I would **strongly recommend** setting the ratings limit to AT LEAST block the porno out. I believe it can not just be shocking, but psychologically damaging for young children to see recreational sex activities, and there are 5 channels of them. Ratings limits may be set inside your IRD or you might have to load the card in ExtremeHU and set it there, along with the unlock password.

One method of fixing a variety of problems is simply rebooting your receiver. This is specific for each IRD out there, like holding down power+chan\_up+chan\_dn for 5 seconds, but another way to reboot all receivers is by just unplugging them for 10 seconds. This causes the CPU inside the IRD to reset and really works to correct certain IRD-CAM type problems (but this method will NOT block an ECM, of course).

Another thing to remember is that turning your receiver off does not prevent your card from being in the stream. It doesn't really turn *anything* off except the video. The safest thing to do is keep your card out of your IRD when its not in use.

Finally, enjoy the fruit of your labor. Once you are somewhat familiar with testing, take the time to help others and never stop learning.



### **Quick Guide to Dish Installation**

First decide what side of your house to install the dish. In North America, this will almost certainly be the south side. The satellite is located a few thousand miles directly above Houston, TX, which may be the east or west end of the south side of your house, depending on where you are.

Now you need to secure the vertical pole that will hold the dish. This can be on masonry, wood, or freestanding. Ask Bob Vila how to do this properly, but the most important factor is that the pole be vertical and *secure*. In the states there are professionals that will install one for you for \$100 or less, but its really pretty easy. If you live in an apartment or high rise you can hold a pole together with cinder blocks, again just as long as its sturdy and vertical.

Next, connect the dish and the coax to the receiver. In the receiver, explore the menu to find the "dish pointing" menu and then find the "signal meter". Make sure your volume is turned on so you can hear the really annoying progress indicator tone. The best technique is to not lay the coax under the house until you point the dish, i.e. drag a TV outside with you and hook it up on the spot. Its pretty easy as long as the coax is wired properly. In my system, there are two coax wires, the one with a grounding wire goes to the dish, the isolated one goes to my receiver, and they are connected via a lightning arrestor. This system WILL NOT work unless all wires are connected in the right order, so be sure to use all your hardware or order the correct hardware from shit-shack. (If all else fails, go bug them on how to install your dish). Make sure you ground your wire to the dish and just move the dish slowly across the horizon until you get a constant beep. From there adjust it until you get the maximum number on your receiver. You might not get 100 percent, but try to get a minimum of 70. Also, try changing to different transponders to get the maximum number. Be sure you get channel 100, "watch pay per view previews" and not some other satellite because there are a few out there. After you get the signal locked, screw the dish down *tightly* to prevent it from drifting. Then wire the coax to the room of your choice and you're good to go.