Bob Cooper's

JANUARY 17 2003

SatFACTS

MONTHLY

Reporting on "The World" of satellite television in the Pacific and Asia

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America has lost first place in satellite race

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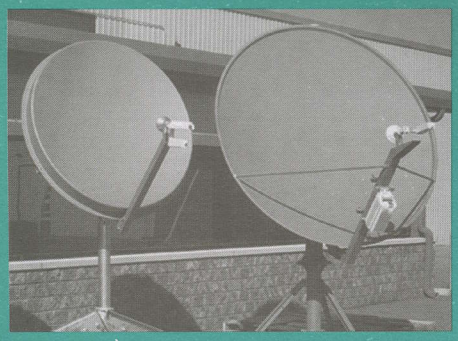

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This publication is dedicated to the premise that as we are entering the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

Editor/Publisher
Robert B. Cooper (ZL4AAA)
Office Manager
Gay V. Cooper (ZL1GG)

Reaching SatFACTS
Tel: 64-9-406-0651
Fax: 64-9-406-1083
Mail: PO Box 330
Mangonui, Far North
New Zealand
Email -Skyking@clear.net.nz
http://www .apsattv.com

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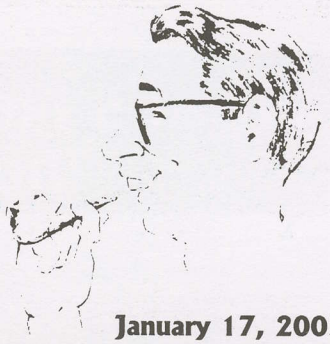
COOP'S COMMENT



January 17, 2003

A close friend working at a regional television service as CEO writes, "*With every indication that Irdeto (1 and 2) is clearly broken and beyond salvation, we have elected the NDS encryption system for our new satellite delivered Ku band distribution service which could launch during calendar year 2003.*" That is a multi-million dollar decision for a firm that hopes to expand its coverage area by a factor of 1,000-plus as they add satellite to their existing terrestrial service. My response to him was that NDS is also broken but the widespread implementation of NDS piracy has not yet taken place. Perhaps it is but a matter of time, perhaps Murdoch's staff can keep the breaks bottled up by making generous payments to the handful of people who understand how the break works and who hold the power (in their PCs) to make it as common as Irdeto or Viaccess "mischief."

Whether Foxtel and Austar upgrade to Irdeto 2 is immaterial. *It is broken* and that fact will not change. Foxtel/Austar could buy some time by converting to NDS (and replacing every receiver in their respective universes - clearly not an option for cash starved Austar) but in the end the public's attitude about the "social correctness" of piracy must be addressed and tackled head-on.

During November I was visiting with a cousin in Bakersfield, California - the red neck capital of the western USA. One evening immediately across the street from my cousin's home at around 11PM a series of cars began to pull up and park. Within ten minutes a dozen cars, each carrying one, two or three teenagers and each teenager lugging a home PC or MP3 machine into the well lit garage where makeshift tables and crates had been set up. I was of course curious what several dozen "youngsters" hauling PCs were doing in that garage so I lit my pipe, assumed my best grandfatherly stance and sauntered across the pavement to the garage. They took no real notice of my presence. I quickly worked out the PCs were being networked and music from hard drives transferred from machine to machine in something far faster than real time. Dozens of machines with a lively verbal banter reciting artist names and titles reminiscent of the current week's top-ten hits. They paid virtually no attention to me standing there amongst this beehive of activity as cars and PCs arrived and left with their "bounty." Eventually I wandered back across the street to share my observations.

MP3 copies. Very fast, dozens of top rated songs transferred from machine to machine in minutes or less. Nobody mentioned copyright. For these sixteen and seventeen year olds in suburban America, this was simply a "Saturday Night Activity." When I was their age, I would "drag main street" in my father's Pontiac with the local rock radio station cranked up to the maximum 4 watts per speaker. For *these* youngsters, Saturday night is meeting at a designated garage in a typical middle class neighbourhood and in 30 minutes time or less copying dozens of hit songs for their own MP3 players and hard drives. The cell phone is their communication's tool and before the cops could even be called by a nervous neighbour (there was one - not us), the copies were made and the kids were back on the street playing the new music through 400 watt per channel in-car sound systems.

Copyright violation is an obscure law to a 16 year old in Bakersfield. With almost no fear of being caught, they trade and swap music with electron speed. And when the technology arrives to do the same thing with video, they will meet in somebody's garage on a Saturday night and copy the latest movies equally as fast and with no more regard for copyright.

This is a war the music producers are losing (in-store sales for album music was down 10.7% in 2002; the first significant drop in five decades). This is a war Hollywood plans to win but the odds are they won't. Movie stars that are paid $8 or $18 million per picture and flaunt their paycheques only serve to reinforce in the kid's minds that this is a big business with plenty of profits. Piracy is simply the rebirth of Robin Hood's legend - taking a pittance from the overly rich so that the underpaid can share in the wealth. The kids in Bakersfield are no different than kids in hundreds of thousands of other cities. Hollywood - take note.

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Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; SatFACTS Digital Watch -p. 24; Supplemental Data -p. 26; With The Observers -p. 28; At Sign-Off (HDTV & hard-drives)

-On the cover-
C-band dishes falling to bits; America has lost satellite innovation lead (p. 20)

What's New at AVCOM RAMSEY?
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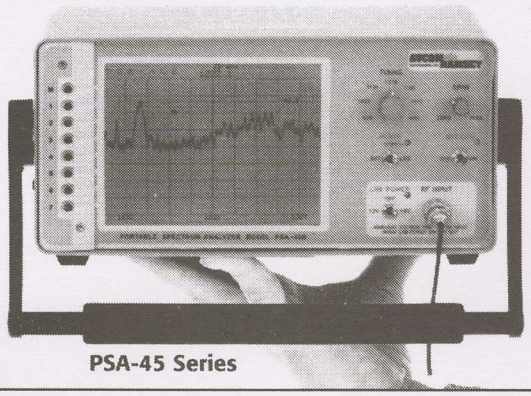

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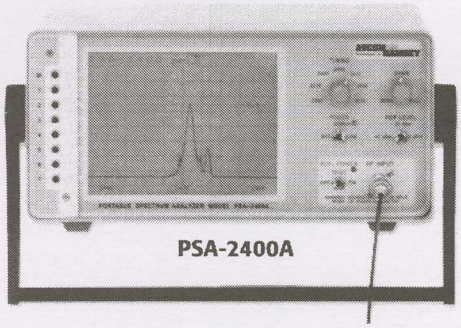

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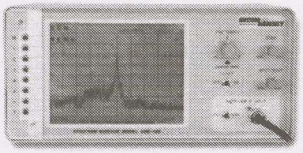
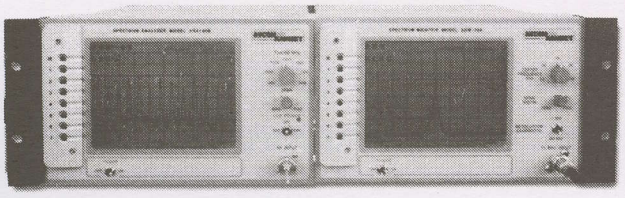


SDM-42B



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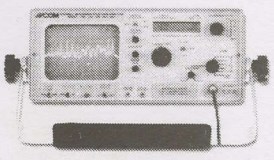

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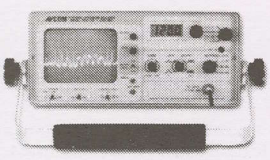

- 5 bands cover 1-1750 MHz plus 3.7-4.2 GHz
- Frequency display

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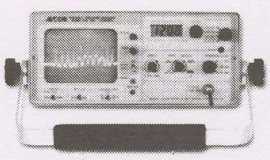
PSA-33A



- 1-1100 MHz, 950-2100 MHz
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- Frequency display

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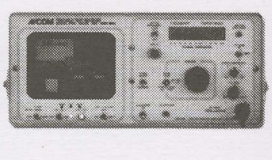

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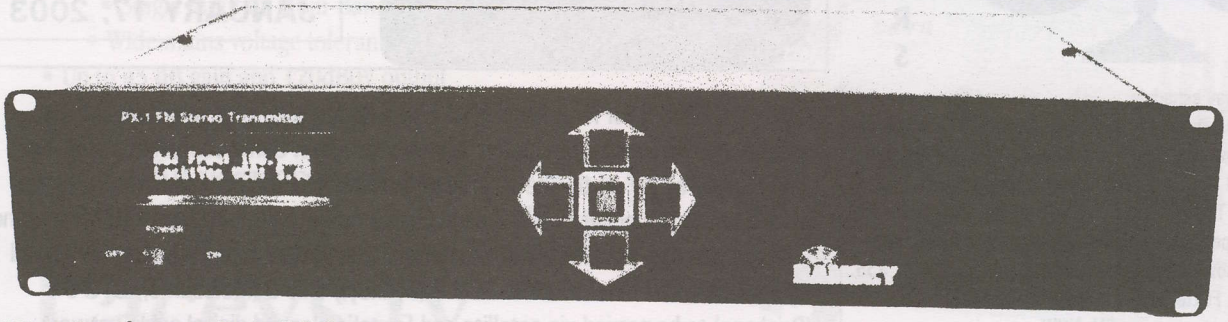

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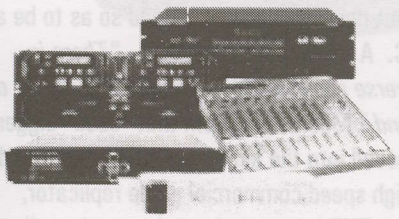

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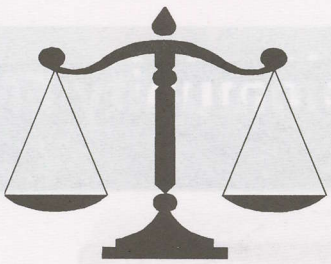

LETTERS

Comet's pay schedule

"SF#100 report on what Comet installers are paid hit the nail on the head. Minutes before reading this I contacted Foxtel to ask about a second IRD for the bedroom. They quoted me $120 for the installation and $29.95 per month whereas the SatFACTS report clearly shows the contract installer is paid only $35. How does Foxtel justify this big difference?"

PH, NSW

Actually, "additional outlet, separate visit" (you already have Foxtel service) earns the installer $48. Foxtel and Comet pocket the difference; $72. The installers in WA we reported about are asking $75 which would still leave Foxtel + Comet $45 just for booking the order. Plus, Foxtel would then earn $29.95 per month more from the home for the second IRD.

Newbie catch-up

"I have only come on board with issue 96 and am wondering if it is possible to obtain back issues - in particular issue 95 which contained the mods for the Nokia 9200/9500 series receivers? Being new to this I am trying to work out whether I should jump now and go with Nokia (or possibly Humax) or wait until the Dreambox becomes available? Waiting would also run the risk of Nokia supplies 'drying up' and then I'd lose that choice! I really enjoy the magazine - wish I had known about it and subscribed years ago!"

Paul, Australia

Issue 95 has been out of inventory from shortly after it was put into the mails. However, anyone who wishes office-made page copies of the 7 page Nokia report may send a crisp (or rumpled) $5 bill (A$, NZ$, US$ - your choice) to SatFACTS, PO Box 330, Mangonui, Far North, NZ requesting "Nokia copies" and we'll see that you receive same by return mail.

Seventh-day Adventist telecasts

"I am a Seventh-day Adventist pastor and monitor our church broadcasts. I suggest those making installs for the Church check www.amcdiscovery.com.au/satellite which carries the latest technical parameters for the 'next' telecast; this verifies last minute (PanAmSat) changes in the assigned link frequency."

Darrin Parker, Australia

Insurance policy?

"As long as Al-Jeezera is carried by PAS-2, perhaps PanAmSat has an insurance policy against having Napa blown to smithereens!"

IF, Qld.

Victorian Farmers

"The Victorian Farmer's Federation is considered an unpopular, elitist organisation and not more than 20% of all Victoria farmers belong. That is why they encrypted their drought-aid programming, proof I would guess of their 'snob appeal'!

Al, NSW

Old and useless

"How about a museum to house no longer useful CA equipment - I will donate the Videocrypt SVA3 (EMTV, PNG) or Starnet by Pace (Indovision)!"

Jim Ruhe, Solomon Islands

PROGRAMMER PROGRAMMING PROMOTION UPDATE

JANUARY 17, 2003

Rural Channel for NZ? Reports of new FTA channel to be available to Sky subscribers without extra charge - March start date. Some confusion about the "how" and "whys" of this new service - for example, unknown whether viewers must have Sky decoder or will it be available to any DVB-compliant IRD? Stay tuned.

Major change for Australian 'network' services? Nine Network has signed agreement with Foxtel to allow TCN 9 (Sydney), GTV 9 (Melbourne), QTQ 9 (Brisbane) to be carried via satellite and Foxtel's planned digital cable network. Negotiations with '7' and '10' are underway as well. Concept is cable or satellite viewers located within 'normal coverage' range of each of the respective 9 transmitters will now have their '9' programming delivered along with other satellite (cable) services. Nine affiliates NWS Adelaide, STW Perth, WIN Canberra, NBN Newcastle and WIN (regional Australia) are not included at this time but could be in future. None of this will happen until C1 is operational (yet another reason to keep fingers crossed that C1 makes it to station and is undamaged by the trip!). This agreement follows similar arrangements in USA where each TV station in major markets is available via DirecTV and DISH satellite services. Nine potentially could require 8 programming channels (or almost one full transponder) while adding 7 and 10 could take that to 23 total programme channels within Foxtel's C1 universe - 2-1/2 transponders total. Which begins to explain their plans for 12 (or 14 maximum) C1 transponders. Individual receivers will only be authorised for their "nearest" 9-network service provider; they won't have access to multiple-9 channels. What does this do to Aurora service offering GWN, WIN, Central 7? *They could be history via Aurora* (and you thought your Aurora services card was good forever!).

DVD security? Remember the teen age Norwegian "hacker" (Jon Lech Johansen) who reverse engineered the DVD CSS (content scrambling system), posted it on Internet and scared the crap out of all of the major Hollywood studios? Using a store bought copy of 'The Matrix,' he worked out how the CSS functioned so as to be able to play the movie on his LINUX format PC. A three man court ruled, "*There is nothing illegal about buying software, reverse engineering it, and making copies or using it in a way the creators did not intend.*" Meanwhile, from that "seed" bigger things are happening. DVD copying has moved into the big time. DVDs intercepted inward bound to UK were "pressed" by high speed commercial grade replicator, whereas prior efforts have been done using DVD-burner style equipment (one disc at a time). And, they were two-sided (9.4 Gb blanks are used). In the shipment UK authorities nabbed, triple-play DVDs containing (for example) 'Ice Age', 'Lilo & Stitch' and 'Spiderman.' UK reports say the extra-loaded discs, "*are technically of high quality.*" Watch how fast the MPAA moves to close *this* door. US Supreme court refused to review DVD case involving (Internet) sharing of CSS data December 24.

ImpacTV? Unusual "soft announcement" of plans to create combo pay + FTA package of as many as 40 channels, Ku available to 80cm dish equipped homes in Australia and NZ, made over Christmas holiday period during Apsattv.com chat night. They claim use of Irdeto2 for CA portion, uplink some channels directly from NZ to a satellite "to be revealed," and start "as early as March (2003)." A support web site is not working (www.impactv.co.nz), but the last time SF discussed their plans with them, they were 3 guys in Auckland, all gainfully employed (one processes air freight, one fixes TV sets, another is manager of a well known Auckland educational facility's TV system). Twice previously ImpacTV has promised to launch by a certain date - we are still waiting. Perhaps the third time is more charmed.

UK's digital terrestrial service which closed in May in bankruptcy has been reborn under BBC leadership as "Freeview" with UK100 pound STBs. And now the hardware is selling faster than manufacturers can produce! Australia take note.

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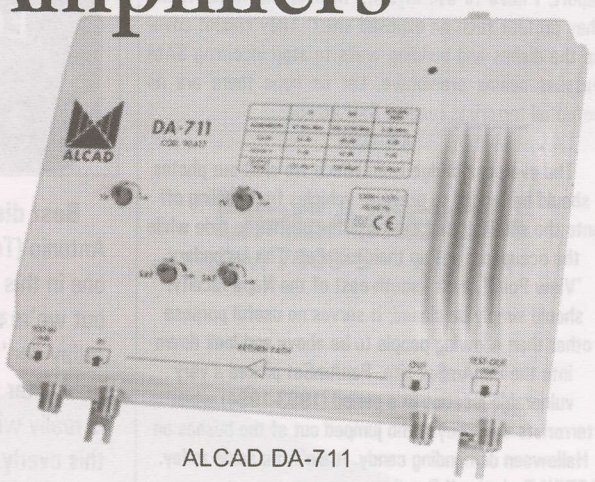

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Napa a "sitting duck?"

"Looking at the pictures (SF#100) and reading the report, I have to ask myself, 'how in the world would they protect such an exposed site?' They cannot cover up the dishes and building walls to stop incoming SAM missiles seems prohibitive. Let us hope there are no potential terrorists reading SatFACTS!"

AA, NSW

The overpass bridge from which we shot our photos should be fenced to prevent vehicles from pulling off onto the shoulder and then into the bushes to hide while the occupants set up their missiles. The secondary 'View Point', east - south-east of the Napa facility, should simply be closed; it serves no useful purpose other than allowing people to be above and look down into the PanAmSat site. PanAmSat picked a very vulnerable location in a period (1993-1994) when terrorists were guys who jumped out of the bushes on Halloween demanding candy. It ain't the same today.

ASTRX Twinstar II Receiver

"I have carelessly deleted Optus B3 transponders, the receiver has locked up, no responses to receiver or remote key presses. Upon switching on, the 4-column LED ladder displays runs for about 30 seconds, replaced with 'dErr' message. The TV screen says 'Digital' with a graphic, every 5 seconds or so. When switched off, the receiver displays the elapsed time the receiver has been running. I hoped to be able to return to factory defaults, contacted an Asian in Dubai (where I purchased the receiver). They sent me a new CDROM with the software to be reloaded; it loads OK but I continue to get only the 'dErr' message. I then tried downloading new software from a site, which requires registration. This does not work, even if I follow precisely their web-site instructions. Is there anyone out there who can help???"

Geoff as gperrin@well-com.net.au

Non-technical help

"What are the best receivers for Oz? Are there receivers available that don't require special skills for introducing extra software after the receiver leaves the factory? Are there services available on pay-TV which can be received in Australia and bought by subscription from outside the country? What is meant by Irdeto embedded CA?"

Harry Wood, Adelaide

The best non-technical peon receiver for Australia? For non-CA, the MediaStar D7.1, D3 (analogue + digital + positioner) and the Strong Technologies SRT 4610 II are straight forward and fun to use. For CA, the Humax 5400Z for Irdeto - the Simba 201 (Aston) for Viaccess are straight forward to set-up and use. Offshore pay-TV services? Only if you go into "grey market cards" (and receivers) for the likes of Star Asia, Zee TV Asia - few of which are non-technical to use. An embedded receiver (whether Irdeto, Viaccess or other) comes out of the box with the CAM (conditional access module) "built-in" meaning it is ready to slide in an appropriate pay-TV authorisation card and watch TV. Lacking embedded, the receiver requires a CAM designed to accept the service card of your choice (such as Irdeto for Foxtel, Austar or Aurora). Embedded receivers typically cost more than receivers requiring CAMs, but less than if you had to buy a CAM on top of the receiver price. However, a CAM can be changed for different service cards while the embedded can only work with the conditional access format it was designed for.

HARDWARE EQUIPMENT PARTS UPDATE

JANUARY 17, 2003

Best disclaimer of the season - From the holiday catalogue of Bjorn's in San Antonio (Texas). "...TV screens are measured diagonally, and not a single photo of one in this catalogue is actual size. Some models are similar to the ones illustrated, but we're still trying to figure out which ones those are. Most HDTV's available today don't have Digital TV tuners built-in, but we weren't planning on telling you that until after you gave us your credit card. Digital TV reception varies by location. 16:9 is really wider than 4:3.... We're sorry if we haven't offended everyone equally during this overly long disclaimer. We'll try harder next time."

AFRTS contact. For technical problems involving DTS or AFRTS DTH service (Asia on Ku-band), Jerry Shorter, GS-124, Chief Engineer, AFRTS-BC, 1363 Z St Building 2730, March ARB, Ca. 92518; COM 01-909-413-2270, Fax 01-909-413-2423 or email shortjl@dodmedia.osd.mil.

Dreambox. In SF hands, currently undergoing Beta testing. One challenge: Lawsuit with Irdeto means no embedded I-format so Dreambox comes with Allcam product instead.

TARBS. With service now on PAS10 (4064Vt, Sr 21.000, 3/4) available over "wide area" of Middle East, Asia and Africa, d-Box 2 enthusiasts have worked out firmware "sort" of the data stream. NDS is also now available for d-Box 2; "firmware" has an information bar which appears after pressing "i" on the remote revealing information covering the channel selected.

Samsung 9500CI reportedly, "as good as the Humax (5400)" at performing certain unintended tasks, and this IRD is attracting major interest of German "free-style" software creators. It typically sells for Euro299 including AllCam Mod (installed) which is a 6 in 1 version. The 9500CI leaves the factory with 2 card reader slots and 2 CIs. The AllCam typically is run from a FunCard and Irdeto 2 operates through a Globe Cam available from Digital Sales (UK supplier). SatFACTS will have a full report.

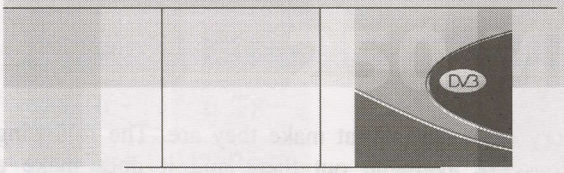
NZ Sky's passion for reversion to "Mosaic Channel." One reported solution - place receiver in standby mode and use remote to enter 10102020.

Linux and the d-box 2? Rolf Deubel reports: "Linux as an operating system presents some problems for newbies as it requires a Linux distribution installation on the user's (programming) PC to create d-Box operating system changes. The former 'read only' and therefor only in Linux source code editable file system Linux CRAMFS has now been successfully replaced by a real time editable file system JFFS2 resulting in a working solution which is freely editable by FTP access. This means people interested in d-Box 2 who are not Linux literate can also create an operating system of their choice with their own menu(es) and games as they please."

Robust versus more channels? The UK Independent Television Commission (ITC) has decided that terrestrial digital broadcasters should continue to be given the flexibility to broadcast their DTT services using either the '16-QAM' (more robust) or '64-QAM' (more programs) transmission mode. At this point in time, 4 out of 5 have elected 16-QAM format because of reception problems. But transmission powers will double (+3dB) in near future perhaps allowing them to switch to more channels (64-QAM).

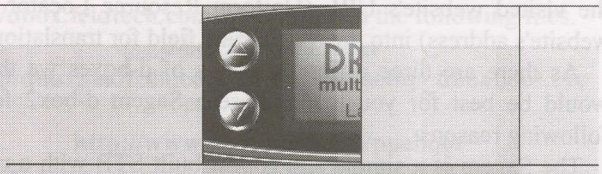
Quick PC boards? PCBexpress.com offers 24/96 hour turn around on 2 sided and 2 to 6 layer PC boards using artwork you "deliver" to them via Internet. Their web address is wwwpcbexpress.com .

NDS unbreakable? PC emulator software (one version is named Kryptonite) which with a fast PC hacks NDS. Next step? Emulator cards and then the first MOSC.



DREAMBOX
DM 7000-S

power • speed • stability • design



Global Innovation

In the DREAMBOX you will find power united with intelligence: The Power PC processor from the house of IBM combined with the LINUX operating system provides lightning switching times together with high stability.

The 100 Mbit Ethernet connection makes the DREAM- BOX Intranet and Internet ready. Thus the user can update the operating software and new setting lists directly, or even download new skins for individual adaptation and configuration of the user interface.

A further innovation in the area of the satellite receiver is the built-in flashcard reader, with which flashcards and minidrives can be read and written.

In addition, the low power consumption (standby mode 1.2 W) together with the minimal heat generation speaks for this receiver.

The DREAMBOX will take you to the future of the satellite receiver.

Features:
- 250 MHz IBM PowerPC Processor (350 Mips)
- Linux open source (most parts under the terms of GPL, accordingly expandable)
- Supports Linux Standard API (Direct-FB, Linux-FB, LIRC, ...)
- DVB Common-Interface Slot
- 2 x Smartcard-Reader
- Integrated Compact Flash Interface Slot
- MPEG2 Hardware decoding (fully DVB compliant)
- Support for MPEG4 decoding
- Common available NIMs (DVB-S, DVB-T, DVB-C)
- 100 MBit full duplex Ethernet Interface
- USB Port Keyboard, Pointing Devices, WebCams and other devices
- V.24/RS232 Interface
- Big-size LCD-Display
- Up to 256 MByte of RAM
- integrated IDE UDMA66 Master/Slave Interface
- Support for internal HDD in any capacity
- unlimited channel lists for TV/Radio
- channel-change time < 1 second
- full automatic service scan
- supports directly 6 bouquet-lists (indirect unlimited)
- supports EPG (electronic program guide)
- supports videotext (insertion)
- various applications such Web-Browser or Mail-clients
- supports multiple LNB-Switching control (supports DiSEqC)
- fully adaptable OSD in many languages (skin-support)
- SPDI/F Interface for digital bit stream out (AC-3 / DTS)
- 2 x Scart-interfaces (fully controlled by software)

DREAM multimedia.TV

Contact and more informations at:
www.dream-multimedia-tv.com

The ultimate receiver gets an award

Teaching your new d-box 2 to "speak Linux"

The response on SF100's Big d-box2 report was enormous. Not only readers who already have a d-box1 in use expressed their interest in purchasing a d-box2 following our instructions on how to bid on http://www.ebay.de but others also wanted to know how to carry on and what to do when the d-box2 arrives.

Firstly let us give you another hint on how to make the most out of bidding at Internet auction house Ebay being able to use your own language (English) even when bidding on Ebay Germany or any other Ebay non English run website: Create an account with your country's Ebay Internet auction site e.g. **http://www.ebay.com.au** all world-wide sites listed on the starting page to make sure your account is set-up in your home language.

From now on when logging into foreign Ebay sites and identifying yourself with your login, your home language is set to handle your transactions, except for the describing part of the goods which obviously is in that particular language of the Ebay website visited.

No train smash at all because you can have the rest of the website translated for you; e.g. by **http://www.systran.org** or **http://world.altavista.com** just by entering (copy and paste) the visited website's URL (Uniform Resource Locator = the website's address) into the appropriate field for translation!

As there are three different brands of d-boxes we think it would be best for you to purchase a Sagem d-box2 for the following reasons:

The Sagem is a simple and robust built STB with a robust, separate power supply, which is an important repair factor 15.000 Km away from any point of production! Also the Sagem uses an easy method for convincing the PPC Power PC CPU to fall into DEBUG mode and accept our new commands. The Sagem is widely available and the purchasing price is about 2/3 of the price for a Nokia d-box2. An unmodified Sagem should be obtainable for between 220,- € and 280,- € depending on age and condition of the STB

As bidding on Ebay is not our primary subject, let's carry on at the point when your d-box2 has arrived, sits in front of you on the table and you are eager to squeeze it a bit to see what it can do except consuming power.

Step 1

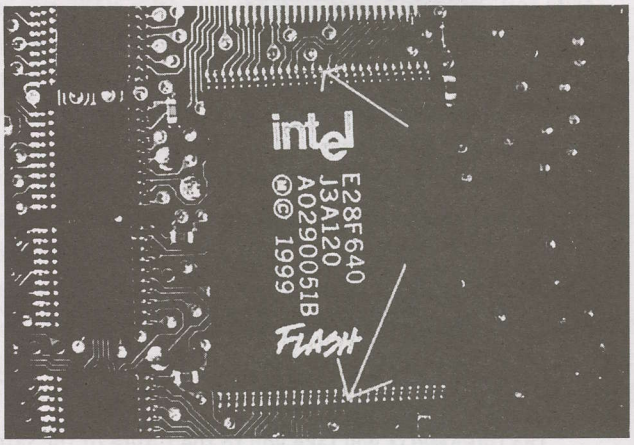
As all d-box2 of one and the same brand do look the same from the outside, we have to open it to determine what chipset is on the mainboard and if the FLASH RAM consists of one or two memory chips, and, what make they are. The following combinations are available out there and it does make a difference which one you've got in order to choose your flash image file (image = the complete content of the flash chip as one file with the size of 8.257.536 Bytes containing the LINUX operating system as well as personal settings, satellite /transponder settings and plug ins):

Sagem d-box2 with 1x Intel Flash 28F640
Sagem d-box2 with 2x Intel Flash 28F320 (the famous CB3 like in Humax)
Sagem d-box2 with 2x AMD Flash 29DL323 but like 2x Intel layout
Sagem d-box2 with 2x AMD Flash 29DL323 but like 1x Intel layout

It also makes a difference in how to enable the bootloader protection for "write enable" in order to swap the bootloader of the d-box2 to the one we need for LINUX.

Complicated? No.... not yet... in fact it is still fairly easy! More to come right away! Do not back off now. Everything written here is again available on-line with even more detailed info:

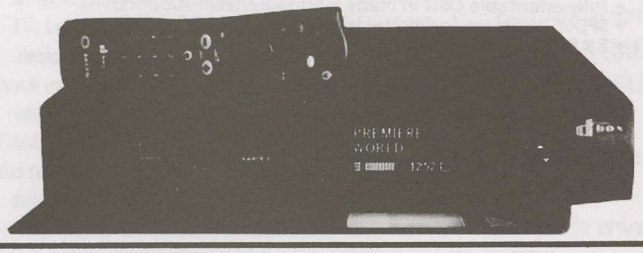
http://www.noernet.de/dbox2/howto/DBox2-HOWTO-2.html#ss2.5



Do not close up your Sagem now... it's not the time yet as we are just about to start talking nicely and convincingly to the PPC CPU. And of course we have to overcome the Flash's write protection. Let's get our tools and software first, set-up our PC and see what else we need.

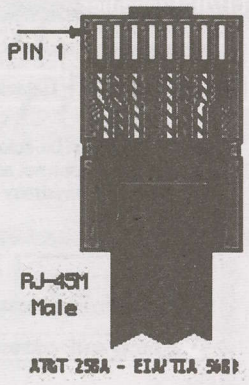
Unlike the d-box1 (only manufactured by Nokia), the d-box2 does not need a BDM Interface (Background Debug Module) to flash the memory chip; this is done through the onboard RJ45 Ethernet connection interface. Like many other LINUX related network applications this is limited to 10 Mbit/sec (10 Million bit per second divided by 8 makes it 128.000 characters per second which is still VERY fast if you consider that on one A4 page there are about 1.000 characters).

SAGEM's d-box 2 is "recommended"



This report researched and prepared by Rolf Deubel. Capetown, South Africa

Crossover Cable	
RJ-45 PIN	RJ-45 PIN
1 Rx+	3 Tx+
2 Rc-	6 Tx-
3 Tx+	1 Rc+
6 Tx-	2 Rc-



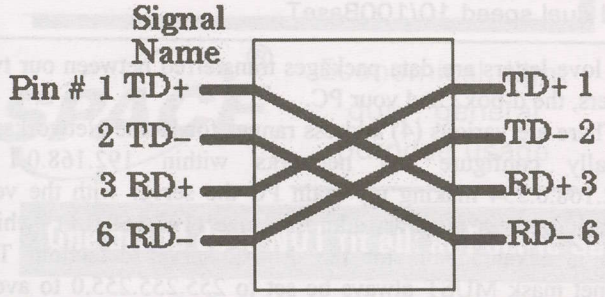
RJ45 crossover network cable to directly connect 2 network devices with each other:

So, to establish communication to the d-box2 we would need to set-up our PC as a network PC with at least the following:

1x RJ45 connector equipped crossover cable to connect the dbox2 to your PC's network adapter (above)

1x Nullmodem cable for RS232 connection, 2x Sub-D9 Pin or also called DB-9 female (crossover) or most probably better known as Laplink Cable!

Here (above, below) are the schematics if you would like to DIY the cables yourself:

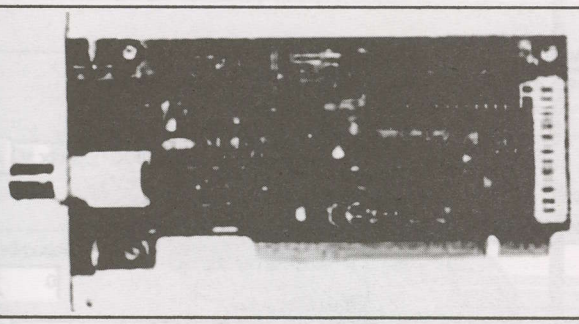


For further reference on home networks visit the following site on the Internet:

http://www.the-roberts-family.net/Dad/network/default.htm

To show the crossover a bit more "picturesque" have a look above.

The Nullmodem cable schematics works on the very same principal but just for the RS232 serial port:



And last but not least we do need a suitable 10BaseT network adapter for network speeds NOT exceeding 10 Mbit/sec (restricted by the d-box2). Be aware that if you have a 10/100 Mbit/second dual speed network card installed and intend using this adapter card to connect to the d-box2 directly with the crossover cable this will not work. In this case you need an auto sensing network hub (automatically detects the lowest speed of the network connection and adjusts the higher speed accordingly).

Common Null-Modem Connection

Signal Name	DB-25 Pin	DB-9 Pin		DB-9 Pin	DB-25 Pin	
FG (Frame Ground)	1	-	X	-	1	FG
TD (Transmit Data)	2	3	-	2	3	RD
RD (Receive Data)	3	2	-	3	2	TD
RTS (Request To Send)	4	7	-	8	5	CTS
CTS (Clear To Send)	5	8	-	7	4	RTS
SG (Signal Ground)	7	5	-	5	7	SG
DSR (Data Set Ready)	6	6	-	4	20	DTR
CD (Carrier Detect)	8	1	-	4	20	DTR
DTR (Data Terminal Ready)	20	4	-	1	8	CD
DTR (Data Terminal Ready)	20	4	-	6	6	DSR

This is necessary or else the two (PC and d-box2) will NOT talk to each other as you will always receive a time-out on your connection which will make flashing impossible!

The next thing you should put aside is a paper clip opened up so that it forms a **V.** This is to bridge the write enable solder points of the flash on the mainboard until you are able to write to the flash (a couple of seconds).

Having prepared the hardware, we now move to the software needed for the "patch." Make use of the Internet, go to **http://dbox.feldtech.com** and download the following files.

d-box2Bootmanager

http://dbox.feldtech.com/downloads/setup_dboxboot.exe

PPC Boot Flash

http://www.dietmar-h.net/ppcboot

Further more you need a file called tuner.so (a Linux system file) which you can download here:

http://dbox2.elxsi.de/files/tuner.so

and you will need a couple of Linux system files compressed in one package called minflsh.tar.gz (tar.gz packed file under Linux) which you can download here as a normal zip file so you do not need the Linux tar.gz unzipper:

http://sat.spb.ru/exchange/receivers/soft/dbox_2/miniflsh.zip

Then you need the actual flash file in Linux, which we suggest you download directly from BerliOS

http://tuxbox.berlios.de/flash

Any version will do but you MUST select one that corresponds with YOUR box' chipset! Furthermore download a tool to read the original flash file from your d-box2 and extract your d-box2's micro codes (ucodes) from this file from here: **http://tuxbox.berlios.de/misc/dbox2.rar**

and last but not least download the console boot files cdkroot

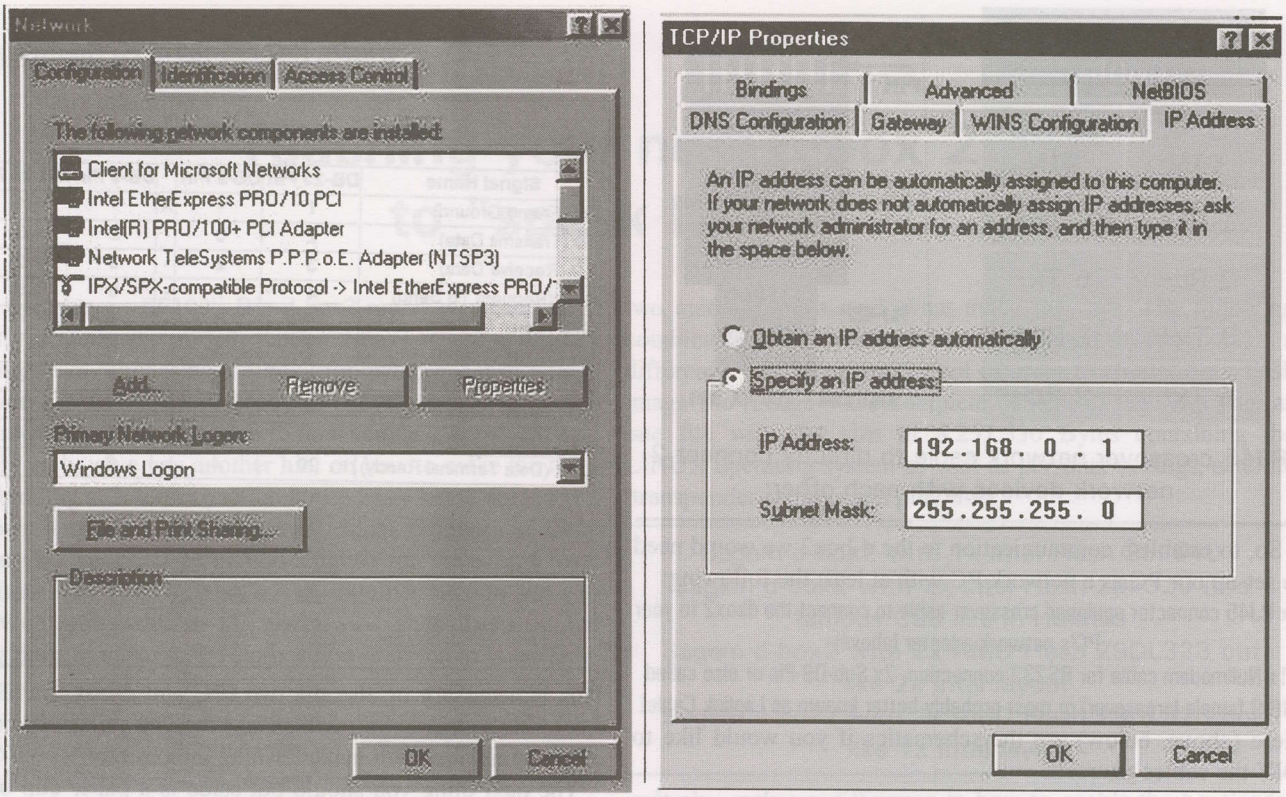
http://tuxbox.berlios.de/misc/cdkroot_console.tar.bz2

Install the d-box2 Bootmanager software on your PC, make a sub directory in the d-box2 Bootmanager installation directory called minflsh (**md c:\progra~1\dboxbo~1\minflsh**) and unzip the miniflash files in this newly created directory using an unzipper of your choice.

Then unzip the cdkroot files in c:\dbox2 directory (preferably) and if you do not have the Linux unzipper then download it here:

http://dbox.feldtech.com/downloads/untar_utils.zip

Alternatively: Search the web using **http://www.google.com**



NETWORK adapters: 10BaseT and dual speed 10/100BaseT

For those who are interested and want know more, here are some more info to download from: **http://www.dbox2.info** there is also an English section which might help should you get stuck!

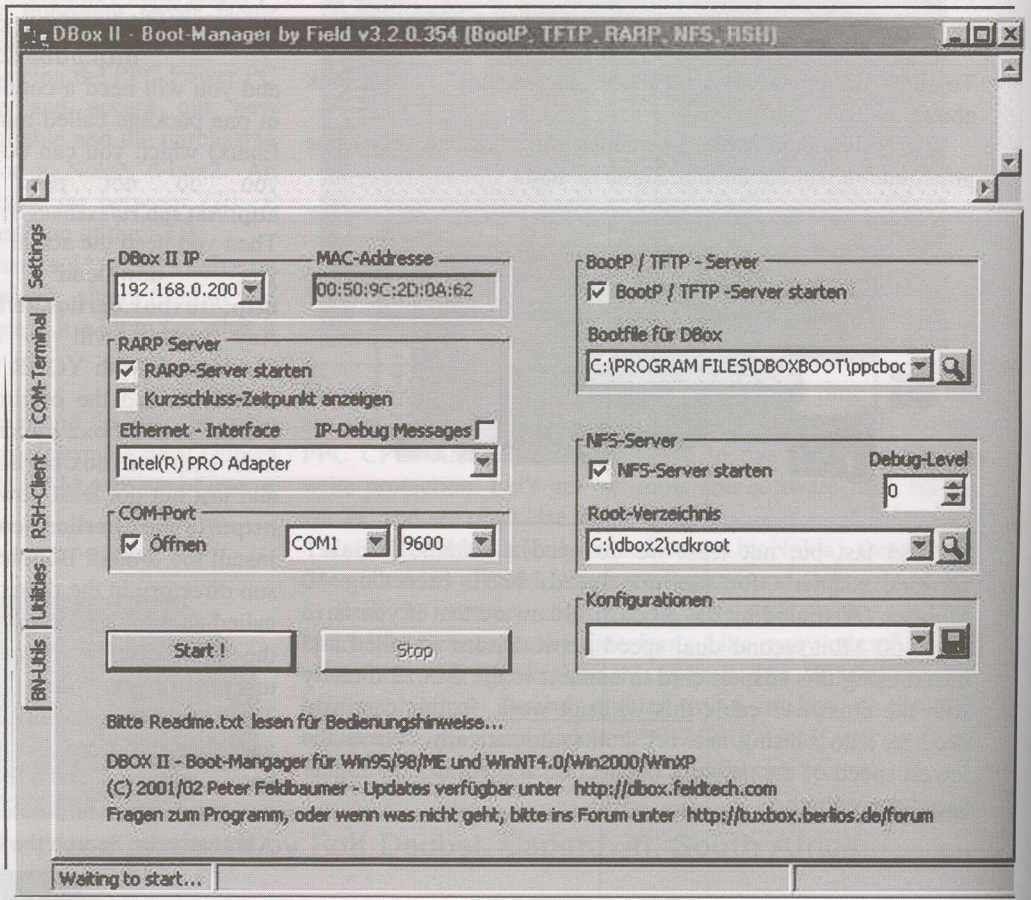
Let's set-up your PC's network. Install your network adapter card into the PC. When you restart the PC, plug & play will detect your new hardware and do a basic configuration. Once you are back on your Windows Desktop right click on Network Neighbourhood to see be able to do changes to your network settings. You should see your network adapter listed there (I personally prefer genuine Intel Network adapters as they are giving the least problems but are a bit more expensive).

In the images here you see 2 network adapters installed in my PC; one is a plain simple 10BaseT and the second one is a dual speed 10/100BaseT which handles my internal Home Network.

All adapters need to be configured for TCP/IP (Transmission Control Protocol / Internet Protocol) network protocol (technical standardised transmission language) and we will concentrate on the one for your d-box2 set-up!

I suggest that your PC is the first device of a (possible) 256 devices on your home network, which needs to be properly addressed. This is like the 10 o'clock postman who brings the love letter to a specific house number. In our case the love letters are data packages transferred between our two lovers, the d-box2 and your PC.

There are various (4) address ranges for Home Networks; I usually configure my networks within 192.168.0.1 - 192.168.0.254 making my main PC the server with the very first address in my own address range (192.168.0.1) which also is advantageous for the d-box2 server detection! The subnet mask MUST always be set to 255.255.255.0 to avoid conflicts (just see it as a standard setting and you won't have



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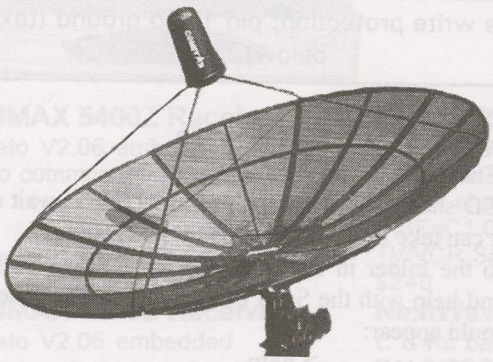
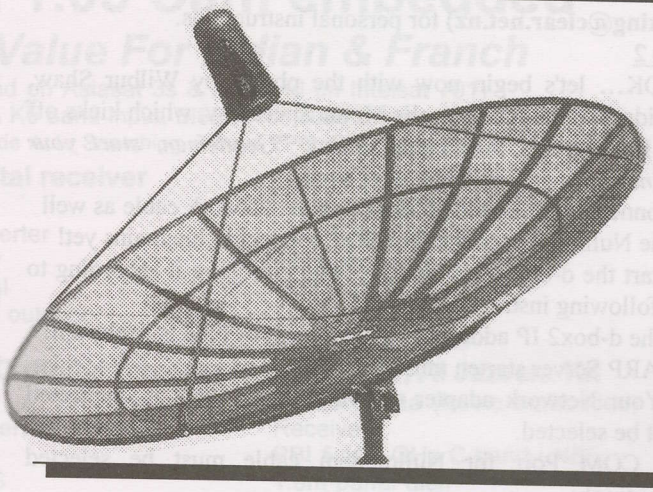


SM-8



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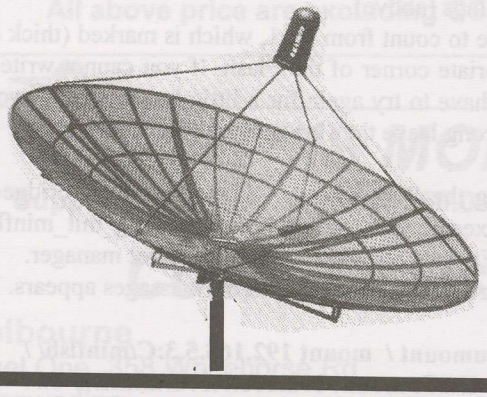

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Email: info@psau.com http://www.psau.com

any problems). The rest of the network setting you may ignore or consider them only later for "fine tuning" The IP address of your loving partner, the d-box2, will for (only) now be set by the miniflash files to make your life as easy as possible!

Before you do anything else, you MUST reboot your PC to rewrite your PC's system files and registry files in order to recognise the new settings. (Remember: this is a MUST DO whenever you change a setting in your network configuration.) Users with network switches and routers in their home network please contact the author via SatFACTS (by e-mail to **skyking@clear.net.nz**) for personal instructions.

Step 2

OK... let's begin now with the phrase by Wilbur Shaw, president of the Indianapolis Motor Speedway, which kicks off the Indianapolis 500 racing event: "*Gentlemen, start your engines.*"

Connect your d-box2 to the Ethernet Network cable as well to the Nullmodem cable. DO NOT connect to the mains yet!

Start the d-box2 Bootmanager and configure it according to the following instructions:

The d-box2 IP address at this moment of time is irrelevant!

RARP Server starten must be checked.

Your Network adapter on which the d-box2 is connected must be selected.

COM Port for Nullmodem cable must be selected accordingly.

You do not have to worry about the baud rate (Port speed) as the script you will run sets this!

OK... all set and ready to rumble!

Set the box to deep-standby (or plug power off) and restart, wait until "Lade..." appears in the LCD and then press the arrow-down key at the d-box until "flash erase" appears in the LCD. Do this twice (the start-assistant should not appear during this procedure), then there should appear a message in the LCD:

"Ihre Software konnte nicht ordnungs.....Drücken Sie OK um die Software zu akutalisieren."

At this point, press OK on the remote. This method works usually on the first attempt; one should not have to repeat this procedure.

Now unplug the antenna and then start the box again.

The error message UD4 should appear on the LCD.

Do not press OK, simply plug off the box.

Then replug the antenna in and start the box.

The box should try to introduce a software update. When the update is initiated (check the LCD) there have to be 1-4 bars but not the fast passing bars while loading. Then again plug off the box.

Plug off the antenna again as some boxes do not answer to RSH if the antenna is connected.

Now the box should start from the network (instead of the Flash) with Bootmanager and minflsh and open RSH.

Step 3

The boot procedure:

1) Start the d-box2-Bootmanager.

2) As d-box2-IP takes an IP address, the network fits on (if you followed my example take 192.168.0.200).

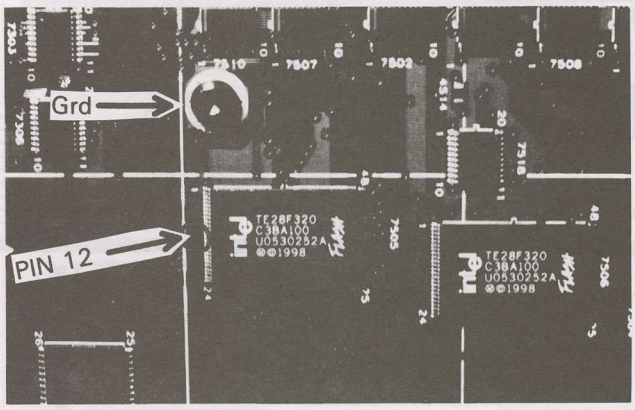
3) Rarp-Server starten: Ein

4) BootP/TftP-Server starten: Ein

5) Bootfile für die Dbox: C:\minflsh\kernel\os

6) NFS-Server starten: Ein

7) Root-Verzeichnis: C:\minflsh



Disable write protection; pin 12 to ground (text below).

8) Com-Port: Öffnen

9) Verbindungsgeschwindigkeit: 57600

Press on Start and plug in the box.

Now the LCD should stop whilst showing "Lade"; wait a few moments; it can take up to 30 seconds till RSH works.

Change to the folder in Bootmanager to "RSH Client" and type and send help with the Send Cmd Button. The following message should appear:

> help

ChorusOS r3 rsh daemon - valid COMMANDS are:
mount [hostaddr: filesystem|special file [mount point]]
umount [- v|F|f|A|t [UF|NFS]] [special file]
swapon mount point

And some other lines more, which are less important.

The aim is to achieve this response to the help command we entered into the "console" (console = our keyboard which allows us to send commands via the network to the d-box2)

If this does not work out as described or a "timeout" appears instead, you have to (must) repeat the steps again and again until it works; try stopping the update function at another point (maybe with 5-9 bars)

Step 4

Disabling write-protection. Now you have to disable the write-protection, the way to do this differs from box to box but here is the method for Sagem boxes with two Intel Flash chips: Only briefly, (1 second) connect GND from the mainboard's mounting points or a specified GND Pin with Pin12 of one of the Flash chips (above).

You have to count from Pin1, which is marked (thick dot) in the appropriate corner of the Flash. If you cannot write to the flash, you have to try again for a little longer until it works! If all goes wrong leave the "bridge" until finished!

Step 5

Enabling the Debug-Mode. If the necessary bridge is set, you can execute the Script "enable_debug_mit_minflsh.txt" with the "Execute Script" Button of the boot manager.

After this a few lines and many error messages appears. That is normal.

> umount / mount 192.168.5.3:C/minflsh/ /
C_INIT: mount 192.168.5.3:C/minflsh/ on /

And now have a look in the terminal window of the previous page;

arun initiator -v -V -i 4
started aid = 10
INIT Version 0.9 loaded
INIT: library path:
"LD_LIBRARY_PATH=/root/platform/nokia-dbox2/lib:/r

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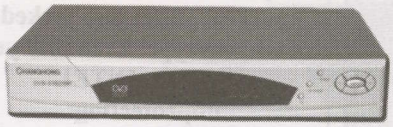

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TV/VCR Scart & RCA outputs
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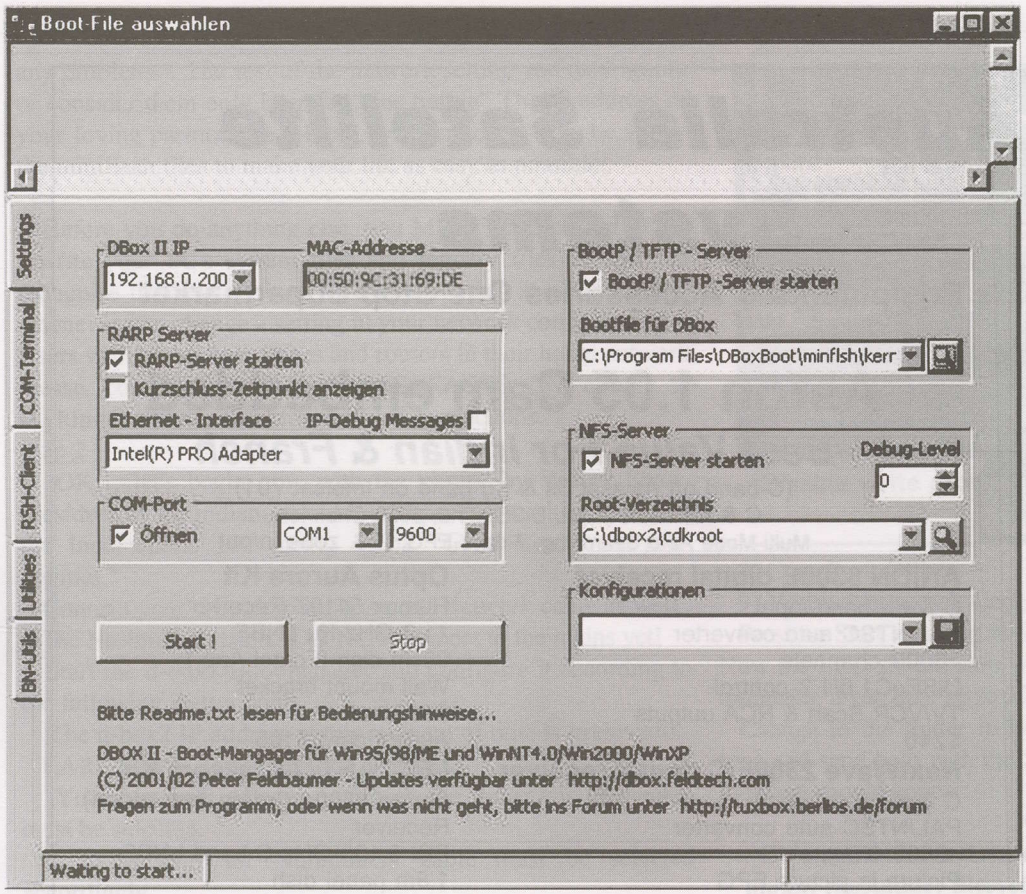
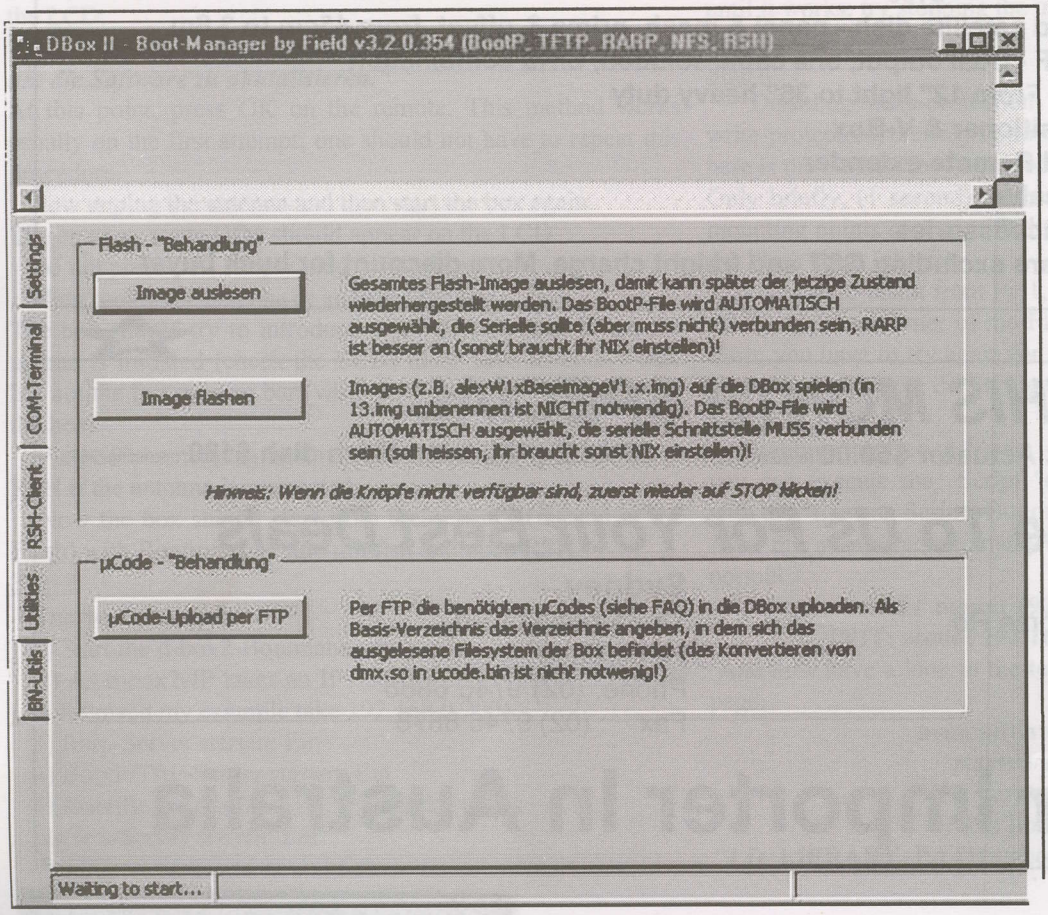


oot/platform/lib:/root/lib:/usr/lib:/root/platform/mpc8xx-dbox2/lib:/root/platform/nokia-dbox2/lib"
INIT: start run level 2
INIT: execute "ddf"
INIT: time: 58 sec, 920000000 nsec
INIT: started aid = 11
INIT: execute "upgrade"



INIT: time: 62 sec, 820000000 nsec
INIT: afexec of upgrade failed - No such file or directory

At this point, the Network seems to be ok.

Now take a look at the com-terminal. If there is:

DebugEnabler (C) tmbinc, gillem + sagem 1,8 beta
bl-version: 1.0
product? at: 10000944
current state: tmb locked
flashrom type: 2x16 bit? yes.
vendor: INTEL
unprotecting:
flashing NOW: DONE!

Then everything is correct.

The exact replies are different from box to box; the last line is the important one. If there is flashing NOW: failed, you did not successfully disable the write-protection. If there is nothing, control the settings of the serial port and the zero-modem and start again!

So, if you were successful, you are now in the Debug mode.

Plug off the box and remove all the bridges of the write-protection should you have to leave them on (only in very rare cases)!

Turn off the Bootmanager by pressing on the STOP button. Now turn on the box again; in the LCD you will see many weird things (Bmon etc.) That is correct, this is what you should see if your box's CPU is in Debug mode as it gives you your box status!

After the debug-mode is enabled you would now let the BR-Software do its update to the end. Well we're not so we can go ahead flashing our selected image into the d-box2

Step 6

Flashing your favourite image. Important: Place the image you want to flash in the root directory of your PC and rename it to flash.img. This makes life much easier when you want to select your image and also for Bootmanager as it can only handle image names up to eight characters (like in old DOS mode).

Open Bootmanager, select all like above but now ppcboot_write_flash in the Bootmanager directory.

Then click on the Utilities folder of Bootmanager and select Image flashen.

FORGET THE REST

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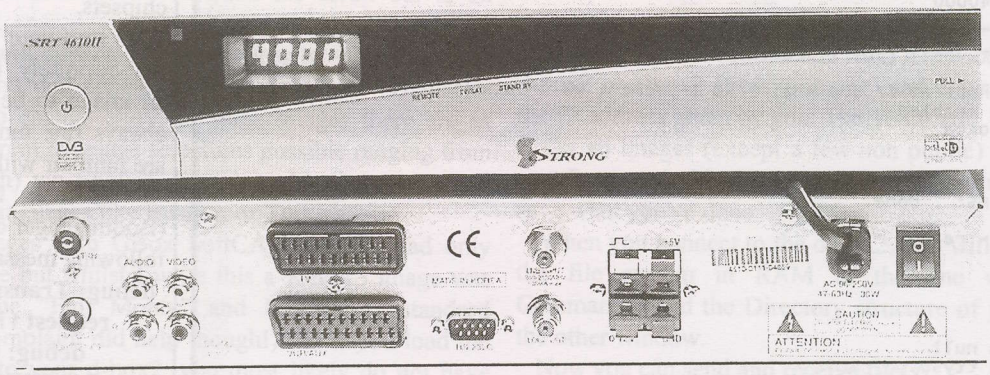

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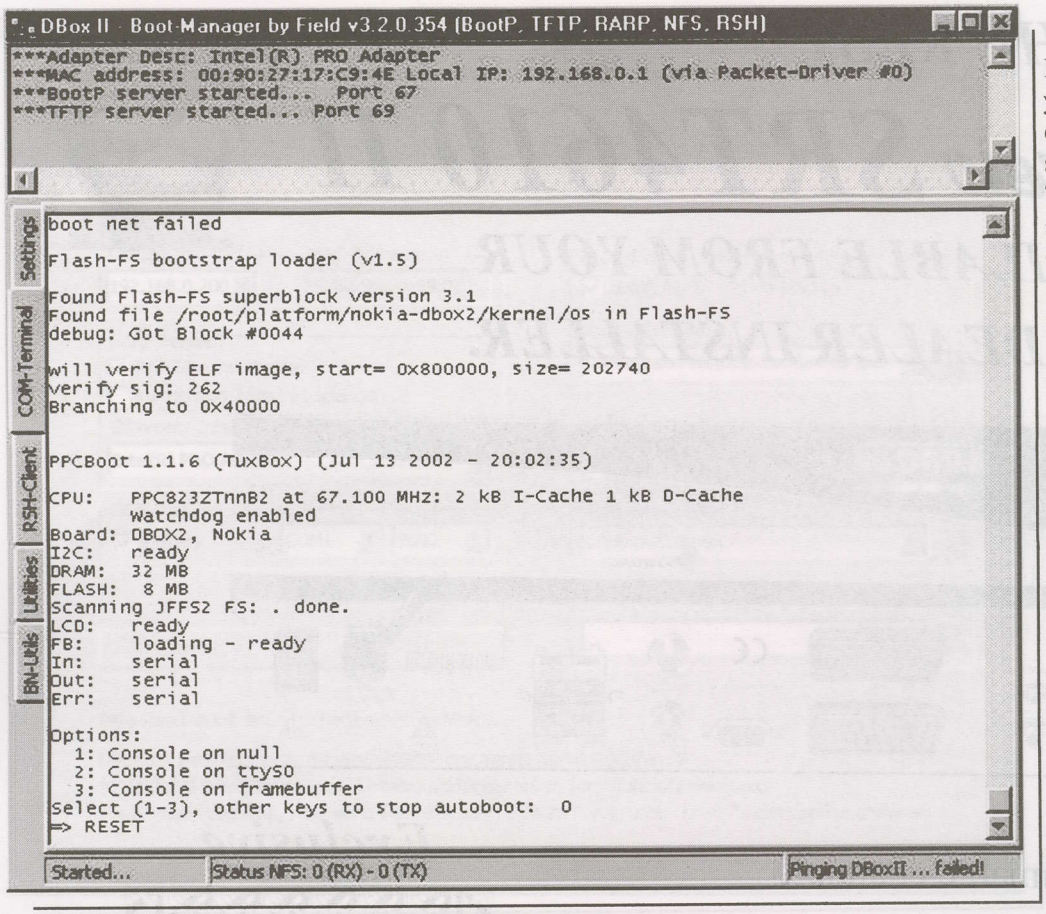


You will be asked for the file name and you should point the Bootmanager to the root where you placed your image.

After clicking OK comes a BIG warning in German saying more or less that this is the last chance to cancel flashing the image to the box and that by clicking OK the flashing process will now start. That's exactly what we want so hit OK! Only now plug the d-box2 into the mains power to enable deep bootup!

A lot of stuff will appear on your PC's screen and if your network set-up is OK the Bootmanager will carry on flashing until a message appears on the screen that flashing is finished (takes about 8-10 minutes).

Known problems whilst flashing your d-box2

Normally the flashing of a new image is no problem, simply click on the "**Image flashen**" Button of the Bootmanager, start the d-box and a few minutes later it is done.

Sometimes there are problems to flash a new image; here are some work arounds to do this:

1)Generally pay attention to a functioning network.

2) Use the newest drivers for your Network Adapter Card also called NIC. If the box is connected with the PC directly, the best setting for your NIC would be 10Mbit half-duplex.

3) With Win2000 or Windows XP you should turn the DHCP-media sensing off.

4) Go to Microsoft's website for further information if you don't know how to do this. Alternatively there is a patch you can download from here:

http://www.dietmar-h.net/Mediasensing.zip

Afterwards the computer must be restarted.

5) If there is "Kein System" appearing on the LCD after flashing you have probably flashed a wrong image. The image you have to flash depends on the number of Flash chips in your box. For the Sagem with 1xIntel Flash you need an image with the designation 1x For all other boxes you need a 2x Image. It does NOT matter if you have Intel or AMD Flash chips on your mainboard unless specifically stated with an image. There might be other specifications for images e.g. GTX or ENX AVIA C-Cube Video chips but if nothing is stated for this image you've selected it is a generic image which should work on all video chipsets.

To start your d-box2 excursion we definitely recommend such an image to be used as you can always fine tune later when you are familiar with the procedure!

6) If in the Log window (Bootmanager console client) the following message appears:

debug: Transmitting BOOTP request via broadcast
debug: Given UP BOOTP/TFTP boot
boot net failed

and / or the flashing just stops with the console prompt ==> then just type RESET and hit enter; in most cases this will solve the booting from net problem. If not type BOOT NET and hit enter and some extra network scan loops will try to detect your network settings!

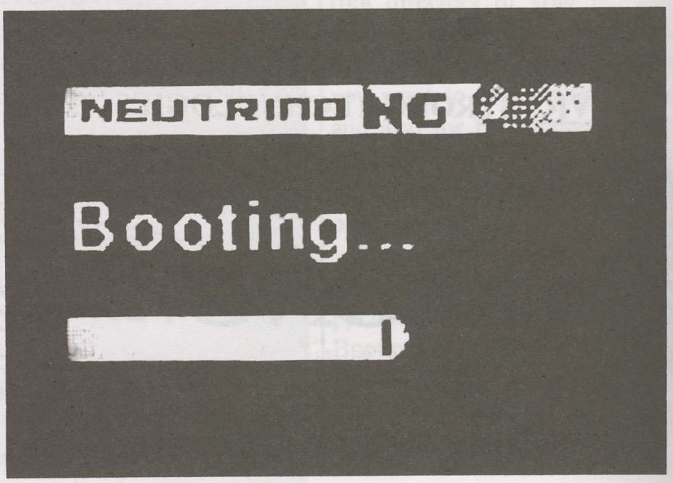
Step 7

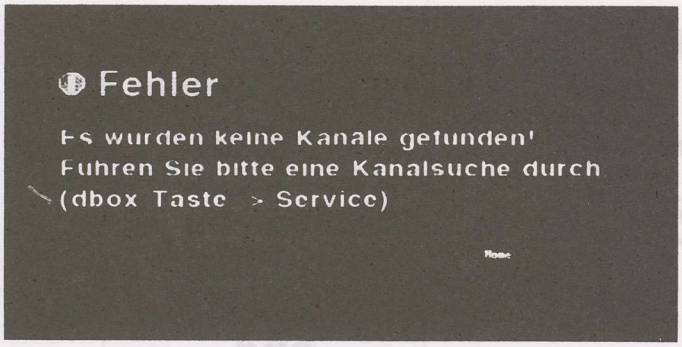
If your flashing has finished and you've seen the on screen message in German, pull out the mains and relax. Now just lets see if your box boots up and shows something on your TV. Plug in the mains, look at the TV and your LCD screen and wait.

The famous DEBUG messages will come up on the LCD and if you see a boot up picture on the TV you are set ... well done, *you did it mate!*

Let the box boot completely, it will stop either as if it "hangs" saying "Booting" on the LCD or the TV screen will tell you that it did not find any channels and this in German! Don't get confused; we are going to sort this out right away; just stay behind me when we wade through the Jungle of the German menu settings!

To enter the menus press the button marked <dbox> go to <Einstellungen> using the up and down buttons to scroll





through the menu and press OK when the scroll bar is on <Einstellungen>.

A new menu will appear. Move scrollbar to <Sprache> and again a new menu will appear. Move scrollbar to <Deutsch> and press OK to change entry. In some images there are as many as 10 different language selections possible ranging from German (Deutsch) via English, French to Mediterranean and Eastern Block Languages like Russian or Turkish.

The first images with GBox SoftCAM module had only German available but whilst I write this a X-MAS image was released with the "Full Monty" and English as standard language (our complaint did help though!). So if you load the latest image on to your d-box2, you most likely do not have the "German only" problem but there is still the need to change settings to English!

Once you've done that, save your settings by moving backwards in the menus and save the settings at the appropriate entry. I usually use the expression "play with the toy" meaning to go through all menus and make yourself comfortable with the settings. Even if you mess it up, you can still reflash the box and start from scratch as we've been through these steps already and it should not be a hurdle for you to do it again!

Good... having done this we need to set the box to talk to our PC via FTP (File Transfer Protocol) so tell it which satellites to use and all about LNB settings and transponder scanning.

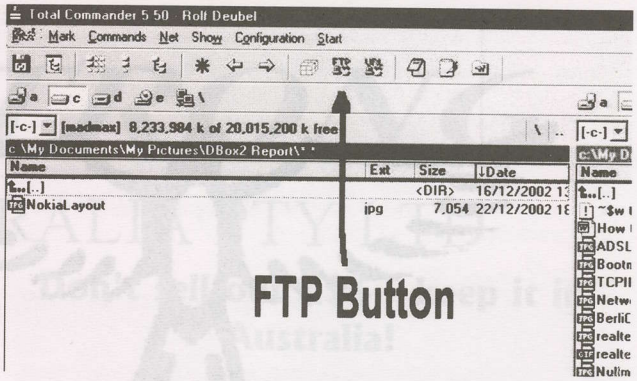
In SF#100 we told you already that the d-box2 is a different machine, very sophisticated and the Neutrino version firmware is something for the adventurous user rather than the normal Tom Dick and Harry from next door! All settings need to be forwarded by FTP via our network and obviously, to do this, your network needs to be set-up accordingly, this time not for flashing from your PC side but static from the box's side.

Having set the language, we now can use all English expressions an so it will be <dbox> button <Settings> and then <Network> Our "Home Network" is 192.168.0.xxx with your PC as server 192.168.0.1 if you followed my instructions.

Set the d-box2 to 192.168.0.200 and confirm by moving the bar to set now position and press OK on the remote.

From now on you can talk to the d-box2 via FTP to exchange files with the d-box2.... and when I say exchange I mean it; not only feeding your box with info but also getting vital information about your DVB environment from your new "Buddy!"

I am using Total Commander from http://www.ghisler.com for all my file organisation and FTP handling. It's a universal tool and very handy so it is worth getting and paying for it although it does run without limitations in shareware mode except for the nag screen at start up!

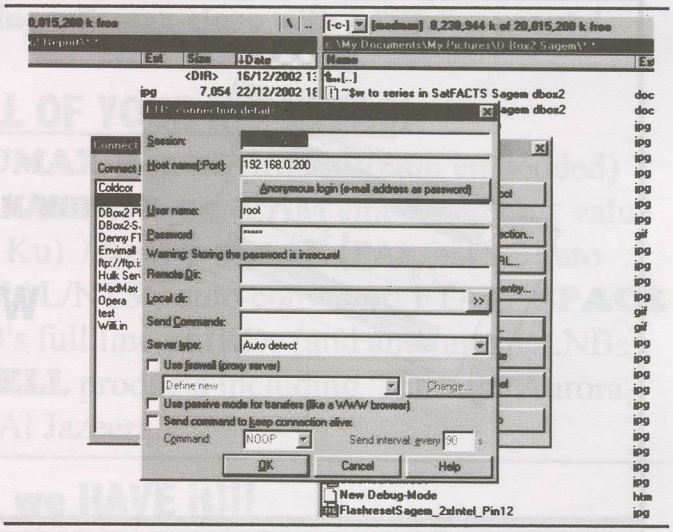


So press the FTP button and enter a new connection. Name it d-box2 or Dbox2 (Session name) and enter the Host name as the IP address given by you: 196.168.0.200

On all images (except a few non public) the logon is User: root Password: d-box2. Leave all other settings untouched and save what you've done.

When you connect to the d-box2, you will see the content of the file system in RAM in the one window of Total Commander and the Directory structure of your hard drive in the other window.

Now you can send and receive file(s).



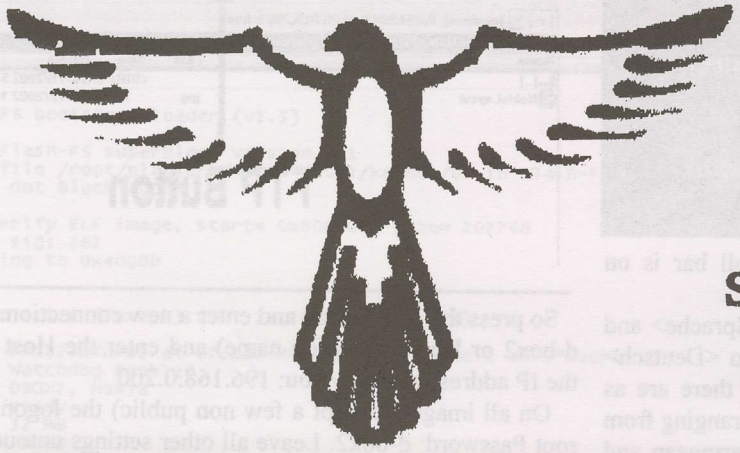
First thing we need to do is to set up our satellites we can "see" or better the d-box2 can "see." This file is appropriately called satellites.xml. Dot xml is a Unix / LINUX standard also supported by MS Windows; so no problems to read and write the file.

1) Each and every transponder needs to be listed with frequency, symbol rate, polarisation and FEC data.

2) If you use more than one satellite, then you need to start a new section within the file. In the example (p. 18) there are three satellites listed with all possible transponder readings. The above are the current maximum possible settings for d-box2 and emu mode. More, far more to come as NDS has now been implemented too and research is aiming for TARBS as well! SatFACTS will provide d-box2 settings on request until an appropriate server has been set-up for equivalent supply of data (email skyking@clear.net.nz with dbox2 as subject matter).

With entered, data one can do a transponder scan. But if you are unable to cope with this procedure or not clued up we also can provide complete set-up data with a file called

LINUX for d-box2 continues - page 18



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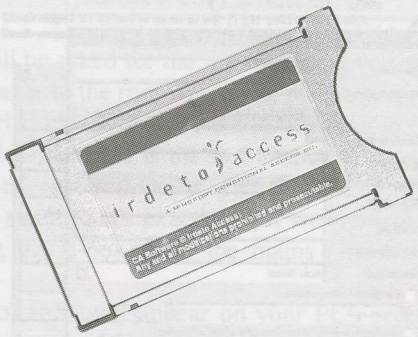

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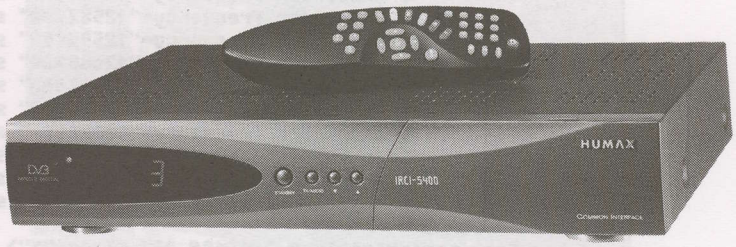

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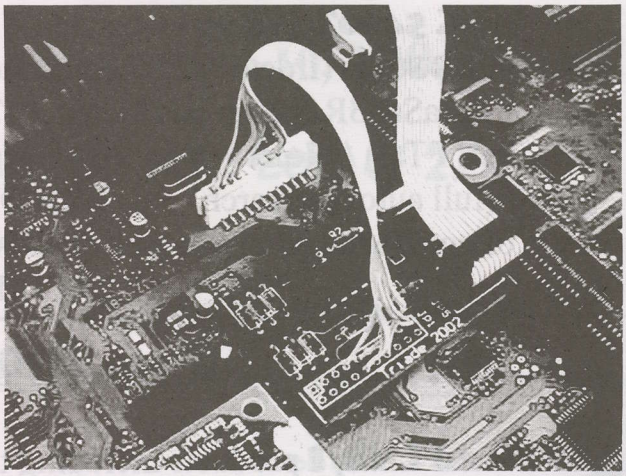
```
<?xml version="1.0" encoding="iso-8859-1"?>

<!-- useable flags are
1       ->      Network Scan
2       ->      use  BAT
4       ->      use  ONIT
8       ->      skip NITs of known networks
and combinations of this -->

<satellites>
        <sat name="OPTUS B3 160.5E" flags="1">
                <transponder frequency="12407000" symbol_rate="30000000" polarization="1" fec_inner="3"/>
                <transponder frequency="12527000" symbol_rate="30000000" polarization="1" fec_inner="3"/>
                <transponder frequency="12720000" symbol_rate="30000000" polarization="1" fec_inner="4"/>
                <transponder frequency="12532000" symbol_rate="30000000" polarization="1" fec_inner="3"/>
                <transponder frequency="12595000" symbol_rate="30000000" polarization="1" fec_inner="4"/>
                <transponder frequency="12688000" symbol_rate="29473000" polarization="0" fec_inner="4"/>
                <transponder frequency="12438000" symbol_rate="29473000" polarization="0" fec_inner="4"/>
                <transponder frequency="12376000" symbol_rate="29473000" polarization="0" fec_inner="4"/>
                <transponder frequency="12626000" symbol_rate="29473000" polarization="0" fec_inner="4"/>
                <transponder frequency="12564000" symbol_rate="29473000" polarization="0" fec_inner="4"/>
                <transponder frequency="12313000" symbol_rate="29473000" polarization="0" fec_inner="4"/>
                <transponder frequency="12501000" symbol_rate="29473000" polarization="0" fec_inner="4"/>
        </sat>
        <sat name="Intelsat 701 180.0E" flags="1">
                <transponder frequency="10975000" symbol_rate="30000000" polarization="0" fec_inner="4"/>
                <transponder frequency="11610000" symbol_rate="30000000" polarization="0" fec_inner="4"/>
        </sat>
        <sat name="PAS8 166.0E" flags="1">
                <transponder frequency="12326000" symbol_rate="28067000" polarization="0" fec_inner="4"/>
                <transponder frequency="12526000" symbol_rate="28067000" polarization="0" fec_inner="4"/>
                <transponder frequency="12606000" symbol_rate="28067000" polarization="0" fec_inner="4"/>
                <transponder frequency="12726000" symbol_rate="28067000" polarization="0" fec_inner="4"/>
        </sat>
</satellites>
```

services.xml which if placed in the /var/tuxbox/config/zapit directory will give you full access to everything!

Once again.... We urge you to "play" with your new toy.... Learning by doing is our motto here and there is not much to teach unless you know what you are doing.

OK... one more thing!

The d-box2's card readers can only handle stock standard Premiere card from Germany..... no good for our battle fields here. Your researcher is a part of a hardware development ring which provides equivalent hardware to suit you, the adventurous satellite enthusiast located around the world. This new hardware is called the COM2Board for GBox Multicrypt usage and SatFACTS previously reported about this device. The Board makes use of the standard on board modem port, which is NOT a RS232 port at the same time! It is placed between the standard port of the d-box mainboard and the card reader. The original plug for the mainboard is a Leoco 12 pin plug but we suggest you order it from us, not that we want to be THE super duper satellite equipment shop but simply because minimum orders are about 5.000 pieces per order! You may also order the complete board for Nokia, Sagem or Philips. Once installed the d-box2 will handle all you original smartcards e.g. Irdeto1, Irdeto2 and most others known (even NDS). Kindly contact SatFACTS Shop for any enquiry.



OK... after you installed all files you need to reboot the box (actually each time you do some changes which are system related). Having updated with the OZ settings, your d-box2 now will give you all the viewing pleasure you can imagine.

Have fun!

The SatFACTS Parts Store

In support of this month's feature on the Linux-modified d-box2

√ d-box 2 stock, standard/ not modified - you do the conversions!

US$599 + US$70 shipping (A$1241 at this time)

√ d-box2 + LINUX + GBox Multicrypt Plugin + COM2 Board + EMU Plugin + preset for Australia (obviously for legal reasons, no keys included!)

US$999 + US$70 shipping (A$1899 at this time)

All boxes purchased on behalf of buyer, tested prior to shipment.

► **COM2-Multicrypt board** (specify which d-box2 model you will use with)

US$60 inclusive of shipping (A$107 at this time)

How to order

Visa or Mastercard only; no cheques, no cash. (1) Supply name as appears on card, card 16 digit number, card expiration date. (2) Supply ship-to name and address. (3) Fax (+64-9-406-1083; maximum card security) ,or, mail information to "SatFACTS, PO Box 30, Mangonui, Far North, New Zealand, or, email skyking@clear.net.nz sending 2 emails with card info broken up for security. All orders are same-day acknowledged and scheduled shipping date advised. Note: d-box2 shipments require time for checkout prior to shipping.

When they cook too long - they burn

SA's power supplies are troublesome and expensive to have repaired!

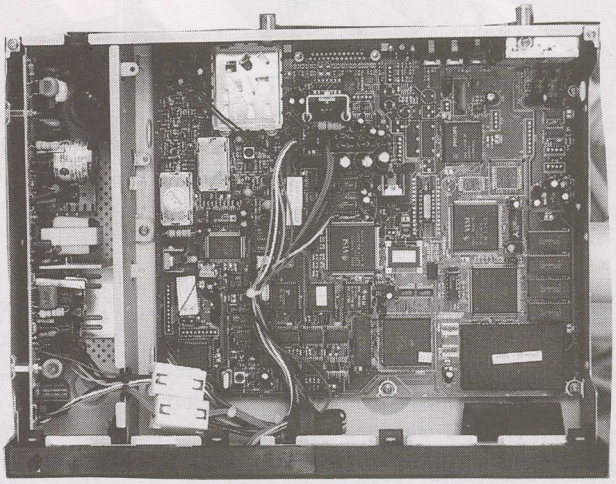
Perhaps the least helpful receiver supplier of all time is Scientific-Atlanta which routinely charges multi-hundred dollars to even take the cover off of a receiver; plus the air freight in both directions (they "request" freight fees in the range of US$150 x 2). Past issues of SatFACTS have identified SA power supply faults, and heat as a major contributor to field failures.

No accurate figure is available for the number of SA format (RABS) receivers still running (on PAS-2 Ku, 12.637Vt). Additional D9234 format users include the AFRTS DTH and AFN-DTS service (I180E, C-band 4175LHC), a handful of CA services scattered throughout PAS-8 (ESPN -4020Hz, California Bouquet - 3940Hz and NHK 4060Hz which has a sizeable number of 9234s in service), a few more on PAS-2 (12.281Vt for offshore oil rigs, 7th Day Adventist 3872 [although most any IRD will (usually) work here for most of their transmissions], and California Bouquet 3901Hz [including The Golf Channel]). Thus the universe of D9234s and D9225s numbers into the 5,000 range in the Pacific.

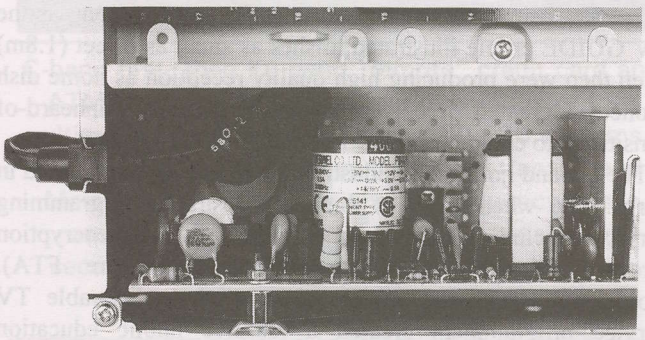
The power supply sits along one side of the receiver in a shielded compartment. The production standard is high, component selection is better grade than many (other) Korean-built receivers (yes - it comes from Korea). What is challenging is the location of the fuse, and, electrolytic capacitors that over time will "dry out." To get at the power supply (even to merely 'check' the fuse), the sub-chassis must be totally removed from the chassis (4 screws), and then carefully rotated 90 degrees because in their wisdom you cannot reach (touch, service, measure) the fuse until the power supply board is freed from the main chassis. In photos here, after rotating the P/S board, the fuse comes into view and can be accessed for measurement or replacement.

Heat is the primary contributor to short and long term problems with any SA receiver. SF illustrated how a cooling fan could be added to the original D9222/9223 series (SF#33, May 1997). In a standard rack mount configuration, not less than 4 inches (100mm) should be left "open" between any SA receiver and units immediately above and below to facilitate the flow of new, fresh air through the receiver. When D9234 and D9225 series are shelf-stacked with other electronics, and the SA unit is above other heat generating devices (such as other receivers), the lower receiver's heat rises into the SA receiver in lieu of fresh, cooler air. Two primary-side capacitors (47uFD, 25V and .22uFD, 100V) are especially vulnerable to heat. These electrolytics have a "liquid" filled interior which "cooks off" when they become hot. If the receiver runs constantly and cooks, when the power is cut for an hour or so the parts cool down and refuse to restart when mains power returns (no "liquid" remaining, no restarting when power is reapplied). These capacitors are part of the SMPS oscillator circuit - when they fail, the oscillator fails and the P/S is dead.

Parts are board identified (silk screened identification as to part number) and suitable Dick Smith or local TV shop



SA consumer line IRDs turn power supply on side and cram into a too-tight space (P/S on left).



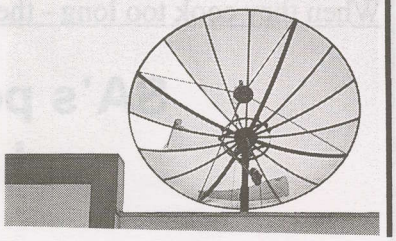
FUSE is buried at far end of board, rear corner (above) and board must come out (below) and rotate to gain access.

available replacements are not difficult to locate. Laurie Mathews (Mathews Electronics, Auckland at 0800-777-376; email squirrels@xtra.co.nz) suggests that all power supply electrolytics be replaced when you have a fault as sooner or later they will require changeout.

Others suggest that as heat is the culprit here, any new or near-new SA receiver installations take extra time and precautions to eliminate overheating the component parts. One particular run (with nearly consecutive serial numbers) of D9234s that found their way to New Caledonia began to quit after only a few months of operation, even with cooling precautions. In this case the problem was traced to "dry solder joints" - connections not properly made at the factory during the assembly process. Reheating the connections fixed it.

Bureaucracy, yesterday's technology and preoccupation with war

The Rise and Fall of the American TVRO Industry



Nothing is forever

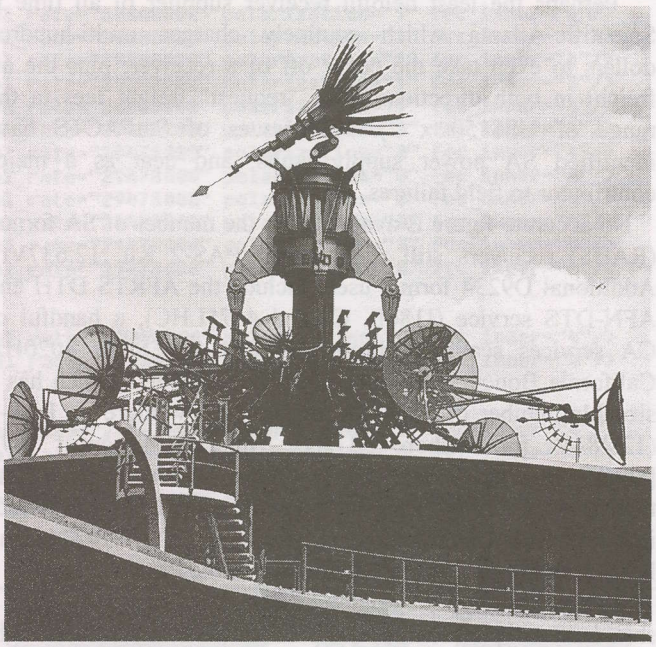
In late October 1978 America's TV GUIDE published a four page report on something totally new - C-band backyard satellite terminals. At that time, fewer than 100 existed but with the massive publicity of TV GUIDE and major network TV reports to follow, within three-years more than 100,000 per month were coming on line.

C-band home DTH (direct to home) was officially never supposed to happen. In the mid 70s, the International Telecommunications Union (ITU) with representatives from more than 120 countries participating agreed Ku band (12.25 - 12.75 GHz initially) would be the spectrum allocation for direct to home TV systems. But these ivory chamber planners had not reckoned with American ingenuity nor with the rapid growth of C-band video transmissions. C-band satellite powers were at the time low (5 watts per analogue transponder) and most engineers believed this would preclude "small dish" terminals from accessing the signals. They were wrong as the TV GUIDE article illustrated; dishes as small as 6 feet (1.8m) even then were producing high quality reception as home dish pioneers created receivers with previously unheard-of sensitivity to compensate for the small antenna systems.

The C-band home dish industry in the USA self-destructed in early 1986 when many of the more desirable programming services (including HBO, the movie service) added encryption (from 1976 start to 1986, transmissions were FTA). Coincidental with the launch of encryption, the cable TV service programmers created a massive public education programme to take the edge off of the desirability of owning a home dish system. Cable TV owed its own rapid growth to the deployment of dozens of satellite delivered programming services and as an industry cable saw no rationale to support a competitive service that was "stealing" their programming.

Within 30 days of the start-up of encryption and the anti-dish system publicity campaign, sales of new C-band systems plummeted; from more than 100,000 per month to under 10,000 in just 90 days. The financial sting was felt world-wide with several hundred thousand C-band dish systems left rotting in warehouses from south-east Asia to Boston.

Within three months, the first piracy (signal theft) products appeared; "chips" programmed by clever folks in Canada (beyond the reach of US authorities) selling for US$200 or more each which restored to a home viewers set the previously FTA services. But to use the chips, viewers had to possess a descrambler device - a separate box which integrated into the home system between the pre-existing C-band receiver and the TV set. In theory, possession of the descramblers was only possible if you were a cable TV affiliate of a programmer. In practice, firms such as Channel Master and M/A Com, the "authorised" sources for the descramblers for cable and other commercial (such as motel) users, could not resist cranking up production to sell their products to piracy-adept private homes as well. From mid 1986 through 1990, while new system sales languished, more than a million of the intended-only-for cable TV system boxes mysteriously were sold to anyone with the cash. The cable TV programmers, initially certain they had put a cap on "signal piracy," found quite the opposite had happened. But it was a temporary resurgence of an industry that really had bit the bullet and died almost overnight back in 1986.



DISNEYLAND California. C-band dishes are returned to "useful" service in this mobile display.

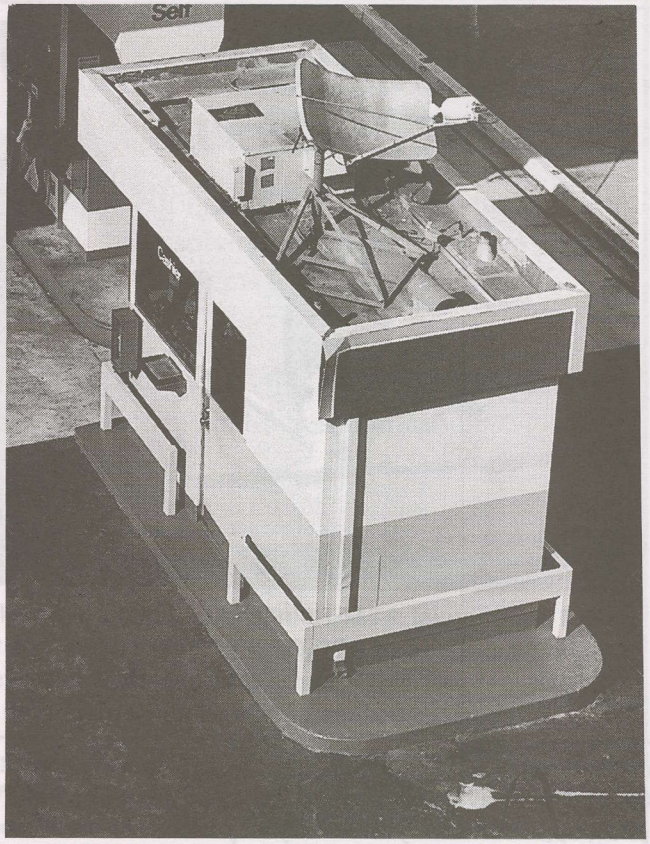
RELIC of the past. SA 2.8m (model 9000) dishes were installed at more than 10,000 motel and other commercial locations in 1980s.

LAST days of glory faded as maintenance routines disappeared while competing technologies appeared.

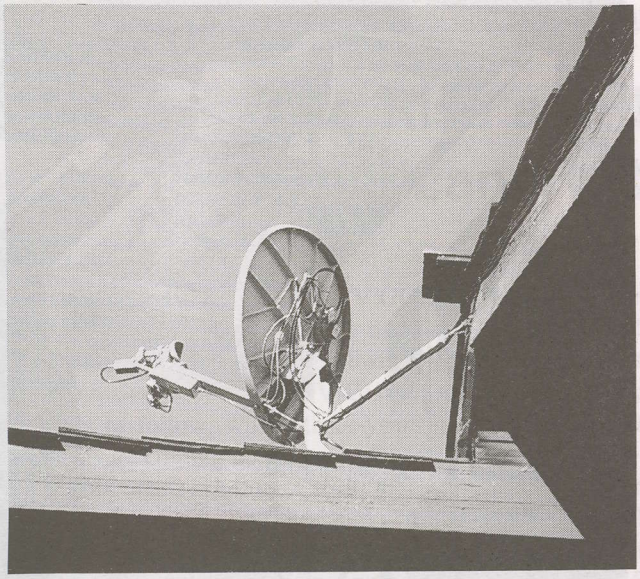
During this end-of-80s period, innovative new users for C (and later Ku) band satellites emerged. The best barometer of public interest in DTH systems was the thrice annual home dish industry trade shows. At the peak of growth in 1984 - 1985 each of these trade shows attracted upwards of 15,000 people for a typical 3-4 day event. A show in that period had as many as 700 C (and a handful of Ku) band antennas installed for demonstration in massive paved parking lots. Supporting the sea of antennas, hundreds of private booths displaying the latest in C and Ku band technology hardware. By 1990, the trade shows had shrunk to once per year and 4,000 was a large crowd.

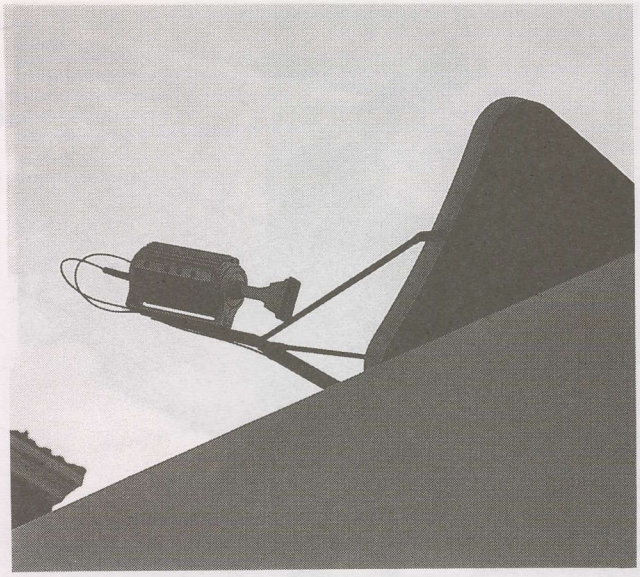
By the early 1990s, C-band two-way terminals had evolved which created a five year period during which several hundred thousand transmit and receive terminals were sold and installed throughout North America. The "driver" for this new sales curve was ATM, and credit card sales at petrol stations, convenience stores and other high sales volume retail outlets. Normal landline connections for gaining approval for an individual credit card sale (or ATM cash transaction) were slow - allowing consumers to charge up to (US)$50 without a card actually being checked by a "remote" computer. Consumers quickly worked out where to charge and stay under the $50 limit using either cards that had no credit remaining or were invalid to begin with. Two-way satellite terminals, installed at retail outlets, solved that one because now petrol stations and fast food outlets could check for approval on any card - all cards - instantly. Before the end of the 1990s, many of these same networks had moved to newly available Ku-band satellites largely because the C-band spectrum available quickly became a scarce commodity.

During the 1990s, C-band television terminals did not totally go away - as many as 1.5 million are still believed to be operable today (out of a peak of nearly 3 million). Those that still function exist primarily in the hands of die-hard ("C-band forever!" read the bumper stickers) fans and commercial restaurant and bar operators. What has disappeared is any semblance of support industry (technicians capable of maintaining C-band systems). And that explains why each day a few more "die" and are judged "unrepairable" by firms no



C-band first, then Ku band "remote" credit card and ATM terminals sprung up in a new industry that ultimately deployed more than 200,000 systems throughout North America (including Canada and Mexico). As demand for shared frequency space escalated, television relays were relegated to second level importance. Petrol station (here) is example of major growth area of 1990s.





FROM commercial ATM to individual homes was a leap of faith. Home systems transmit and receive within Ku band (upwards of 120,000 now in service) but the economics are marginal for service providers; under US$100 per month for hardware, unlimited (always "on") 500k/bit service, plus, 100 channels of TV and forecasters believe satellite Internet-to-home is a 'poor use of valuable satellite bandwidths ".

longer fluent in C-band technology. Late in the 90s, private Ku-band two-way terminals under the brand name of DirecTV sprang up; unfortunately while they may have been useful, too few people wanted or could afford the packaged systems and recently it appears these Internet + TV terminal systems will be abandoned by the service provider.

All that remains of a once proud and diverse satellite industry in North America are the DirecTV and DISH (brand) Ku TV terminals plus a now saturated market for two-way (C and Ku) band systems. Major retailers such as Walmart operate their own private TV networks alongside of virtually every brand distributor of automobiles, appliances and software.

The satellite revolution in North America is now complete and the only interesting battles are being fought in courts and before federal government agencies where "insider advantages" are won and lost. The industry has "matured" to the point that innovation is no longer common nor exciting. America is no longer the land of "satellite opportunity" and the spread of fibre optic lines pretty much guarantees that satellite TV in another ten years will be history as well.

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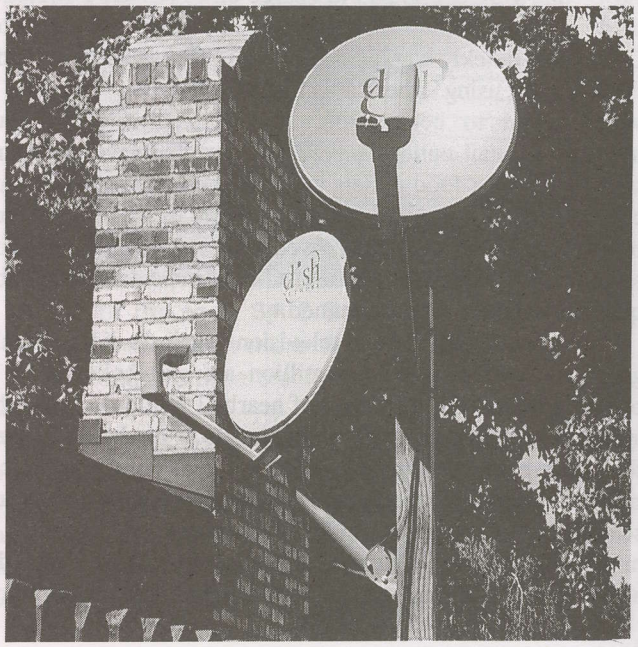
LAST gasp of a once proud industry; DISH network offers hundreds of Ku-band channels from a flotilla of satellites scattered throughout orbit belt (dishes are now cheaper than dish movers and small enough that mounting two or more is not problem).



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√ **Needle set for HUMAX** 54xxZ needle board - in stock US$ 40,-
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SatFACTS Pacific/Asian MPEG-2 Digital Watch: 17 January 2003

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym	Receivers and Errata
Thcm3/78.5	SkyChAust	3695/1455H	up to 3	3/4	5(.000)	CA (#1, 3); FTA audio #2 (dm)
	MRTV-Myn	3676/1474H	1	2/3	6(.000)	erratic service
	TARBS ME mux	3640/1510H	12TV, 12 radio	3/4	28(.066)	CA + 2 FTA(A1TV, IRB3)(DM)
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26(.667)	Thai + Indian services; FTA (DM)
	SE asia Mux	3569/1581H	2+ TV	3/4	12(.500)	MRTV3, MRTV (DM)
	Nepal TV+	3554/1596V	3+ in mux	3/4	13(.333)	FTA + CA mux
	RR Sat mux	3551/1600H	8TV,10 radio	3/4	13(.333)	3TV, 5radio currently in use (DM)
	JAIN TV	3538/1612V	1TV	3/4	3(.300)	PIDs 4132/4133
	PTV1 +	3521/1629V	1TV, 1 radio	3/4	3(.333)	frequency change
	TARBS	3520/1630H	12TV, 12 radio	3/4	28(.066)	Feeds to TARBS Australia and PAS-8 (DM)
	TVK Cambodia	3448/1702H	1TV	1/2	6(.312)	**FTA**
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26(.667)	**3FTA**: TV5, VTV4m ATN Bangla (DM)
	KCTV/Korea	3424/1726H	1TV	2/3	3(.366)	Not 24 hour
	Thai Global	3425/1725V	up to 7?	2/3	27(.500)	FTA (reaches SE Australia)
InSat 2E/83	**ETV mux**	4005/1145V	6+ TV	3/4	27(.000)	Several ETV now here; wide beam
-	**Hyd Dig 2E**	3910/1240V	1	3/4	5(.000)	SCPC, OK E. Aust. wide beam
	Kairali TV	3699/1451V	1	3/4	3(.184)	SCPC, OK E. Aust wide beam
	Indian mux	3643/1507V	3	3/4	19(.531)	New 07/02; corrections 12/02
	ETV Mux#2	3485//1665V	4+TV	3/4	27(.000)	Several new ETV here; Asia beam
	Sky Bangla	3430/1720V	1TV	3/4	6(.000)	New - November 2002
ST1/88E	MMBN	3632/1518V	12TV	3/4	26(.667)	Nagravision, some FTA; erratic
As2/100.5E	**Shandong TV**	4070/1080H	1TV	3/4	6(.811)	New - October 2002
	Euro Bouqt	4000/1150H	6TV, 21r	3/4	28(.125)	FTA TV + radio
	5-Star Med	3951/1199H	3TV	3/4	13(.185)	Macau MUX
	Reuters News	3905/1245H	1TV	3/4	4(.000)	Was 3923H; sometimes **FTA**
	WorldNet	3880/1270H	4+/28radio	1/2	20(.400)	FTA; Now here full time
	Hubei/HBT	3854/1296H	1	3/4	4(.418)	FTA SCPC, teletext, 2 radio
	Hunan/SRT	3847/1303H	1	3/4	4(.418)	FTA SCPC, teletext
	Guan./GDT	3840/1310H	1	3/4	4(.418)	FTA SCPC, radio APID 81
	In. Mongolia	3828/1322H	2	3/4	8(.397)	FTA: #1 Mongolian, #2 Mandarin
	APTN Asia	3799/1351H	1	3/4	5(.632)	Sometimes **FTA**; also 3895Vt
	Reuters/Sing.	3775/1375H	1	3/4	5(.631)	**FTA & CA**
	Liaonin/Svc2	3734/1416H	1	3/4	4(.418)	FTA SCPC, radio APID 256
	Jiangx/JXT	3727/1423H	1	3/4	4(.418)	FTA SCPC, teletext, radio APID 81
	Fujian/SET	3720/1430H	1	3/4	4(.418)	FTA SCPC, + radio APID 80
	Hubei TV	3713/1437H	1	3/4	4(.418)	FTA SCPC, + 2radio (APID 80)
	Henan/Main	3706/1444H	1	3/4	4(.418)	FTA SCPC, + radio
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27(.850)	Thru TARBS Aust, occ. **FTA**
As2/100.5E	**Macau MUX**	4148/1002V	5TV	3/4	11(.850)	5 chs TV, FTA, some tests
	Feeds	4086/1064V	1	3/4	5(.632)	FTA SCPC feeds
	Dubai MUX	4020/11430V	4+, radio	3/4	27(.500)	FTA including sport
	Jilin Sat TV	3875/1275V	1	3/4	4(.418)	FTA SCPC, + radio
	Shanghai BN	3846/1304V	1	3/4	4(.800)	V1110, A1211 + 2 radio ; FTA Jan 2003
	HeiLongJian	3834/1316V	1	3/4	4(.418)	FTA SCPC
	JSTV	3827/1323V	1	3/4	4(.418)	FTA SCPC, + radio
	Anhui TV	3820/1330V	1	3/4	4(.418)	FTA SCPC + radio
	ShaanxiQQ	3813/1337V	1	3/4	4(.418)	FTA SCPC, radio APID 81
	Guan/GXTV	3806/1344V	1	3/4	4(.418)	FTA SCPC, radio APID 257
	Fashion TV	3795/1355V	1	3/4	2(.533)	Now Viaccess version 2 CA
	Myawady	3766/1384V	1	7/8	5(.080)	FTA SCPC - difficult to load
	Saudi TV1	3660/1490V	7+/tests	3/4	27(.500)	FTA MCPC; Yemen, MBC Europe tests
As3S/105.5E	Telstra I-Net	12.596V	no TV	5/6	30(.000)	Signal useful for dish testing - no TV
	Zee bouquet	3700/1450V	10TV	3/4	27(.500)	Mediaguard (SECA) CA; 2 FTA
	Macau MUX	3713/1437H	2TV	3/4	5(.868)	New June 2002; low res MUX
	Arirang TV	3755/1395V	1	7/8	4(.418)	FTA SCPC; audio now OK
	Now TV +	3760/1390H	up to 8TV	7/8	26(.000)	CA + NOW, B'berg, Indus FTA
	Star TV	3780/1370V	15(+)TV	3/4	28(.100)	NDS CA (Pace DVS211, Zenith)
	Star TV	3860/1290V	21(+)TV	3/4	27(500)	NDS CA (Pace DVS211, Zenith)
	Star TV	3880/1270H	20(+)TV	7/8	26(.850)	NDS CA (Pace DV211, Zenith)
	HK Mux	3900/1250V	2+TV	7/8	27(.895)	FTA PAL + occ. feeds and CA
	Star TV	3940/1210V	7(+)TV	7/8	26(.850)	NDS CA as above
	CNNI	3960/1190H	8(+)TV	3/4	27(500)	PowVu CA; new SR Apr 29
	StarTV	3980/1170V	12+TV	3/4	28(.100)	NDS CA (Pace DVS211, Zenith)
	Star TV	4000/1150H	9(+)TV	7/8	26(.850)	NDS CA w/ **4(Chinese) FTA**
	Sahara digital	4020/1130V	8TV	3/4	27(.250)	New 12-02; FTA tests
	Sun TV	4095/1055H	1	3/4	5(.554)	"History Channel" testing SCPC
	CCTV bqt	4129/1021H	4(+) TV	3/4	13(.240)	moved from 4115
	Zee Bqt #2	4140/1010V	8(+) TV	3/4	22(.000)	Mediaguard (SECA) CA
Cak1/107.5	Indovision (S-band)	2.536, 2.566, 2.596, 2.626	33(+) TV	7/8	20(.000)	NDS CA using RCA/Thomson, Pace IRDs
T'Kom/108E	**IndoBqt**	3460/1690H	up to 6	3/4	28(.000)	also 3586H/17.500, 3496H/19.615
C2M/113E	**TPI**	4185/965V	1	3/4	6(.700)	FTA SCPA; NT/NC only
	Anteve	4144/1006V	1	3/4	6(.510)	change from 4055V; FTA SCPC

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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(C2M)	**Indo Mux**	4080/1070H	5+ TV	3/4	28(.125)	Global TV - frequent changes in lineup
	Indosiar	4074/1076V	1	3/4	6(.500)	FTA; solid on 3.5m in New Caledonia
	SCTV	4048/1102V	1	3/4	6(.618)	FTA SCPC; NT/NC only
	Indone.Mux	4000/1250H	6+TV	3/4	26(.085)	unstable platform - testing?
	Satelindo	3935/1215H	1TV	3/4	6(.700)	Test card only reported
	Bali TV	3926/1224H	1TV	3/4	4(.208)	Returned to air Nov. 2002; V33, A36
	Indo. MUX	3880/1270H	3+ TV	3/4	28(.125)	TVRI, others FTA
	GlobalMUX	3760/1390H	up to 12 TV?	3/4	26(.087)	Testing- 12 chs promised; 2-12 tests
	Brunei/Sing	3733/1417H	1TV	3/4	6(.000)	FTA; share time, Brunei-23hrs,Sing1h
	TBN/Trinity	3727/1423H	1 TV	3/4	3(.000)	Testing; VPID 4144, APID 4145
	Unknown	3605/1545H	1TV	3/4	2(.900)	Tests-multi-screen, may have no video
	RCTI	3473/1677H	2	3/4	8(.000)	FTA SCPC, Australia, NC OK
	Myawad TV	3706/1444H	1	3/4	5(.924)	may be test; svc has been erratic
Jc3/12	Miracle Net	3996/1154V	3 up to 6	5/6	22(.000)	PowVu, some **FTA** (ch # 1,3)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)	CA & **FTA** NTSC: Japan, Taiwan
Jc28/54	**BYU tests**	3.915/1245V	2	3/4	3(.425)	not fulltime; very strong NZ, Aust
MeaSs2	New Mux	12.532H	17	3/4	41(.500)	New Sept 2002; unknown source
	Astro Mux	11.602H	up to 17TV	3/4	41(.500)	Aust East beam - **3 FTA** + 14 CA
	VTV MUX	11.522Vt	3 TV	3/4	9(766)	WA only? Skew path, intended Asia
B3/156	**Mediasat**	12.336V/T2	10TV, 4+radio	2/3	30(.000)	KBS Korea, Med-TV new here 12/02
	Aurora	12.407V/T3		2/3	30(.000)	Aust, NZ 90 cm
	Aurora	12.532V/T5	Inc Zee TV	3/4	30(.000)	Aust only; changein FEC
	Aurora	12.595V/T6		2/3	30(.000)	Possibly Aust + NZ; FEC change
	Aurora	12.657V/T7	data only?	3/4	30(.000)	Aust only; in transition
	Aurora	12.720V/T8		3/4	30(.000)	Aust only; - smart card p. 26
	Austar	12.313H/T9	iTV + here	3/4	30(.000)	Austar Interactive + demos); p. 29, SF#97
	Austar/Optus	12.376H/T10		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.438H/T11		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.501H/T12		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.564H/T13		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.626H/T14		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.688H/T15	(some FTA ra)	3/4	29(.473)	CA, subscription available Australia
B1/160	**ABC NT fd**	12.258V	1TV, 3 radio	3/4	5(.026)	V832, A833
	ABC feeds	12.317H	1	3/4	6(.980)	also 12.326, 12.335; ex PAS8 Ku
	Net 7 service	12.397H	1	3/4	7(.200)	Full schedule less commercials
	Central 7	12.354H	1TV + 1 radio	3/4	3(.688)	V1280, A 1281; occ. 2nd TV ch
	Imparja mx	12.379H	2TV + 8 radio	3/4	5(.424)	V1024, A1025, P1024; also try 12.360
	Feeds to NZ	12.411V	1 TV	3/4	6(.111)	NTSC; sport feeds USA-Aust-NZ
	Sport feeds	12.420V	1	3/4	6(.110)	Weekend footy feeds reported-FTA
	Mediasat#3	12.424H	3+ TV	2/3	19(.800)	
	TVNZ DTH	12.456/483V	4+TV	3/4	22(.500)	FTA 4 channels (TVNZ x 4)
	Nine Net	12.512H	1 TV typ.	3/4	5(.632)	testing digital feeds; Sr may be incor.
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.644/671V	9TV	3/4	22(.500)	NDS CA, subscription available NZ
	ABC HDTV	12.603H	5TV	7/8	14(.300)	also 12..626,.643,.670, 688, & 706H
	Sky NZ	12.707/733V	8+TV	3/4	22(.500)	NDS CA, subscriptions available NZ
	Mix 106.3	12.574H	1 radio	3/4	1(.851)	Radio SCPC; was 12.570Hz
P8/166	**ABC A-P**	12.284H	1TV, 2 radio	5/6	5(.858)	Feed, Adelaide; not permanent; was 12.301Hz
	TARBS3	12.326H	13TV + radio	3/4	28(.066)	TPG/EurodecMDS CA, occ. FTA
	TARBS	12.526H	13TV + radio	3/4	28(.066)	TPG /Eurodec MDSCA, **radio FTA**
	TARBS2	12.606H	13TV + radio	3/4	28(.066)	TPG/Eurodec MDS CA; **TRT FTA**
	TARBS5	12.646H	testing	3/4	28(.066)	TPG/Eurodec MDS CA
	TARBS4	12.726H	13TV + radio	3/4	28(.066)	TPG/Eurdec MDS CA; **Thai TV, FTA**
	JEDI/TVB	12.686H	11+ TV	3/4	28(.126)	June 2002-Irdeto-2 CA
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(.500)	Dateline west; east PAS2, 3901
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(.125)	PowVu CA
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(.470)	PowVu CA & **FTA**; subscription avail
	FOX MUx	4040/1110V	up to 5TV	7/8	26(.470)	was PAS-2, previously 2992Vt
	ESPN USA	4020/1130H	8+TV, data	3/4	26(.470)	PowVu CA; ch 11 DCP-CCP bootload; new FEC
	Discovery	3980/1170H	8 typ.	3/4	27(.690)	PowVu/CA (some audio **FTA**)
	CalBqt/Pas8	3940/1210H	up to 8TV	7/8	27(.690)	PowVu CA & **FTA (EWTN +)**
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)	FTA at this time
	FilipinoMUX	3880/1270V	up to 8TV+radio	3/4	28(.694)	**Myx FTA** V1960, A1920 + radio FTA
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(.000)	some TV FTA; radio may require PIDs
	CCTV Mux	3839/1311H	up to 4	3/4	13(.240)	PowVu FTA, replaces PAS-2 svc
	TVBS-N	3836/1314V	**1FTA**, 4+ CA	3/4	22(.000)	Difficult because of CCTV cross pole
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(.632)	was As2?; PowVu CA
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(.000)	PowVu, CNN/CNNI now CA
	Discovery Asia	3769/1381V	Upto 5 TV	3/4	13(.240)	PowerVu; Asian MUX
	MTV	3740/1410H	8	2/3	27(.500)	#2, 8 **MTV China FTA (V0385, A0386);** rest CA
P2/169E	P2/169	12.281V	2+ TV, radio	2/3	27(.500)	PowVu CA, WIN, ABC NT
	WA PowVu	12.637(.5)V	4TV, 8 radio	1/2	18(.500)	PowVu CA, WA only - D9234
	TARBS (?)	4087V	9TV + radio	3/4	21(.000)	New Sept 2002; possibly TARBS
	TVB(S)	4020/1130V	1TV	3/4	6(.620)	feeds to (USA) pay-TV
	Feeds	3966/1184V	1	2/3	6(.620)	PowVu (FTA) occ feeds
	Feeds	3957/1193V	1	2/3	6(.620)	PowVu (FTA) occ. feeds
	Feeds	3929/1221V	1	3/4	10(.850)	PowVu (FTA) occ sport feeds
	Feeds	3912/1238V	1	2/3	6(.620)	PowVu(FTA) occ. feeds
	Feeds	3898/1252V	1	2/3	12(.000)	PowVu (FTA) occ. feeds
	Middle East	3836/1314V	4 typ	3/4	13(.331)	**RAI TV, radio FTA**; balance CA
	Feeds	3803/1347V	1	3/4	6(.000)	PowVu (FTA) occ sport feeds
	BBC +	3743/1407V	3	3/4	21(.800)	**BBC FTA**, others CA usually

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(PA8/169E)	**Feeds**	4040/1010H	1	3/4	10(.850)	PowVu occ FTA feeds
	7thDayAdv.	3872/1278H	1	3/4	6(.620)	Sat, Sun 0030, 0900+UTC?)
	Feeds	3868/1182H	1	2/3	6(.620)	FTA (occ sport); also try 3863,Sr6.100
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498	FTA-typ NTSC-occ sport, live Shuttle
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)	PowVu CA + **FTA** (BBC gone)
	HK bouquet	3850/1300H	up to 8	2/3	24(900)	was 4148Vt; some **FTA**
	occ feeds	3776/1374H	1 typ	3/4	5(.560)	occ feeds, typ FTA; also Sr 5.600
	Korean Bqt	3762/1388H	up to 3	3/4	11(.570))	Korean MUX, reload June 01
I702/176E	**RFO Poly**	4027/1123L	1TV	3/4	4(566)	SE spot beam
I701/180E	TNTV	11.060&11.514	9	3/4	30(.000)	east spot; 10TV + r each, vertical pol.
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)	1+ **FTA**, Mediaguard; also 10.975 weak
	TVNZ	4195/955RHC	1	3/4	5(.632)	DMV/NTL early vers., occ feds, typ ca
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)	DMV/NTL early vers. occ feds, typ ca
	TVNZ	4178/972RHC	1	3/4	5(.632)	DMV/NTL early vers., occ feds, typ ca
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(680)	'DTS' **radio, TV audio FTA** some IRDs
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)	DMV/NTL early vers. occ feds, typ ca
	TVNZ/feeds	4161/989RHC	1	3/4	5(.632)	DMV/NTL early vers., occ feds, typ ca
	RFO-Canal+	4086/1064L	4TV, radio	5/6	12(.041))	east hemi 20.5 dBw thru 2003+; new Sr
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)	DMV/NTL early vers.,occ feeds, typ ca
	TVNZ feeds	4044/1106R	1	3/4	5(.632)	SCPC, mixed CA and **FTA** feeds
	NZ Prime TV	4024/1126L	1	2/3	6(.876)	PowVu CA; Auckland net feeds
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)	CA, Leitch encoded
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(.000)	New Feb 2002; very strong NZ, Pacific
	Ioarana	3772/1378L	1	3/4	4(.566)	FTA SCPC; East Hemi Beam-Tahiti
	TVNZ	3846/1304R	1	3/4	5(.632)	SCPC, mixed CA & **FTA**, feeds
	10 Australia	37691381R	4	7/8	20(.000)	PowVu CA & **FTA; #3 TBN**
	USA feeds	3749/1401R	4?	?	26(400)	16-QAM (not MPEG-2 compatible)

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!

Aston Simba 201. Embedded SECA (Zee, Canal +); review SF#97. MediaStar 61-2-9618-5777.

AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM P/L, 61-2-9939-4377.

AV-COMM R3100(A). FTA, good sensitivity, ease of use exc (review SF May 2002). See above contact.

Benjamin DB6600-CI. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)

eMTech eM-100B (FTA), eM-200B (FTA + CIx2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)

Humax F1-CI. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).

Humax ICRI 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, SF#76.

Humax IRCI 5400 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). WIdely available.

Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)

Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.

Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.

MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. 61-2-9618-5777

MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777

MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.

MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738

Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. See SF#95, p. 14.

Nokia 9200/9500. When equipped with proper software, does Aurora, pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)

Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). Units being replaced with UECs.

Pace DVR500. Original DGT400 modified for NBC (PAS-2)/RSA use, with CAM equivalent to DGT400 but more reliable.

Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.

Panasat 520/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370. No longer wotrk with Austar/Foxtel.

Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but never available in Australia.

Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH(below)- 222; terminated

Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review SF#51. SATECH 61-3-9553-3399.

Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)

PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). Scientific Atlanta 61-2-9452-3388.

Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.

SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-3749)

SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above).

STRONG Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).

Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.

Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, Aurora. Strong Technologies 61-3-8795-7990.

Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84); Strong Technologies, # above.

UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faultyP/S. Norsat 61-8-9451-8300.

UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.

UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.

Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447

Xanadu. DVB compliant special-priced receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)

Accessories:

Aurora smart cards. New v1.6 now available, 1.2 no longer available for RABS. Price now A$105, Sciteq 61-8-9306-3738.

PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

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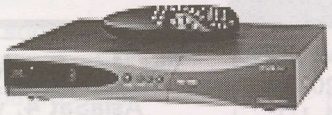

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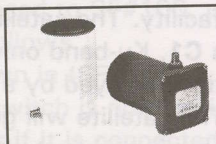

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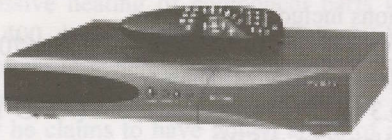

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WITH THE OBSERVERS

AT PRESS DEADLINE

CNBC (PAS-8, 3900Hz) encrypted (January 5) with only limited advance notice to affiliates. CA format is (apparently) NDS, IRDs are Tanberg TT1200 (some reports say Irdeto 1, with SID missing). US$300 is single home (annual) subscription rate, $500 is 'minimum' annual fee (paid up front) for SMATV/small cable systems. Tanberg IRD + smartcard US$400 (plus shipping charges). Contact is Alex Feldman; Alex.Feldman@cnbcasia.com.

AsiaSat 2/100.5E: "3854Hz, 4.420, 3/4 Hubei ch 1 TV, ch 2 and 3 radio (FTA) - different from Hubei 3713Hz, 4.420, 3/4 where radio 4 and 5 were added 02/01. 3880Hz, 20.400, 1/2 - 2 new radio services ('ENC-5-audio 33-3', playing music and 'ENC5-audio 37-4' with tone) FTA." (**DM**, NSW) "3966Vt, 6.110, 3/4 Globecast golf match feed; 3846Vt, 4.800, 3/4 unidentified Chinese channel feed; 4055Vt, 6.200, 3/4 Chinese basketball feed." (**B. Richards**, Aust) "Anyone know frequencies/digital parameters for Voice International (Qld) broading radio on As2?" (**RFI**, NSW) "STV Business 3846Vt, 4.800, 3/4 FTA - likely to go CA." (**NA**, Qld)

AsiaSat 3S/105.5E: "3780Vt, 28.100, 3/4 - '764 Star Con' added to MUX (CA); 3880Hz, 26.850, 7/8 - 'National Geo' added to MUX (CA); 4020Vt, 27.250, 3/4 - Sahara TV ENT has standard 'Sahara TV' service in programming, 7 more are test cards only at this time (NAT, NCR, MUM, UP, BIH, RAJ and MP)." (**DM**, NSW) "Sahara TV analogue moved from 4020Vt to 3660Vt; crawl on screen advises viewers to switch to 4020Vt and MCPC package (see above)." (**Arnold**, PNG)

Intelsat 701/180E: "Croatian HRT TV1 added to 10-Aust MUX 3769RHC, 20.000, 7/8; FTA." (**D. Leach**, NSW)

Intelsat 804/176E: "3874RHC, 6.110, 3/4 Globo TV (CA in PowerVu); 3845RHC, 1.499, 3/4 TBE (Australian TAB)." (**StuM**, NZ) Note: 804 has replaced I702 at this location.

JcSat2/ 154E: "BYU-TV (3915Vt, 3.425, 2/3) reported as 'CA' - I think merely not transmitting programming at this time?" (**DM**, NSW) "Advisory from Mormon centre is this channel will be CA and used for special feeds to 'Stake Centers' such as Priesthood sessions; contact is Chris Twitty as ctwitty@byu.edu." (**D. Leach**, NSW)

NSS-6/ 95E: New Ku-only satellite with 50+ dBw footprints now on station here; some testing reported from Asia. Beam options include Australia.

Optus B1/160E: "12.430Vt, 6.670, 3/4 Globecast feeds including NBN Mingara test card." (**B. Richards**, Aust) "Mix 106.3 on 12.574Hz, 1.851, 3/4 (APID 1063); was 12.570Hz." (**J. Vaneven**, NSW)

Optus B3/156E: "New on 12.375Hz, Sr 29.473, 3/4: 'A+9' and 'A+A' 12.527Vt, Sr 30.000, 3/4: radio ch 43 labels as 'Mulba' and began by repeating radio ch 35 (Caoma 8KIN Alice Springs). Aurora 12.594Vt, Sr 30.000, 3/4: Radio channel 67 is ARRN (Australasian Retail Radio Network - note "asian" portion of first word) - ARRN has become 'SCAR FM' which is shorthand for 'Super Cheap Auto Radio', a small chain of car-parts retail shops which apparently now has its own radio channel; UEC 642 claims it is CA but plays without a card. At9 has now become SBS and TV channel 13 on Austar; exactly same as SBS SE (ch 2 Aurora 12.407Vt) plus addition of 'now' and 'next' on Austar EPG. ABC National and SBS SE also here on TV (NZ + Australia beam)." (**IF**, Qld.) "12.314Hz, SR 29.473, 3/4 Austar has switched off their 'Demo' channel and now 4 'Service Menu' channels running FTA the ABC interactive programme, 'Long Way to the Top'. On Austar ADB IRDs these channels accessed via menus and coloured buttons on remote. Using 'Services Menu': 9o1 = red button = 'In Concert', a loop of the concert from single camera position; 9oj = green button = split screen which is loop of concert from 4 simultaneous camera angles (screen in quarters); '9oK = yellow button = 'The vault' which is old film clips of the band or performer currently on stage; 'q' (on UEC this is Test Bouquet Services Menu) = blue button = 'Backstage' which is interviews of the band/performer currently on stage. This is quite impressive; do not understand why it is FTA." (**AI**, NSW) "Globecast, 12.336Vt, Sr 30.000, 2/3 - KBS (Korea) which began as FTA NTSC has permanently switched to FTA PAL, labels as 'Korea'. Tzi Chi is now labelled 'Da Al TV' but programming is same as prior. 'Med TV' is new, usually colour bars, but occasional medical information during December." (**IF**, Qld) "Aurora 12.537Vt, Sr 30.000, 3/4 during Westlink down period (every January) rebroadcasting Perth's community 'Access 31' including ex-'Hollywood Palace' and even 'Adventures of the Nelson Family' (ex-'Ozzie and Harriet'). Access 31 is on occasions grainy (poor off-air terrestrial reception). " (**AI**, NSW)

Palapa C2M/113E: "4080Hz, 28.125, 3/4 - Bali TV was here briefly, as of 03/01 'Anteve 10'. 3926Hz, 4.208, 3/4 Bali TV back here (again). Global MUX (3760Hz, 26.087, 3/4) had added first radio channel; Global Radio 1, with tone (FTA). " (**DM**, NSW) "TBN's Sr now 2.667, 3/4 on 3727Hz." (**Clyde**)

Major Regional Launches Scheduled

AsiaSat 4, with a 28 C and 20 Ku band transponders, is scheduled for a mid-late March lift-off through the US Cape Kennedy/Canaveral facility. The satellite will go to 122E.

Optus C1, Ku-band only (see SF#99), has been potentially delayed by a December Ariane launch failure. The satellite will go to 160E, replacing Optus B3, in what promises to be one of the most exciting Australian satellite TV weeks in decades.

InSat 2E could go to 83E as early as late March.

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Notice to whingers: This is a "**shared information**" segment of SatFACTS. If you find inaccurate information here (or in our Digital Watch Tables pgs 24/25/26), it is your patriotic duty to provide corrected/updated information. Every item here and in our tables is reviewed every month - if errors are found, it is up to YOU to provide corrections. Deadline for February 15th issue: February 3 by mail or 5PM NZST February 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

Setting the UEC IRD to operate a 22kHz switch:

The 'LNB Configuration' menus in the UEC IRDs do not have the ability to manually switch the 22kHz on, but there is a method to get around this problem. This involves setting the UEC to treat the 22kHz switch with it's two attached LNB(f)s as if those three units are combined to form one dual LO LNB.

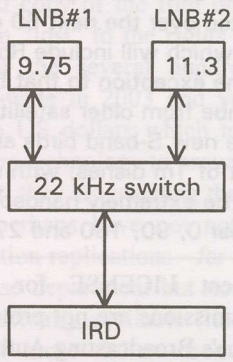
First (re)see the second diagram appearing in SF#100, p. 22 (repeated here) and the settings shown here.

In this case always set the 'LNB Selection' in the signal set-up menus to "1." The IRD will automatically select which of the two LNBs is used, dependent upon the 'frequency' set.

Readers are now referenced to SF#100, p. 22 for what follows.

For the configuration shown in (SF#100, p. 22) figure C: As the 22 kHz switch is not required, the UEC needs to be set as if it is connected to 4 'single frequency' LNBs via a DiSEqC switch. Instructions for this at http://www.uec.co.za ("Installer's manual for decoders loaded with software version 3600").

LNB Set-up 1
LNB power is: On
LNB Mode: Dual Frequency
LNB Lo Frequency: 9750
LNB Hi Frequency: 11300
DiSEqC CMD: None
Tone Burst: None



This treats the 22 kHz switch with two LNBs as if these three units combine to form a dual LO LNB. See setup steps appearing above.

For the configuration shown in (SF#100, p. 22) figure D, set "LNB Set-up 1" as per example #2 (here) but with the correct "DiSEqC CMD for port A on the DiSEqC switch. The other three LNBs are set as [per example 3 (SF#100, p. 22).

Additional information on DiSEqC codes appears at: http://www.eutelsat.org/press/tv_recept1.html#DiSEqC.

PanAmSat PAS2/169E: "Fox News, feeds in PowerVu moved here to 4040Vt, 26.470, 7/8 (was PAS-2, 3992Vt)." (**AJ**, NSW) "IHUG Internet new parameters: 12.487Hz, 11.108, 3/4." (**B. Richards**, Aust)

PanAmSat PAS8/166.6E: "ABC A-P feed now 12.284Hz, 5.858, 5/6." (**A. Zapara**, WA) "Discovery Asia MUX on 3769Vt, PowerVu 13.240, 3/4." (**Clyde**) "MTV Asia 3740Hz, 27.500, V0385/A0386 FTA w/ MTV China." (**H. Wood**, SA)

Thaicom 2/78.5E: "3480Hz, 26.667, 2/3: TV5 Global is now ATV, VTV is now Show - both FTA; 3600Hz, 26.667, 3/4: Ch4 was running CCTV9, gone 01/01, now running MCOT TV9 but image frozen. ETC Punjabi and ETC 1 have card advising retuning to 3585Vt, same parameters for 'better reception FTA'. 3569Hz, 12.500, 3/4 MRTV occ feeds in addition to 2 FTA channels previously here." (**DM**, NSW) "Indiavision testing 3684Hz, 6.830, 3/4 on Global Beam; not yet fulltime." (**Archie**, Qld)

Soapbox: "Question: What model Nokia(s) and which tuner (model number) allows you to access Astra Skynet's 41.500 Msym service on Measat X?" (**AI**, NSW) "I find the Humax 5410-Z does not do a couple of things I consider essential: (1) blind search (has capacity for only 5 user specified Sr rates), (2) Handles NTSC poorly (such as KBS Korea when it was NTSC) - glitches worse than [my] UEC 642 and unmodified Nokia), (3) Double loads some services when doing search (such as Rhythm FM), (4) Has subtitles but teletext is only VBI (can only be viewed on teletext equipped TV), (5) Only capable of symbol rates between 2 & 31 Ms/s - will not do Astron Mux Measat 2." (**IF**, Qld.) "Analysing the photo of interior of Dreambox (SF#99, p. 23), there appears to be a pair (2) SMPS power supplies rather than the normal one (1). Why two? Possibly they shut down the larger main supply on standby to reduce current drain?" (**NS**, NSW) "Hyundai HSS-100C F connector fault. Discovered F-socket is not connected to IRD main case, only thin metal of tuner. If the connector is/can be bent at a right angle to the back panel, damage to the PC board inside will follow. Solution is to place a (new) washer on the outside of the tuner hard against inside of back panel thus securing F connector to both pieces of metal. (Note: This may only be relevant with HSS-100C models equipped with Nokia-like 'NDT1006' tuners; other tuners that have an air-gap between the two pieces of metal would not be advisable to so retrofit." (**IF**, Qld.) "I was horrified to see Rolf suggesting use of an industrial grade hot-air gun to remove parts from a Humax board! Setting aside the ability to melt solder, the broad sweep of the gun's nossle concerns me with excessive heating of component parts not designed to withstand 400 degrees and more." (**RE**, NSW) "Three piracy related items: Igor Serebryany, Russian student in USA, arrested for publishing (USA's) DirecTV P4 technology. Funny how he claims to have gotten ahold of it - hundreds of pages of programming information brought to a 'copy shop,' where he work(ed), by a law firm, for copying. Imagine that - a guy walks into a copy shop with hundreds of pages of code and says, 'make me a copy of this!' and the guy making the copy ends up making two, one for himself, which he somehow recognises and then redistributes for a fee. While you are swallowing that story (DirecTV has stopped issuing replacement P4 cards - claiming 'problems' with the card's use), C0NAX has (now) been broken using something called 'Season Interface' and LINUX. At this stage a PC is required for real-time decryption through the STB's smartcard reader. More than 25 pay-TV firms use the system, mostly in (northern) Europe. Conax reaction? 'Conax2 will be released soon'. Meanwhile, in South Africa Multichoice/MNet has for 8 years based claims of piracy on RSA law prohibiting 'tampering with devices or using any apparatus to gain access to LICENSED pay-TV providers'; now it turns out MNet

S-band satellites for service to moving ships and planes

It may never happen (2005 is present operational target date) but some heavyweight firms are behind the plan. Which is - to create four S-band (2.5 GHz region) satellites which will provide 60+ channels of television, Internet downloading and two-way emailing to ships at sea and aeroplanes on long haul circuits. The service is tentatively named 'AirTV' and amongst the first services to "sign on board" is BBC World. From geostationary (Clarke) orbit, each satellite will cover approximately 42% of the earth's surface (but unfortunately not the extreme polar regions above and below approximately 75N and 75S; many Europe to North America and North America to Asia flights cross into these extreme latitudes). Mitsubishi Electric has a contract with Boeing to develop a "phased array" antenna system which will be integrated directly into the fuselage of Boeing long-haul (private and commercial) jets manufactured from late 2003 onward. Prior to the scheduled introduction of AirTV in mid-2005, Boeing and Japan's JAL will be testing broadband high speed data services on flights between Japan and Europe using a variety of existing satellites; British Airways and Lufthansa testing will be conducted over the next 60 days. Ten JAL planes are scheduled to be equipped with Boeing's "Connexion" service package which will include Rockwell (ex-Collins) electronics. S-band satellite frequencies are essentially unused world-wide (the exception to that being Indonesia where Cakrawarta operates and India where tests on a single S-band channel continue from older satellites). Given the anyplace-at-anytime nature of long haul planes and ships, antenna patterns from the new S-band birds are expected to be "global" in fashion and power levels quite high (probably down to the equivalent of 1m dishes) with robust (as in FEC 1/2) digital formats employed. At the very least the projected four satellites will be extremely handsome "targets" for terrestrial viewers as well with logical locations near 0, 90, 180 and 270 (OE/W, 90W, 180E/W, 90E).

neglected to obtain a government LICENSE for their operations and therefore their transmissions are not protected by the law! The head of South Africa's Broadcasting Authority (ICASA) is on record stating, '*I do not see any breach of law by watching Multichoice without a subscription*'. With revelation MNet failed to obtain a license, all charges previously filed have been dropped and the pay-TV firm is now bringing new charges based totally on (smartcard) copyright issues. This could be fun - in court MNet will have to reveal the source code for their own cards in attempting to prove MOSC and other (Fun etc.) cards are 'copying' their copyrighted software!" (**RD**, RSA) "Video Ezy is offering free DVD players to anyone who agrees to rent $10 in DVDs (or more) per week for a year." (**NS**, Qld. Ed's note: DVD players in USA are now down to under US$50, or below A$90 so this is not exactly a great bargain.) "Big bucks - Matchmaster charging A$418 for 8 hour 'Television Antenna Analogue/Digital' course; $495 for MATV course'. Makes the ex-SPRSCS three day event fees a bargain!" (**IF**, Qld.) "Humax PVR-8000 has a removable hard disk bay in the middle of the STB (www.satplaza.com/hardware.htm). 2003 will be a tough, competitive year for highend STB product sellers. For example, the TuxMedia (Linux) STB combines MPEG-CS24 Digital Audio/Video decoding with Integra L64736 satellite demodulator powered by Motorola PowerPC 604E (375 MHz) Processor - 4 built-in card readers, embedded UCAS (SECA compatible) and twin PCMCIA slots. " (**OE**, RSA) "http://tv4all.com/portal/htm lists nearly 600 TV broadcasting stations world-wide, their streaming speeds and if you have 300k connection, the quality is decent. One amusing Australian site is www.thebasement.com.au featuring views along a Sydney municipal bus line (live - muggers beware!) checking out people and shops along the way." (**MB**, USA) Humax has filed lawsuit charging Viaccess with damage to its reputation; Viaccess in July sent out notice to industry advising Humax was in violation of license agreement by allowing their receivers to be easily 'modified' for piracy purposes.

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More about: HDD

This feedback from reader Robert A.

"I find your HDD write up (SF#100, p. 31) a bit misleading. I have been using an eMTech EM300 PVR w/ 120GB HDD for a year now with FTA and Aurora. As I live in central Oz, I can't get Austar/Foxtel (yet, come on C1!) via satellite. I do find your idea about timed replay from the PVR IRD to be 'interesting', but it is not an end-user feature for most users.

"I use an analog/DV converter to record my ESPN Pac Rim sports from PAS-8 Ku as my subscription decoder can not have it's smart card operated outside of the TARBS IRD. That is a downer, but the DV replay works well from the 120 GB firewire (IEEE 1394) hard disc. As I have converted DV to MPEG2 and burned DVD-Rs from this, I can't see a cost effective method for the IRD manufacturer to add in this capability to an IRD for analogue sources. However there is an entire audio/video forum dedicated to this type of activity with PCs on the web at www.avsforum.com that end users can review for themselves.

"It would certainly be nice to have all of this in an IRD, but I would first like to see eMTech modify their em300 PVR to add s-video output (lacking in this IRD!) and add a firewire (IEEE 1394) port via the USB port/connection to the PC. Maybe you could put out a RFI for anyone who has successfully used this USB port with a PC."

As we noted in S#100, the fine folks that make movies and own sporting rights are in the driver's seat determining just how "shareable" HDD or DVD materials will ultimately become. If the right's owners get their way - and it looks as if they will at this time - any commercially sold DVD/HDD product will play (1) only once, and, (2) only on one player machine. Rental DVDs will be "store burned'" with a code that determines how many times it can be played before it refuses to play again while purchased DVDs will be software "married" to the particular player they first operate with (a coded number originating in the player will complete the DVD authorisation cycle when first played).

At the end of 2002, nearly 17 million US homes have two-way broadband connections (9.6 million of these are through the local cable TV firm); up from 9 million a year ago. That is expected to double again (34 million) before the end of 2004. What this means to Hollywood and the sporting rights owners is simply this: By the end of 2004, 35% of all American homes will be able to send-out or receive-in a full length movie through their broadband connection in something under 20 minutes time.

Hollywood and Murdoch see this as a serious threat to future control of their copyrighted products. If a 15 year old with a copy of "The Prisoner of Azaadan" (Harry Potter three) can sit in his bedroom and send the film via a broadband connection to dozens of friends and each of these can in turn send it on again to dozens more - well, the potential financial damages are obvious. The answer, as the right's owners see it, is to first make sure our hypothetical 15 year old never gets his hands on a pirated copy to begin with, and, as for store-bought authorised copies - that there is no way built into the consumer playback system for him to share it by sending the contents through a broadband Internet connection. And - no way for him to "burn" DVD copies one at a time, even if that is "old fashioned" and slow.

The Prisoner of Azaadan (when released late in 2003) is likely to be a US$1 billion grossing film. If ten percent of those who might otherwise elect to stand in line and pay $10 to see the film in a theatre choose not to do so - opting for a pirated copy of the film on DVD instead - there is US$100 million "lost" to the rights owners. Multiply that paper-loss against the several hundred similar films to be released world-wide in 2003 and you have a "kitty" of well over a billion US dollars which movie rights owners can create to develop technology to prevent (or control) piracy.

First, they are insisting that future DVDs not be "shareable." You perhaps have not noticed but today's DVDs are low resolution replications - far better than VHS tape in the signal to noise department but no better in the number of scanning lines actually available (line doubling is a "trick" created to extract more dollars from gullible consumers - it is not HDTV).

All of those wonderful films you and your neighbours rush out to purchase on DVD are but an interim technology. Imagine for a moment if the original VHS tapes would only produce black and white pictures. Then ten years after the black and white VHS titles became available, suddenly they released the same movies all over again with colour. Being stupid is part of being a consumer - we would all rush out to buy the new, latest versions, *in colour*.

Locked away in California vaults are the original 35mm high definition versions of essentially every film ever produced. *Someday* they will be re-released in a HDTV widescreen, theatre-sound format. And those low-resolution DVDs we have previously purchased will be instantly obsolete. But before that happens, first there must be a universe of significant size in true HDTV receivers or monitors in consumer hands, and, the protection technology to ensure no "sharing" or "copying" must be in place and proven.

All of this comes home to roost when you attempt to purchase and use a HDD or home DVD recorder instrument today. The device you can now purchase is early days technology and because it has only limited protection to prevent copying or sharing, it is a frightening technology to rights owners. A Panasonic DMR-30 series DVD recorder can "burn" copies of DVDs on DVD-R format discs which can be played on many (not all) home-style DVD players. The DVD-R blanks are under US$7 each (in single quantity) on Internet but when "burned" with a recent hit movie can command 3 to 5 times that number on the street. For a 15 year old with time on his hands and some technical savvy, this is one hell of a way to line his pockets with spending money from the comfort and safety of his bedroom.

As long as the rights owners can keep the pressure on the hardware manufacturers, only a very limited number of "operating options" are likely to appear before Hollywood and Murdoch approve the "final solution" to their version of DVD and HDD recording. eMTech certainly knows *how* to produce a satellite receiver that does everything reader Robert A. suggests in his letter here. Our point is, they dare not do so out of fear of massive legal retaliation. If you doubt this statement, ask Rolf Deubel what Murdoch's agent said to him in a police interrogation cell in Bangkok.

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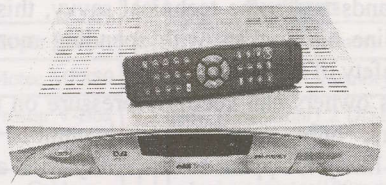

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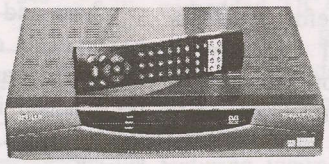

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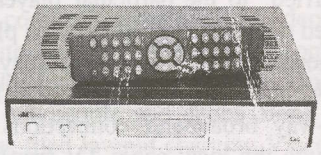

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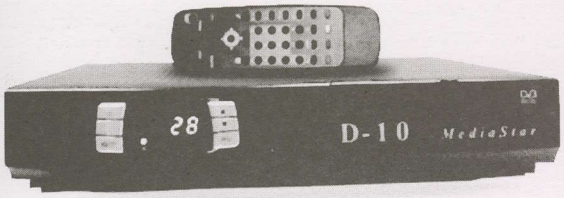

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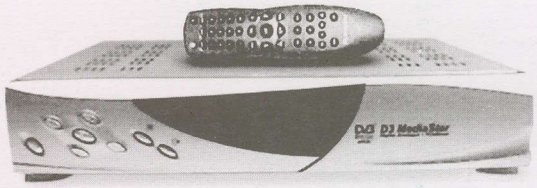

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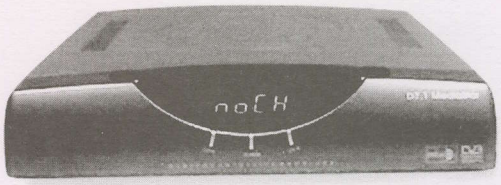
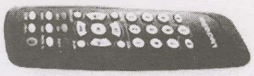
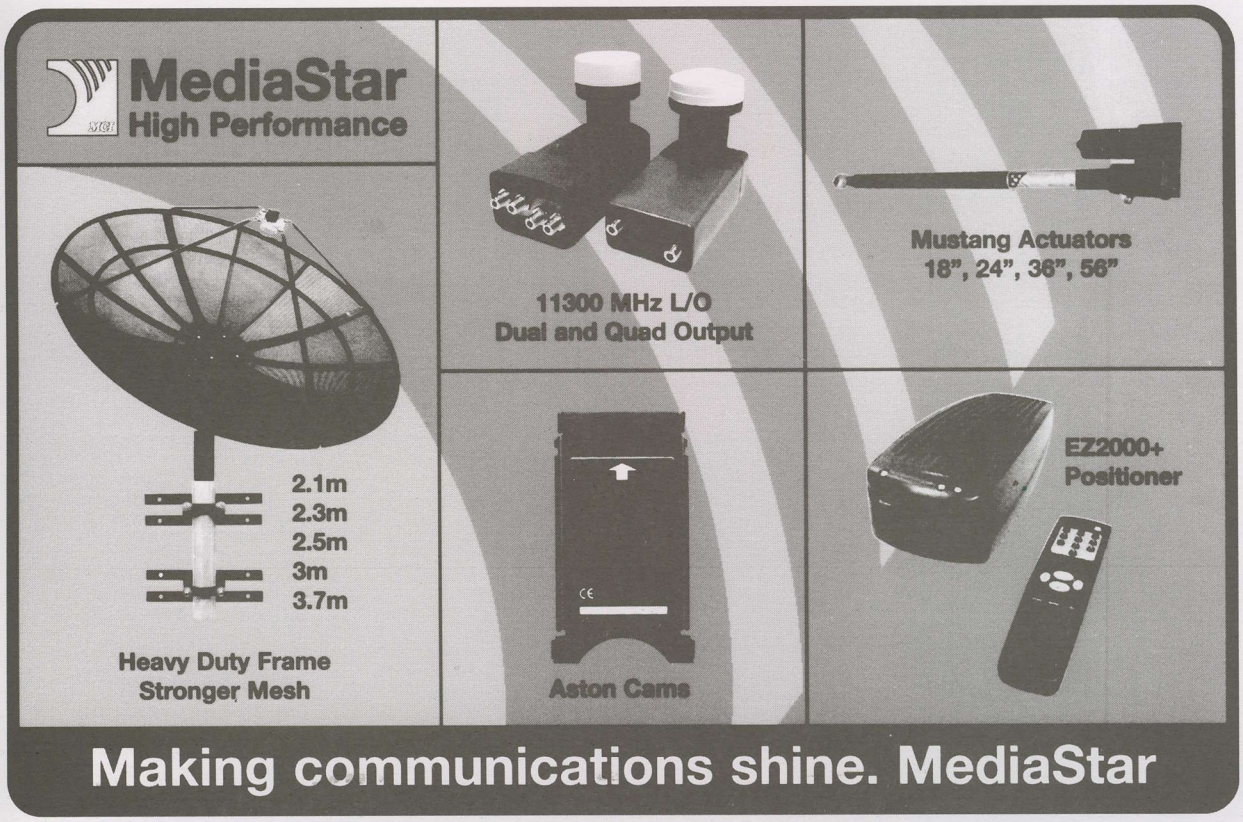
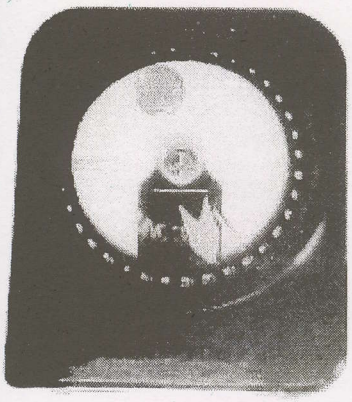
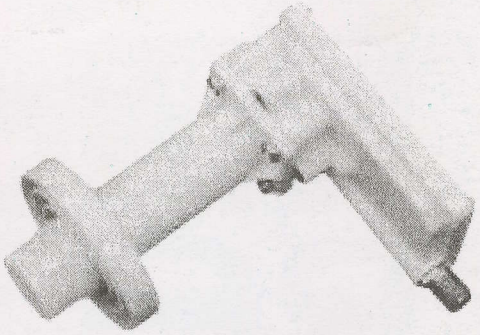


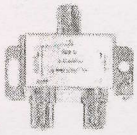
D7.1 Free to Air

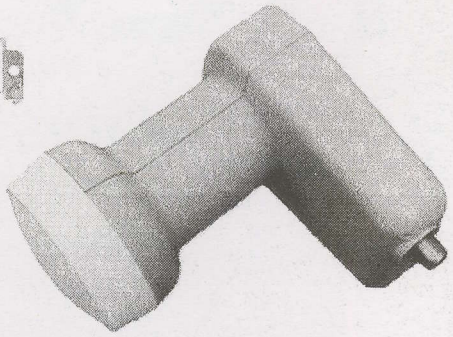












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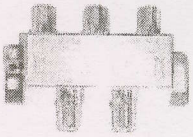

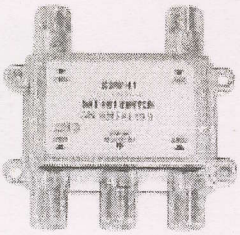

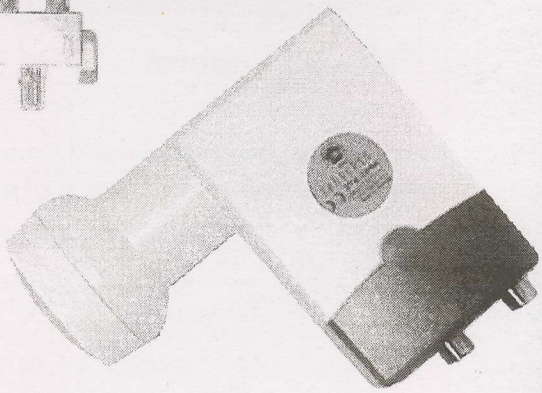

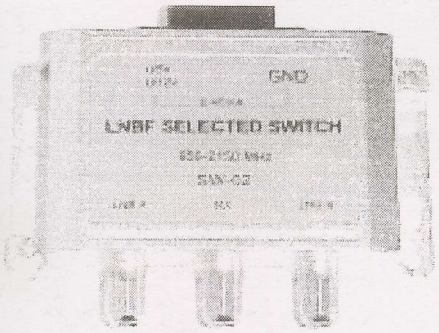

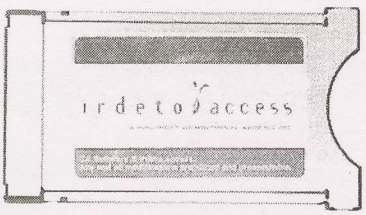

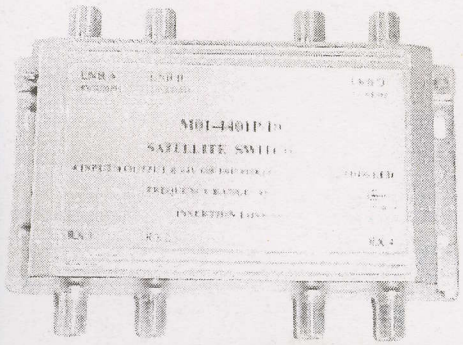

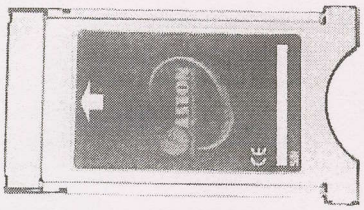

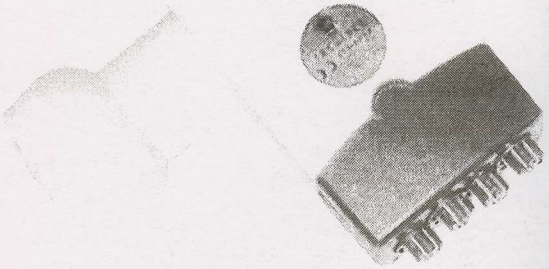

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