14-02-03 10AM

Bob Cooper's

FEBRUARY 15 2003

SatFACTS

MONTHLY

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

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Australia's step to shut down terrestrial TV

Which CAM is the "right CAM?

More about power supply troubleshooting

✓ Latest Programmer News
✓ Latest Hardware News
✓ Foxtel's piracy battles
✓ Observer Reports

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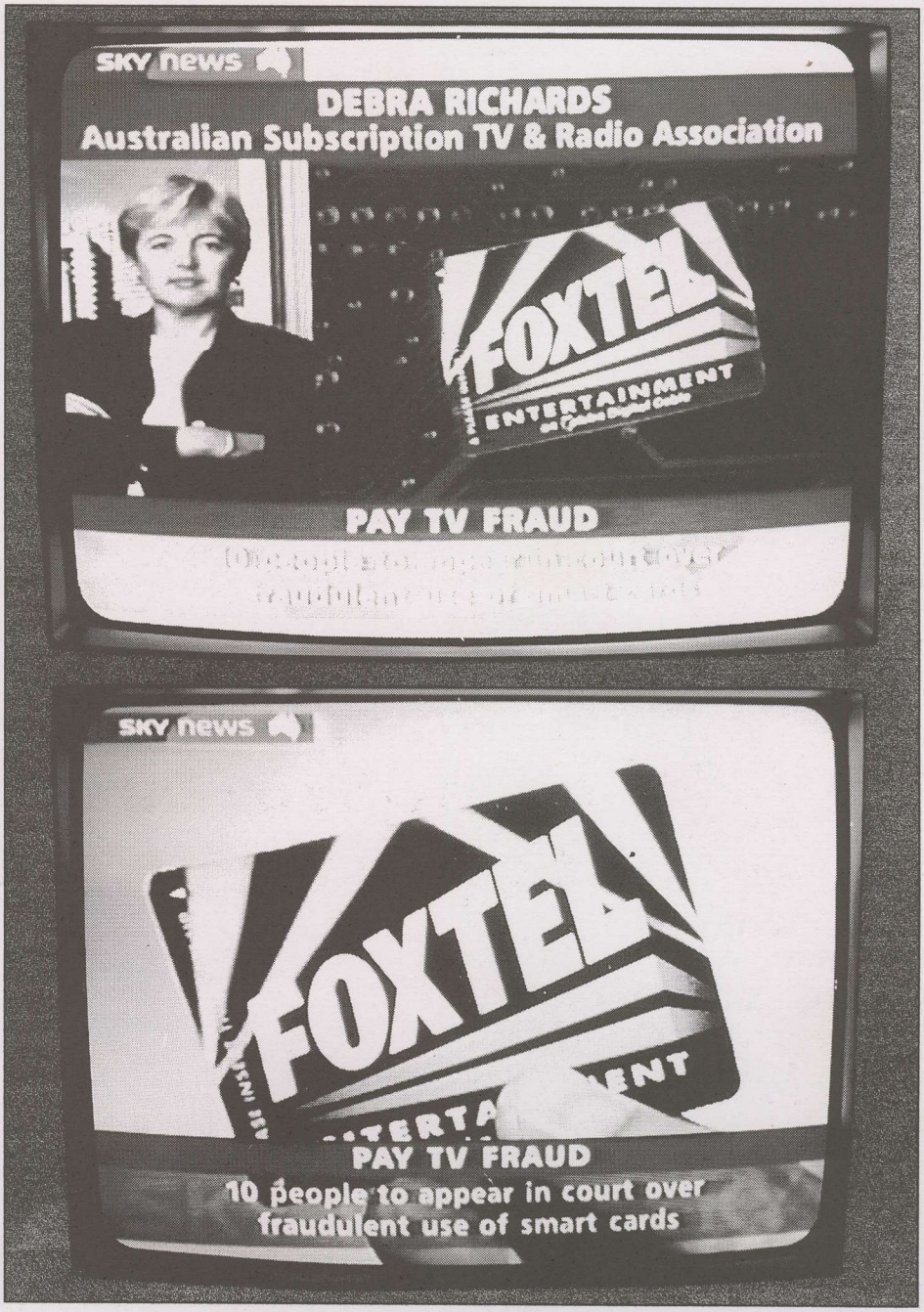

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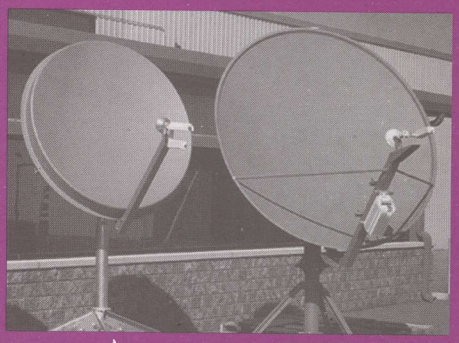

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This publication is dedicated to the premise that as we are entering the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages 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

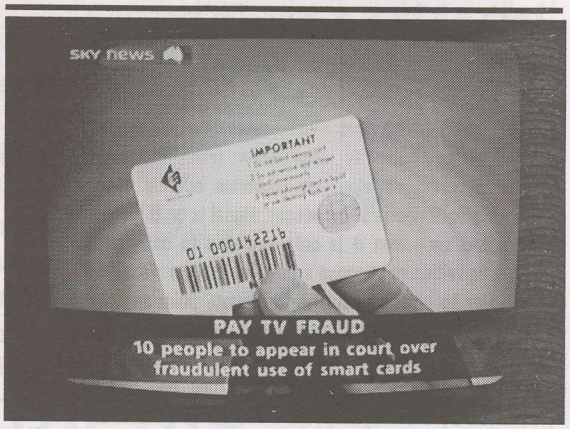
February 15, 2003

Comment regarding SF#101 Coop's Comment. "Only the technology has changed; when I was a teenager, we routinely made cassette copies of popular artist songs and traded them with friends. And nobody gave it a second thought."

Precisely; "*nobody gave it a second thought*." Because very few (if any) of those generation-ago teenagers had any concept of copyright and the ramifications of making unauthorised copies.

Our SF#101 comment pointed out that until it becomes "socially incorrect" to make unauthorised copies of materials which are copyright protected, we really cannot expect society to accept that this is a criminal act.

A news story appearing late in January, typically buried in the section one rear pages of prominent newspapers, relates that a Victoria man arrested last June 12 has admitted to "making 60 unauthorised Foxtel smart cards" which he sold on the street for $250 each; a $15,000 "enterprise." He was fined $20,000.



A second late-January news story relates that a NSW man living in the strangely named community of Blackbutt was caught in a "sting" operation set up in a tavern involving an offer he is purported to have made to sell a grey market decoder (+ card) for $750. His fine was $1500 plus $100 court costs.

Even more on point is a pair of cases brought against Tattersall Club Hotel (Mathoura, NSW) and the Commercial Hotel (Hamilton, Victoria) alleging, "(each) was using pirated smart cards and set top boxes to show the satellite racing channel (Sky Channel) without authorisation." Sky Channel's barrister told reporters outside the Sydney Federal Court, "these cases are just the tip of the iceberg; investigators have found dozens of hotels around the country using the channel illegally."

In New Zealand, one of the most powerful PSA (public service announcement) commercials in recent times links excessive drinking with vehicle accidents. The announcements dramatise in a way no simple words could do the permanent side effects of driving while impaired. The messages are so violent and gut wrenching that I now routinely turn my head and reach for the mute button on the remote control. It is "socially unacceptable" to drive after drinking alcohol; you cannot be subjected to this PSA and come away with any other conclusion.

There are several ways to correct something that is socially unacceptable. Law enforcement is one such method, financial penalties is another. In a (USA) Colorado case this past November, someone was caught doing essentially the same thing as our Victoria man. But rather than receiving a $20,000 fine, the Colorado man was fined US$2.5 million and sentenced to 5 years in a federal detention centre.

How do you enforce "socially acceptable behaviour?" Monetary fines is one system, jail time another. Public awareness, the New Zealand messages relating excessive drinking to auto accidents, is a third. So a no-charge set of suggestions to Sky Channel and Foxtel.

Sky Channel. Create a web site, supported with on-air announcements, which lists every single authorised location for viewing your service. Keep it up to date daily. Then, offer money (a reward as it were) to anyone who reports a non-authorised facility to a toll free number - payable upon conviction or admission of guilt by the unauthorised facility.

Foxtel. Use your 40+ channels to air public awareness messages explaining the "true cost" of piracy, support it with a toll free "dobbing in" number, and offer Foxtel-credit "rewards" for each such report that results in one less piracy user. In one year or less, I believe your piracy problems will be significantly reduced.

In Volume 9 ◆ Number 102

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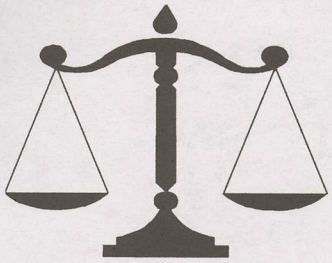
Australia's "conversion" to all digital delivery -p. 7
Pacific Porno Watch / Humax files suit/ card maker begs for help -p. 27

Departments

Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; Technical Topix (P/S, Laplink, USB ports); SatFACTS Digital Watch -p. 22; Supplemental Data -p. 26; With The Observers -p. 27; At Sign-Off (Dreambox P/S, ADB decoders, Perth 31 on satellite) -p. 30

-On the cover-

Foxtel's token effort to put the pirates on notice (above)



LETTERS

Imparja is not FTA

"I note from your publication (Digital Watch, B1 listing 12.379) you are promoting the availability of Imparja as a free to air service. This information is incorrect and we request that it is immediately removed. Imparja is NOT free to air on B1. And, it is not a DVB signal and it is not comparable to other free to air television services you refer to. Australian Broadcasting Authority regulations prevent Imparja from delivering its signal to locations outside of its license area. Imparja's 'broadcast' signal is on B3 and is encrypted such that it is only available to designated locations within our license area. The 'free to air' signal you refer to on B1 is actually a private point to point connection that delivers our raw programme content in a form NOT intended or configured for direct reception, to the multiplex point. It is NOT DVB and this is indicated by the fact that there are no SI PSI tables. Interception therefore requires a specific knowledge of the internal structure of the PIDs to receive it. This configuration is designed to make interception as difficult as possible and we do, and will continue to, take precautions to render it unusable when it is carrying critical material. I am aware that you and certain other publications and websites publish information designed to facilitate its interception, but the mere fact that a 'normal' FTA receiver needs to be specifically set up to allow this interception indicates clearly that the signal is not 'transmitted' nor 'broadcast' within the normally understood meaning of those words."

Tim Mason, Chief Engineer, Imparja Television Pty Ltd.

An interesting ethical question is posed here. Imparja as an affiliate of Australian 9 and 10 networks is licensed to serve DTH homes in geographic-specific regions - in theory a home to be served by Imparja is not able (because of distance or terrain) to receive alternate Network 9 or Network 10 services by direct terrestrial service. The ABA acts as a control valve sitting as a court of "go" or "no-go" on each individual application asking for Imparja's Aurora based B3 service. Without the ABA's agreement, Imparja is simply unable to authorise the UEC (et al) STB for service. The ABA has been widely criticised for what hundreds call "unreasonable refusals" of approval. At the same time, piracy (Gold) cards have been created which make a total mockery of the Aurora Irdeto 'Fast-I' format. For as little as $A20, a MOSC (modified original or clone) Irdeto 'smart card' that produces Imparja reception on B3 is street-available. The widespread adoption of these grey-market cards is a direct result of the ABA's failure to properly deal with a rurally disadvantaged public subjected to a bureaucracy totally controlled by 7, 9, 10 and their regional terrestrial affiliates. As for the B1 'feed', we note popular web site 'Lyngsat' has acquiesced to Imparja's 'demand' to be unlisted - likewise apsattv.com does not provide 'PID entry' numbers for Imparja's B1 service referenced in Mason's letter. We'll be pleased to delist Imparja B1 as well - as soon as the ABA stops being a broadcaster's lackey.

PROGRAMMER PROGRAMMING PROMOTION UPDATE

FEBRUARY 15, 2003

SF#101 correction. OK class, turn to p. 15, 2nd (right hand) column, 5th line from top. We wrote:

"...root Password: d-box2" when in fact it should have been:

"...root Password: **dbox2**" - those "-" do make a difference!

DVD's CSS and Internet. A Texas man charged in a California court with posting the DVD cracking programme DeCSS on various web sites has been given a temporary reprieve by the US Supreme Court. The high court ruled the DVD Copy Control Association (made up of DVD rights owners) cannot bring suit against a Texan in California even if some of the web sites carrying his DeCSS post can be accessed in California. Attorneys for the Texan told the courts, "*In reality DeCSS remains ubiquitously available throughout the world from countless sources not named in this action.*" Crossing US state boundaries and international boundaries within Internet has been a difficult legal issue for some years; the Australian High Court recently declared that Dow Jones Co, the publisher of on-line versions of the Wall Street Journal, could be sued for defamation in Australia where laws are less generous to publishers than US laws. What this means is anything transmitted through Internet may have to pass "legal muster" in every corner of the world to escape lawsuits, not merely in the country of origin. Early in January, Norwegian "hacker" Jon Lech Johansen was acquitted of any wrong doing when he reverse engineered the DVD encryption system and posted his "patch" (called DeCSS) on Internet. Johansen had purchased (DVD) movies such as 'The Matrix' which could not be played on his LINUX software system. His intent was to discover how to convert the original (Microsoft format) encryption to one compatible with LINUX. The court said, "*We find that someone who buys a DVD film that has been legally produced has legal access to the film. Something else would apply if the film had been an illegal, pirated copy.*" This translates directly to the satellite TV smartcard world where software such as that created by Irdeto is said to be "protected" by "copyright." At least in Norway, satellite enthusiasts who "read "the content of their subscription smart cards and use this (data) as a "softcard" in Emulators such as Gbox in the d-box2 or in the soon-coming Dreambox DM7000-S are in fact not doing an illegal act.

Impact TV. In January we reported, " ... 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)." A correction in this communication from one of the trio who originally attempted to launch this business some seven years ago: "*ImpacTV Limited, of which I was a Director and Shareholder, was wound up a couple of years ago, although I understand Tony Dunnett has since reregistered the company. The parting was amicable. In fact, if Tony has managed to pull something off, I wish him all the very best of success.*" (Brian Oliver, UniSat, Auckland). A very limited interim web site is now functional at this address: www.impactv.co.nz

Illegal FTA viewing? US House of Representatives bill 3824 makes it an offence to tune-in via satellite FTA transmissions which are intended as "remote link feeds" - such as from a remote uplink van to a studio or network centre. Big dollar fines, up to 5 years in the pokey for violation!

Satellite possible. NZ Government has seeded Maori Television Service (MTS) with NZ$12.98 million, decided it will, "*broadcast on UHF and satellite.*" No details of when, what satellite, how or whether to be FTA or a part of a CA package (such as Sky) announced.

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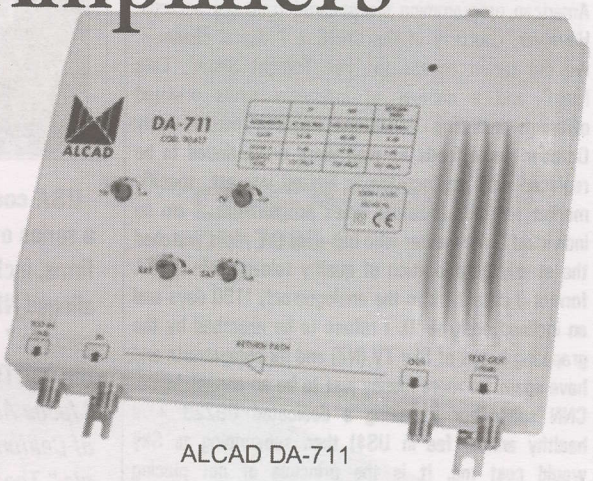

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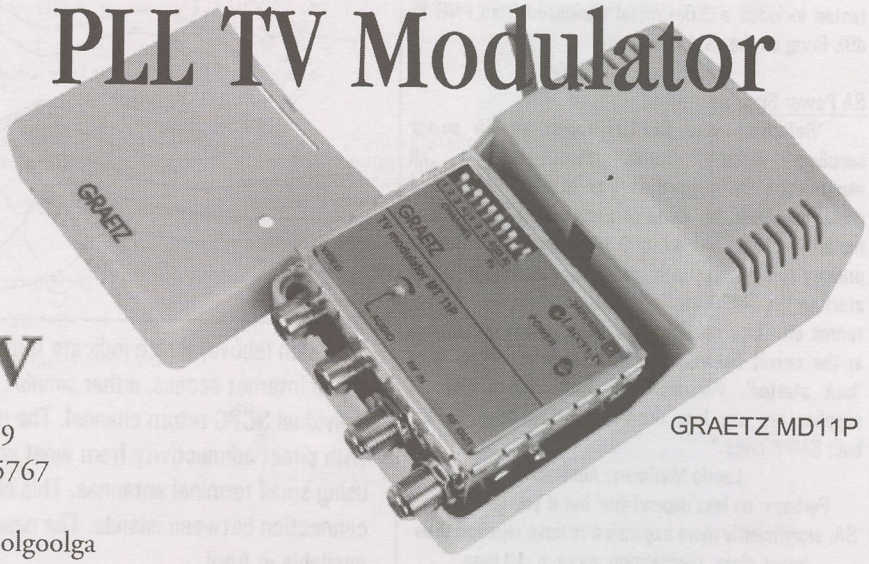

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NBC's swan song

"When NBC-Asia departed from our world region several years back, a significant segment of quality American programming disappeared from our screens. However, courtesy of the CNBC x 7 digital channels, we did retain access to 'The Tonight Show', Late Night' and a number of interview news oriented offerings including 'Meet the Press'. Then in early October those feeds as well were discontinued to be replaced with an increase in limited interest, specific market targeted business news programmes. I am an individual home viewer who has over the years watched the steady deterioration of quality television in a FTA format (I date back to the analogue-only I180 days and an inclined orbit bird!). I refuse to be absorbed by the grappling hooks of Sky TV (NZ) and its compatriots and have spent far more money just to be an annual, home, CNN subscriber (requiring a dedicated D9223 + a healthy annual fee in US$) then subscribing to Sky would cost me. It is the principle of not placing someone who makes my viewing decisions for me that has driven me to be 'independent'. Now I note that CNBC has elected to encrypt their Pacific-Asia feeds on PAS-8 and as best I can determine they did so (January 5) with no advance notice to anyone who might like the option of paying for their service. Shame on them for being so stupid!"

Francis Kosmalski, Auckland

B3 in New Caledonia

"One of our greatest challenges for the last few years has been to identify the appropriate mix of equipment which will produce suitable C/NR results from B3, here in New Caledonia. Yes, we are 'beyond the fringe' coverage and yes, there are authorisation challenges as well. But the signals are 'there' and naturally one would like to make it work simply because it is a mountain to be climbed. We have finally located a suitable dish for this purpose; it is manufactured by Andrew, a one-piece rolled aluminium 3.6m. It is light in weight, easy to assemble, comes with a suitable Andrews designed and manufactured feedhorn; with a 0.6 dB noise figure Gardiner LNB, 12 dB C/NR. The next best was the 3.8m Patriot manufactured through 2000 or so. It produced a C/NR of 10.5 dB peak; however, a change in manufacturing process reduces the present same-model antenna to 9 dB best case performance. A 3.6m Prodelin fibreglass 6 panel dish produces no better than 8 dB C/NR. Others tested included a 3.6m metal panellised from PNG (5 dB). Bring on the next challenge!"

PacIP, New Caledonia

SA Power Supplies

"Reference your SF#101 report on SA power supplies; actually, rather than replacing 'all electrolytics' (a suggestion you attribute to me), I prefer to check the value of each with a capacitance meter. The .22 and 47 uFD electrolytics are on the primary side of the supply, providing tuned-ciruit 'Q' for starting the SMPS oscillator when the receiver is first turned on. Once running, they have almost no purpose in the circuit because the oscillator runs freely once 'kick started'. Personally, I don't believe the SA supplies are any less dependable than other Korean built SMPS units."

Laurie Mathews, Auckland

Perhaps 'no less dependable' but if you go back to SA, significantly more expensive to have repaired than lower class competition; more, p. 19 here.

HARDWARE EQUIPMENT PARTS UPDATE

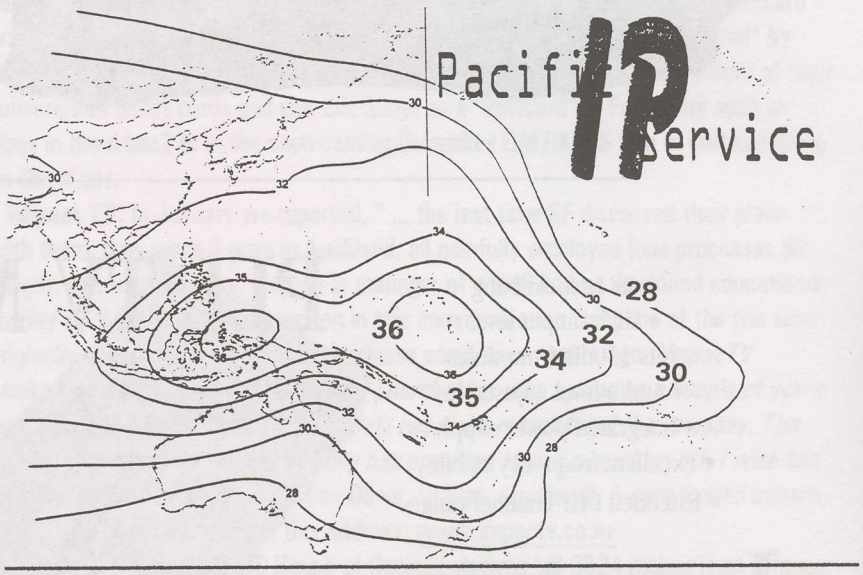
FEBRUARY 15, 2003

USA court dismisses (portions of) DirecTV suit against NDS. SF #99 reported on a series of lawsuits filed against encryption system creator NDS by a number of firms, including their former major customer (USA) DirecTV. A suit filed in September alleged NDS committed, "*breach of contract, fraud and misappropriation of trade secrets*," and more (the suit was "sealed" at the court and details were available only through DirecTV press-releases). On January 21, NDS issued a press release stating, "*Judge Audrey B. Collins of the United States District Court for the central District of California dismissed most of a lawsuit filed last September against NDS Group plc*." The operative word may prove to be "**most.**" The NDS 21 January press release continues, "*we are confident that DirecTV's remaining claims will be dismissed as well once all of the facts are presented to the Court*." The NDS press-release ended with this kicker: *"NDS still has claims against DirecTV and a chip manufacturer for conspiring to create a knockoff of NDS's latest generation smart card for DirecTV."*

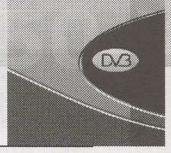
Rumour without base? Glue-riddled Humax products now being distributed are alleged to be capable of total shutdown on B3 Hz services "if and when the programmer wishes." As best we can determine, this is a totally baseless story.

2.06 CAMs? Field reports say while shortages have occurred from time to time, the distribution of this desirable product continues. Current production runs, whatever the manufacturing source, seem to be in lots of 5,000-plus at a time with no "tracking serial numbers" on the CAMs.

Major changes in Pacific coming from PAS-2! This satellite has two C-band beams, one of which has not been used commercially; (the) *Oceania Beam*. During December, Pacific Ip Services (New Caledonia; www.pacificip.com) arranged tests of



the beam (above) which indicate terminals as small as 2.4m will be able to have high speed Internet access, either simplex hybrid (return channel via local telco) or with an individual SCPC return channel. The platform will be DVB-IP, 27 megabits per second with direct connectivity from west coast USA to essentially all of middle-Pacific using small terminal antennas. This also opens up for first time small terminal VSATs connection between islands. The newly tested beam will become commercially available in April.



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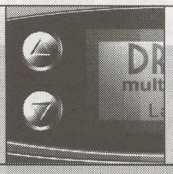

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The 100 Mbit Ethernet connection makes the DREAM- BOX Intranet and Internet ready. Thus the user can update the operating software and new setting lists directly, or even download new skins for individual adaptation and configuration of the user interface.

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Rolf Deubel sets the record straight

CI = Common Interface but which one works on Optus B3 Horizontal???

I have read many, many postings on Australian Discussion Forums. I have realised that most people do not understand what is going on. I have initiated numerous tests and NOW is the time to tell you what it is all about!

Common Interface (also known as CI) has been in use since 1999 on digital satellite receivers as a successor to "normal" CAM (Conditional Access Module) allowing watching of encrypted pay-TV services. The only ever successfully launched "old" CAM was the Irdeto™ CAM as well as it's German derivative the green C-CAM issued by BetaResearch™.

Because the European Union was looking to ease the burden of Conditional Access Receivers for it's citizens, Common Interface CAMs have become more and more widespread, even around the world.

Many of the new so called Multicrypt CI Common Interfaces have appeared and are gone again just because they just don't want to work on our playground. And, the question is WHY?

Without going too deep into the technical trouble, we would like to say that services on Optus B3Hz are <u>not</u> world Irdeto™ standard compliant but still are a Irdeto™ Mark 1 system! It's called FAST-I and because most CAMs and CI's are programmed for the stock standard thing, FAST-I is one, which can (and does) cause some trouble!

Initiated by SatFACTS readers Peter A. and J.B., we would like to clarify the myth of Fast-I and CI Interfaces a bit.

Let's have a look what is commonly available on the market; whereby we do look at a much wider spectrum than the average user might look at!

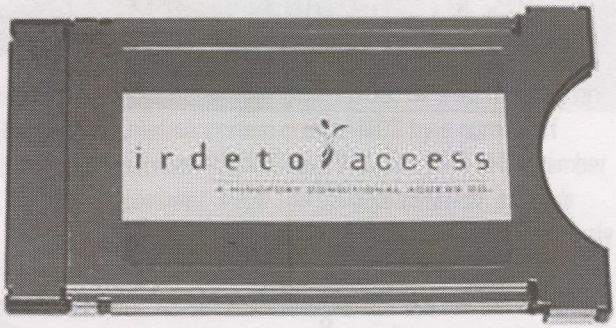
The first known CI for Irdeto™ services was the well known 900264 part number (on the back of the module). This is the one with a Flash chip, and it is freely programmable (SF#97). This is also the one which gave Irdeto™ the most headaches as it was easily modified to suit "entrepreneurs!" This 900264 does work in Australian PayTV channels on Optus B3 Horizontal services. And, even if you can buy a so called 4.7SE.... that's the one!

The 900264 is easily modified into a "FreeCAM" which can hold session keys of that particular service and therefore allows viewing of pay-TV services without a valid smartcard.

Beware! This is a) illegal, and, b) only lasts until the next update of those session keys! Once the keys have changed, your TV screen stays black. No picture!

This "workaround" was developed and successfully used on European pay-TV channels where session keys hardly changed and if they change an "update" for the CI was available within minutes on the Internet. In Australia, providers have learned a lesson and have done their homework! Session keys are more frequently updated in our regions and in some instances may change every hour. Well done guys.

The next CI that works is the 900440 with the infamous software version 2.06 which everybody speaks about. This, so far, is the last known version which works on Optus B3Hz.



Irdeto CAMs vary only slightly from the device shown here. Looks can be deceiving - the part number is the correct identifier for "go" / "no go."

All other versions are wrongfully called "Irdeto2™" CIs which is actually not accurate.

Irdeto2™ is based on Irdeto1™ but just altered to keep the "Shreks" out of "the business." This is the reason why all old CAMs and all old STBs still work 100% with Irdeto2™. In principal all CI modules with the following NEC I-chip versions can be upgraded / flashed:

Version 00.03, Version 00.04, Version 00.05, Version 00.06, Version 00.07 .

You can find the relevant number in your decoder's CI information menu. And should you ever have wondered what that PIN number was, requested to enter the CI's hidden menu, here it is: **6962**

Here are all part numbers of Irdeto™ CI modules which currently do <u>NOT</u> work on Optus B3 horizontal pay-TV service:

901205 - Euro/Irdeto II CAM (same hardware as Aston 104/105), Irdeto v01.05, SoftCell Version 2.09, compiled 22/Sep/2000, one time flashable only, blue label warning: "*Any and all modifications prohibited and prosecutable.*"

901275 - Euro/Irdeto-II CAM, Irdeto v01.06 & AlphaCrypt v1.00, SoftCell Version 2.09; compiled 12/Oct/2000, non-flushable without opening CAM, Blue label warning: "*Any and all modifications prohibited and prosecutable.*"

901633 - Euro/Irdeto-II CAM, Irdeto v0.07B, SoftCell Version 2.06B, compiled 4/July/2001, non-flushable without opening CAM, very small chips (difficult to solder), Blue label warning: none.

With the last one there is a bit of a does work / does not work situation. I personally have not seen this particular one yet and I have to believe what people tell me: "It does not work," but *theoretically* it should work!

Never mind and don't be too worried about the different CI versions ... when the service is changed to Irdeto2™ you won't have this problem anymore!

Again, there is a lot of information on the Internet and should you want to find out more it is definitely worthwhile using a search engine like <u>http://www.google.com</u>

SatFACTS recommends visiting this excellent site showing about 90% of all currently available CIs and hosting adequate upgrade software as well.

<u>http://www.lefdata.com/ci_ca/ci .html</u>

When Australia's 7, 9 and 10 are on Foxtel/Austar satellite -

Satellite + Cable passes a landmark goal post in Australia

What is the least attractive business to be affiliated with in Australia's television delivery world these days? The answer, as New Zealand learned 12 months ago, is the manufacture, distribution, and installation of terrestrial TV reception antennas/equipment. Now that Network 9 has broken the ice and agreed to allow its owned and operated terrestrial TV stations (TCN-9 Sydney, GTV-9 Melbourne and QTQ-9 Brisbane) to be distributed directly to home viewers via Foxtel (+ in limited cases Austar) satellite, a major "consolidation" of the TV world will in short order put new and significant business pressures on a wide range of "competitors" and "tagalongs" who ride the terrestrial TV gravy train.

Here are the issues. Cable + satellite has now reached a level of saturation (23%) in Australian homes where it can no longer be ignored as a major source of viewer's attention; it is now competing effectively with terrestrial broadcast. Terrestrial broadcast depends upon "eyeball counts" - how many people are watching a particular programme? Their entire revenue stream (A$20 billion in 2002) is dependent upon the number of viewers (which translates to the number of dollars the station can charge for advertising time). As the number of viewers declines, the revenue goes down.

When revenues slide the money available to produce, or acquire from outside sources, new programming shrinks. Less money to spend on programming, fewer viewers and the cycle continues - fewer advertising dollars once again. At some perhaps distant point in time, the networks are no longer profitable which means those who hold stock in the broadcasting enterprises find their portfolios less valuable. And for those living "high" off the broadcast hog, this would be a terrifying, to be avoided, experience.

Foxtel and Optus cable already carry local terrestrial signals on their wired networks; the *single channel*, analogue transmission. Neither Foxtel nor Austar *satellite* do this (although Austar does carry ABC and more recently SBS within their satellite packages). The reason 7, 9 and 10 do not appear within the Foxtel or Austar digital bouquets is complex to grasp.

Each transmitter site for 9 (for example) is a "stand-alone" business enterprise. GTV-9 Melbourne's "market" is defined by the region surrounding the analogue transmitter where most (90% or more) of the viewers who watch 9 do so through the GTV transmitter. Beyond the terrestrial reach of GTV, either other owned and operated stations (Sydney, Brisbane) or "affiliate" stations (such as NBN Newcastle) carry significantly the same programming as GTV (although not always at the same time nor on the same day as GTV Melbourne). The affiliates are also "free" to not carry selected Nine-Net programmes, substituting their own programming which they have sourced from non-9 venues. Within the Nine-Net "O and O" (owned and operated) string of three stations (which includes Sydney and Brisbane), each of the markets produces its own local/regional newscasts and produces programming which makes local sense in their market area.

Network 9, as a 25% owner of Foxtel, was in a position to force the terrestrial competition to agree to combining satellite + cable with terrestrial service areas just as DTT was going belly-up.

Thus while Nine-Net might be a "full service" programmer for close to 24 hours per day, for some day segments different Nine-Net affiliates are broadcasting programming quite different from the network itself.

This is the core of the satellite challenge. If Nine-Net simply placed GTV-9 (Melbourne) on Foxtel/Austar satellite, the entire country would become a "television suburb of Melbourne." Gone would be Sydney newscasts for Sydney-siders, Brisbane sport for Queenslanders and so on. And over time, as the percentage of homes equipped with satellite grew, the need for the terrestrial transmitters would evaporate.

There are economic models to study where this has happened or is starting to happen. In the Netherlands, 92% of all homes receive their television by cable. Some terrestrial "transmitters" (channels) have actually shut down - why bother sending signals *through the air* if you can reach 92% of the homes via cable. They still function as a television "channel," only - *no transmitter*! Something similar is happening in the United States - with 86% of all American homes now either subscribing to cable or DTH, the need to actually have a "transmitter" is somewhat muted. In fact, the way US rules work, all a TV channel is required to do to gain automatic access to the local cable system's channel line-up is to have a transmitter on the air which "reaches" the cable system's headend (antenna receiving station) location with a suitably strong signal. This allows the TV station to "demand cable carriage." Most TV stations take that a step further - they install short haul microwave from their transmitter location to the cable system's headend thereby assuring the cable company of a "studio grade service" before the channel is mixed into the cable line-up.

Something very similar has happened with DTH in the United States. Fifty years ago the US created "TV markets," defined by the outer reaches of a TV station in a city or town. If the coverage circle was 100km across, everything inside that circle was defined as being a part of the "Bozeman (town in Montana - or some other town or city name) market." Over time "Bozeman" got more TV stations and now with four major TV networks (ABC, CBS, Fox and NBC) plus two part-time networks and an educational (non-commercial "public") channel, most markets have at least 7 TV "transmitters." Some, such as Los Angeles, Chicago or New York City have far more than 7 different TV channels; the "extra channels" are speciality channels - such as full-time shopping programming, full-time religion, full-time Spanish and so on.

DTH (two USA competing firms - DirecTV and DISH TV) creates the model which is "coming to Australia." The logic is inescapable.

Terrestrial TV transmitters do not do a very good job of producing high quality reception to all homes in a market. Terrain (hills, mountains that block signals), local interference (high voltage power lines, machine shop equipment, two-way radio transmitters) and just plain lousy receiving antenna systems (installed decades ago and now with rotted transmission lines and corroded aluminium elements) all combine to degrade somebody's "off air" reception. The "legal" definition of "adequate off-air service" to a "market" is this: "Reaching 50% of the homes 50% of the time with a viewable signal." Cable eliminates most of these problems, satellite TV delivery of the local free to air terrestrial channels does an equally good job. Both cable and DTH are superior to most off-air antenna installations.

Cable in the USA, like cable in Australia, already carries the local terrestrial airborne channels. DTH now does the same thing in nearly USA "markets" and new ones are coming on line each month.

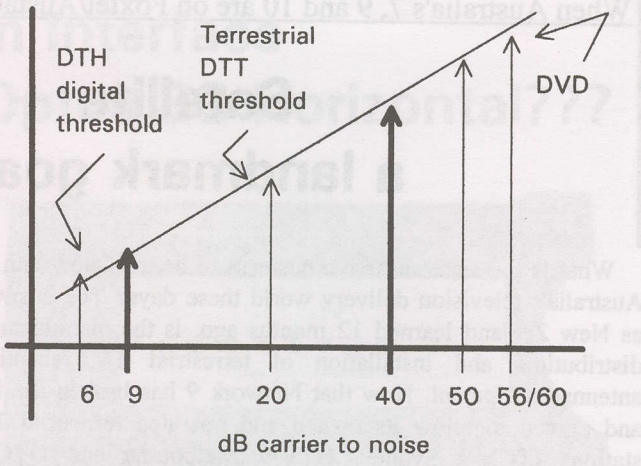
The kicker. Viewers prefer only one remote control - they will avoid any system which demands they leave their easy chair or couch to switch between say their DTH antenna system and their rooftop terrestrial antenna system. If the cable or DTH company can provide every channel (terrestrial, and, satellite delivered) via one continuous stream of remote control commands, the viewer is pleased. But if there is an extra step involved, such as having to do something special to "switch back to" the terrestrial channels, more often than not the terrestrial channels will simply not be viewed anymore - or as much as they were previously.

The terrestrial broadcasters in Australia (well, Nine-Net for now) realise that increasingly in the future viewers will switch *channels* only. If the cable system provides "Nine-Net" on cable channel 9, if Foxtel/Austar provide "Nine-Net" on satellite channel 9, it all makes sense to a potentially overburdened viewer awash in more programming choices than they can sort "on the fly" (i.e., at the end of a typical 30 minute programming interval).

One wire (whether it comes from the cable system network or the DTH antenna on the roof), all channels, equally distributed on the remote control. All with the same (high grade) reception quality, each "equal" on the screen allowing viewers to make choices based solely upon content.

The Digital question

And there is the "terrestrial digital challenge." First the bad news. In no place in the world is the transition from analogue terrestrial to digital terrestrial going well. There are technical problems (VHF and UHF digital signals do not seem to be recoverable - viewable - as reliably as existing analogue), there are reception equipment problems (perhaps complicating coverage problems), and there is the "politics" of digital.



THE modulation format determines the amount of signal required for "quality" reception. 9dB represents analogue satellite threshold; 40dB analogue terrestrial threshold; 50dB S-VHS tape.

The amount of terrestrial signal level required to produce a pristine digital terrestrial signal varies between 21 and 24 dB (above receiver system noise threshold) although there has been a trend for newer software algorithms coming on line to be more sensitive to lower signal thresholds. By comparison, a 40 dB carrier to (receiver threshold) noise signal level is required for even VHS quality terrestrial analogue service (no, VHS 'quality' is not a very high benchmark but it is repeatable as a measurement point). So in theory, the digital signal strength from the terrestrial transmitter can be up to 19 dB (-19 dB) weaker than a companion analogue terrestrial signal level.

In fact, the digital threshold is significantly altered by a number of factors other than pure signal strength. Multipath reception (terrestrial reception arriving at the receiving aerial from two or more different directions) is one degrading effect. Ignition and other electrically-based interference (motor cars, street lights, household appliances) is another degrading factor. As pioneering digital terrestrial broadcasters have learned the hard way, it is almost impossible to duplicate the terrestrial coverage of their existing analogue transmitter with a new digital service. It may be as little as 50% of terrestrial (measured by the number of square kilometres of existing analogue versus new digital) coverage.

Analogue terrestrial does not have to pass any "threshold test" to be usable. A 40 dB C/NR signal might create VHS-quality service on the TV screen, but 20 dB C/NR is still usable (viewable if not with a blemish free picture and noise free sound). Digital's threshold works the same way with terrestrial as it does with satellite - at and below threshold signal level, there is *no reception at all*; not even degraded reception. Above threshold, the image is very high quality. What terrestrial broadcasters are learning is that with analogue, perhaps no more than 50% of their coverage area (regular viewers) receive a 40 dB C/NR service; the remaining 50% (typically the outer portion of their coverage circle contour) receive something much lower but because analogue

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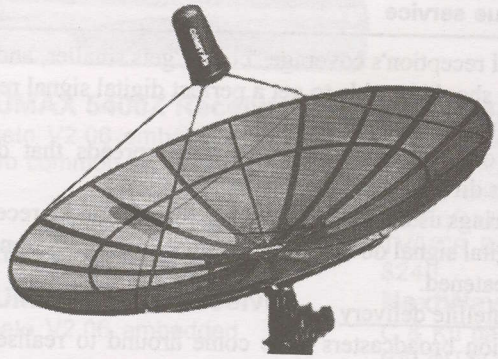

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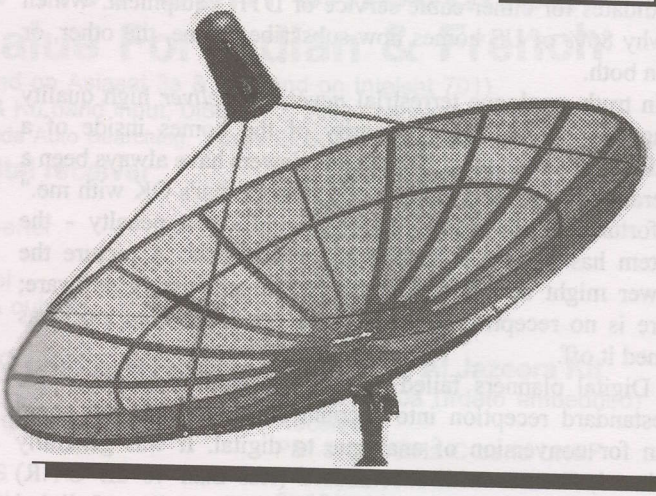

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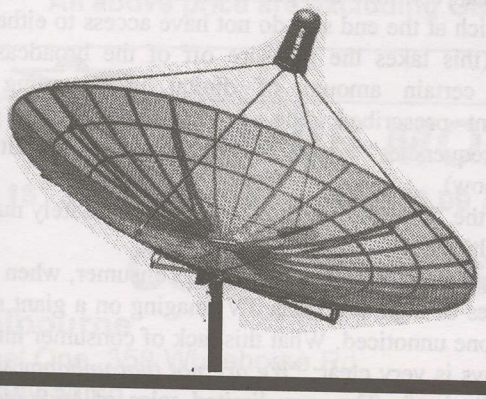

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"works" even when the signal level is below "threshold" the reception can still be watched. It is that 50% which today receives something less than a 40 dB C/NR analogue which is finding that with digital, they receive nothing at all.

The rooftop antenna

Fewer than 15% of Americans still rely upon off-air analogue reception. For most American homes, if they live where their home requires an outdoor (rooftop) aerial for TV reception, chances are they are located where TV reception is below 40 dB C/NR anyhow. The rooftop antenna is necessary for even marginal reception and that makes them prime candidates for either cable service or DTH equipment. Which is why 86% of US homes now subscribe to one, the other, or even both.

In truth, analogue terrestrial *never did deliver* high quality images to more than a minority of the homes inside of a station's coverage area. Television viewers have always been a tolerant crowd - "If I can see and hear it, that's OK with me." Unfortunately the switch to digital inflicts a penalty - the system has a built in threshold for tolerance. A picture the viewer might accept is rejected by the processing software; there is no reception at all because the "*algorithm cop*" has turned it off.

Digital planners failed to take the public's tolerance for substandard reception into account when creating the grand plan for conversion of analogue to digital. It was generally believed, "homes with substandard (less than 40 dB C/NR) analogue will be delighted with the high quality of digital possible at signal levels down to 21 - 24 dB C/NR. "

It didn't quite work that way, at least not in America. Most (not all) digital terrestrial is operating at UHF (bands IV, V) and in a market with 7 TV channels broadcasting, that often means 7 different transmitting towers at 7 different locations. Which presents the home digital viewer with a challenge - a directional UHF receiving antenna when pointed "at" one or two of the TV transmitters must be rotated to a new direction to receive the balance of the local stations. Or, the home requires two or three or even four completely separate UHF antennas just to receive the *local* digital services.!

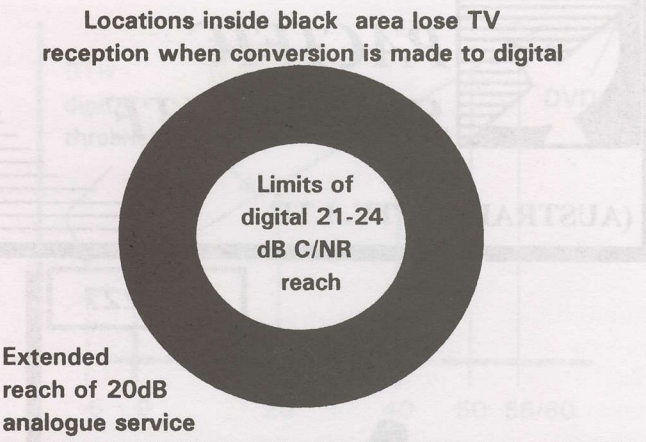
Digital in the USA has floundered badly; after nearly five years of trying, something less than 250,000 homes out of 100 million have made the investment; a quarter of one percent. Terrestrial digital in the UK has fared marginally better. The Brits resolved the multiple-channels, multiple transmitter sites problem by consolidating all area stations on one transmission mast, thereby eliminating many of the reception problems. *But not all.*

The UK analogue UHF band is very full and locating unused channels for DTT multiplexes has been the most complex challenge ever faced by broadcasters. Analogue had their frequencies "first" and digital had to fit in around pre-existing analogue. And because 100% of pre-digital viewers depend upon analogue reception, the last thing that can happen is to create digital to analogue interference.

So in the UK (and in the USA or closer to home in Melbourne, it would turn out) digital transmission powers had to be throttled back (reduced below their design level) so as to not interfere with analogue reception. And this is a catch 22 - the devil gets you - circle.

1) Objective one: Transmit in digital and encourage every home to run out and install digital receiving systems.

2) But, in the interim, cut the power of digital back so as to not interfere with analogue.



3) Digital reception's coverage "circle" gets smaller, and now homes that should be able to get a perfect digital signal receive none (the "algorithm cop" at work).

4) So digital growth stops as word spreads that digital reception is difficult for many homes.

Which brings us back to #1 - homes that should be receiving a clean digital signal do not and the future of digital's transition is now threatened.

Cable & satellite delivery

Television broadcasters have come around to realise they have options in getting past this impasse:

1) Reinvent the home antenna industry, subsidise the development of new home rooftop antennas optimised for digital reception, and one home at a time work through the very real problems digital rooftop reception comes with.

2) Plug their digital transmission directly into the local cable or regional DTH satellite network and let "those guys" worry about the one home at a time delivery problem.

After four or five years of trying "Plan A" the time has come for "Plan B."

Plan B eliminates a host of problems:

1) Digital transmission power levels do not have to be high - only high enough to reach the DTH uplink and/or cable TV receiving sites (alternately, terrestrial fibre or microwave connects the TV "station" directly to the uplink site - ultimately, no need for the [FTA] transmitter!).

2) The "transition" to digital delivery will now depend upon the growth of the cable and/or DTH delivery systems and analogue can continue to operate for that ultimate handful of homes which at the end still do not have access to either DTH or cable (this takes the pressure off of the broadcasters to create a certain amount of digital programming by a government proscribed date, in return for being granted "digital frequencies" which in fact they may not ultimately need anyhow).

3) And the "killer application" that will ultimately make this work: Multicasting.

The large yawn from the American consumer, when offered "1080 lines of high definition TV imaging on a giant screen," has not gone unnoticed. What this lack of consumer interest in HDTV says is very clear: "*We are not that unhappy with our present display.*" The very limited sales of 16:9 (so-called "widescreen") display receivers (monitors in fact since virtually none yet have built-in DTV tuners) has been driven by DVD, not HDTV over the air broadcasts.

There are other "American factors" at work here. With only 14% of American homes still receiving their primary TV from either a rooftop or rabbit-ear antenna, the market size for

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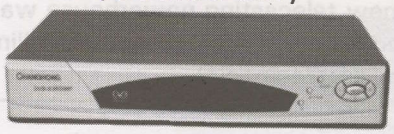

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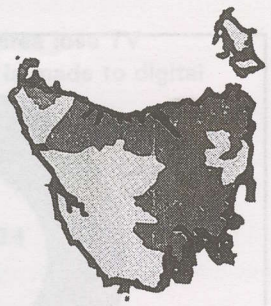

WITH the first announcement that Aurora would provide Central 7 and Imparja's 9 + 10 programming to "any terrestrially underserved" reception area east of Western Australia, a new telecasting powerhouse was planned from - of all places - Alice Springs. Alas, other telecasters interceded with the ABA essentially killing the Imparja expansion plans. (Bumper sticker Imparja issued for Tasmania)

over-the-air HDTV (digital) is much smaller than originally calculated. That 14% largely is explained by American families too poor to afford either DTH satellite or cable, or not enamoured enough with TV to want either. So HDTV is one of those "products" looking for a marketplace. America's HDTV TV is over the air TV, not generally available on cable and not available on satellite. To partake of HDTV, the American family has to supplement or abandon DTH and/or cable; a decision almost none are anxious to make.

The television broadcasters in most world regions have another way of using their new found digital capability; multicasting, or, the transmission of two (or more - up to 8 in the UK) separate programming "channels" per TV channel. In the UK, by reducing the cost of digital set-top boxes to UKP99 (Australian $280), the market has finally awoken to "Freeview" digital (up to 30 channels without paying a monthly fee). This is the first country in the world to have even a measurable take-up of terrestrial digital and the reason why it is working is very obvious - people want more channels and 30 versus 4 or 5 with terrestrial analogue is a powerful incentive to spend UKP99. Importantly, "Freeview digital" is not HDTV; it is plain old everyday 625 line PAL in a digital transmission format. On occasion, it *may be* true 16:9 "widescreen" but in the UK it will never be HDTV because the Brits have elected to not go down the HDTV pathway.

If Australia's Net-Nine is going to make the conversion from analogue to digital work, they are going to have to offer more programming channels; HDTV (alone or combined with "cleaner images") is not going to drive consumer enthusiasm for digital.

But Nine-Net is presently restricted from telecasting most categories of entertainment programming using their multicasting capability; no other country in the world has attached this "condition" that limits what telecasters can do with their digital spectrum space.

But that limitation is only in place when Nine-Net uses their terrestrial transmitters to broadcast multicast programming. If Nine-Net plugs directly from TCN-9 Sydney into the Foxtel/Austar uplink or the Foxtel/Optus cable systems with multicasting that only goes out via satellite and cable, the limitation which was written to prevent this genre of multicasting for terrestrial transmission does not apply.

Which means? Nine-Net can produce 2, 3 or more separate simultaneous programmes for cable and satellite viewers while those viewing on DTT (terrestrial) are limited to the single Nine-Net "entertainment" channel. If the cable/satellite version of Nine-Net multicast does not radiate over public airwaves, well ... no government restrictions need apply!

Meanwhile the affiliates

The initial agreement, announced late in December, assures Nine-Net of distribution through Foxtel (and Optus) cable services as well as (when Optus C1 comes on line) satellite. Nothing new for cable, you say? Not so - with multicasting, Nine-Net will produce several simultaneous channels that cable (and ultimately satellite) will distribute. Nine-Net Entertainment, Nine-Net Sports, Nine-Net News? Coming to a cable or satellite TV set near you - *soon*. Which goes a long ways towards explaining why C7 (the Seven-Net sports channel that discontinued operation six months ago) is no longer with us - especially no longer on satellite. Nine-Net wants no direct competition in any of the three programming genres (entertainment, sports and news) from terrestrial competitor Seven-Net.

The Nine-Net affiliates covering secondary areas (NSW Adelaide, STW Perth, NBN Newcastle, WIN Canberra for example) will have similar options but only if they are willing to pay the costs associated with appearing on satellite. That will involve somehow transmitting their Nine-Net service from their control room to the uplink operated by Foxtel/Austar (Sydney) where it will be multiplexed into the Foxtel/Austar stream as appropriate. Most of the affiliate viewers are located in the Austar, not Foxtel, regions and that suggests cash-starved Austar will not be in a position to help with the funding of this interconnection cost.

What affiliates such as NBN Newcastle bring to the party is debatable. What they stand to lose if they boycott the party is not debatable as any established American telecaster who is not on cable plus satellite will sadly advise. By not becoming a party to the channel mix, NBN will over a few years time simply lose so many viewers that it will ultimately be a valueless operation.

There is proof of this as close as New Zealand. When satellite provider Sky TV began carrying TVNZ's TV One and TV2, only the Auckland area versions of the two channels went out by satellite. In New Zealand, TVNZ breaks the two islands (North and South) into marketing regions and sells commercial time to firms on a region-by-region basis. More than 40% of TVNZ's commercial revenue comes from advertisers who (by their own decision) reach only homes in one geographic segment of the country. But when Auckland region advertisements were initially the *only* regional version to be seen, without respect to where the viewer was located, an advertiser revolt occurred. TVNZ and Sky had to quickly sort out a way using a spare TVNZ controlled Optus B1 transponder segment so that three "satellite regions" now exist: South Island, North Island from North Cape to

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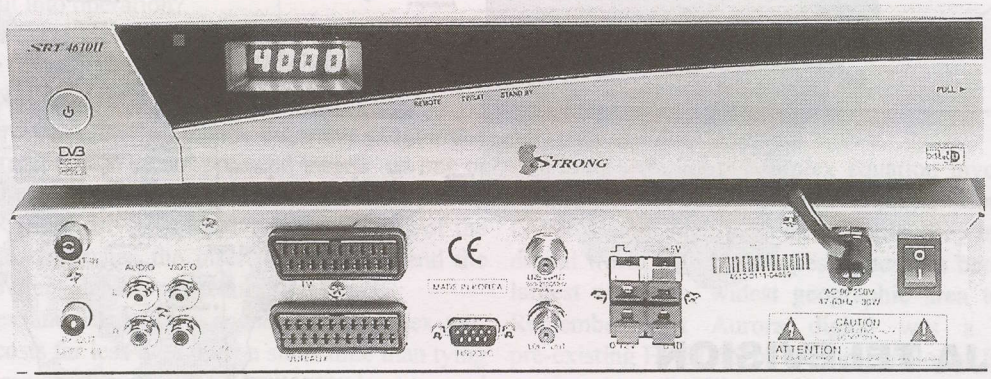

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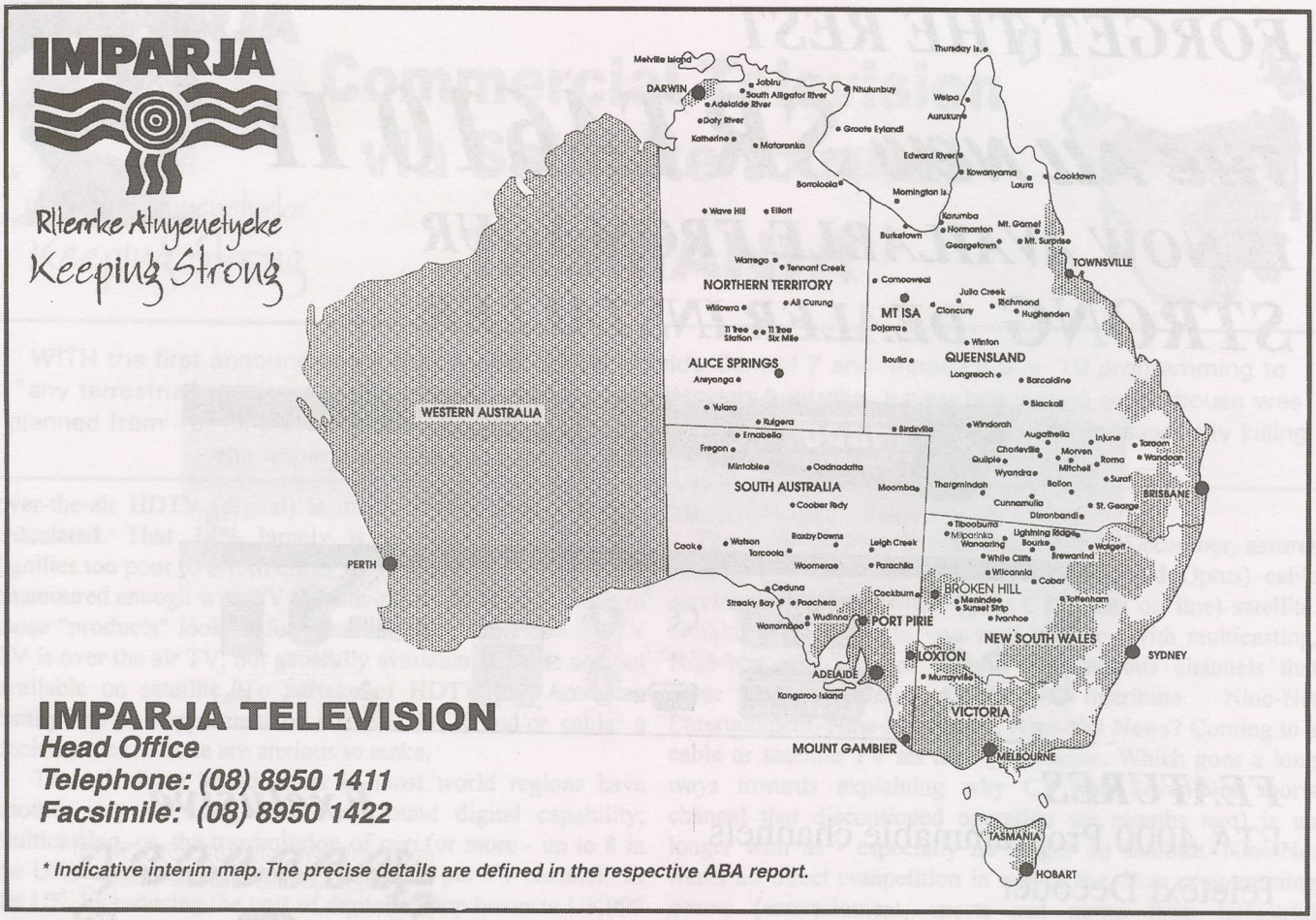


IMPARJA issued "Imparja via Aurora" white area map, claiming if homes were located within any white area shown on map, they could legally and quickly become Imparja viewers. The ABA squashed that one.

Taupo/Rotorua and thirdly North Island for the balance. In this way viewers receive their own "regional" advertisements, just as the terrestrial viewers receive regional advertisements because of the way the terrestrial feeds are configured. (This also allows TV One and TV2 to produce a limited amount of special regional programming for each of the three country-segments as well.)

In a sense, New Zealand's "three regions" are the near-equivalent of "three American markets." Or, the difference between Nine-Net Melbourne, Nine-Net (WIN) Canberra and Nine-Net Sydney. The majority of the day's programming content is identical for all "markets" but some of it differs as well.

In September (2002) the Australian Broadcasting Authority (ABA) issued a report drawing TV station owner's attention to a steady decline in "local programming." The ABA believes that since "aggregation" in 1988, the amount of local programming created by WIN, Prime and others has been reduced to once or twice daily newscasts; other community-of-service programming "has all but disappeared" according to ex-TV broadcaster, now Member of Parliament, Peter Andren from Orange. The ABA put stations on notice that if they are going to continue to have their present licenses renewed, "(they) will now be required to either provide a comprehensive local news or create equivalent local programming such as sport or current affairs." Regional information is what makes "affiliates" work as a viable member of the broadcasting community. Residents in rural NSW are only modestly interested in cattle prices or the weather for Melbourne and Canberra - it is what is happening in Orange and Lithgow which brings them to their TV screens each night over dinner.

The Nine-Net plan to expand to satellite presents serious challenges to the continued economic viability of regional affiliates. For viewers, it could mean an end to any regional coverage of the affairs of their area.

Or, perhaps not.

If 7, 9 and 10 each created four channels of (multicast) programming, we would have 3 times 4 or 12 satellite programme channels. If each of the three networks created 4 channels of programming but "switched in" (as Sky NZ does for TVNZ) local commercials and local (newscasts etc.) programming, then we would have 12 full-time programming channels and during commercial breaks and local programming inserts as many as 24 (12 + 12) programme channels in simultaneous use.

Remember that 12 programme channels is about all that current technology can cram into a single 36 MHz wide transponder. In America, DISH TV has refused to carry a terrestrial TV station in the (American) HDTV format, claiming to do so would consume as much "satellite bandwidth" as 8 standard definition channels.

Now, if we add affiliates in Adelaide, Perth, Canberra, Newcastle and elsewhere to the satellite-available list we have another 24-plus full-time channels and up to 24 part-time (commercial inserts, newscasts) programme channels. Add all of this together and we are up to 72 programme channels which would require 6 of the Foxtel leased 12 or 14 transponders.

There is another approach - one under investigation in the USA. It is called "timed-multiplexing." And it works like this.

DISH Network (a DTH satellite provider) realises that carrying 30/40/50 simultaneous NBC affiliate stations is a very poor use of transponder space when on most occasions *all* of these NBC affiliates are carrying the very same programming content. Why not send the primary NBC feed out *once* and then on demand switch away from the NBC feed to the individual inserts, such that - as in New Zealand - the folks in a specified market only see the inserts intended for their geographic market region?

Does that not still require 30/40/50 "programme channels" to be "standing by" so that when the inserts are due, all can then individually be put into operation?

Not if the home DTH viewer is equipped with a PVR-design of DTH receiver (over 1 million DISH subscribers now have PVR equipped DTH receivers). How's that work?

During the NBC-feed time segments, the other programme channels are not required. Why not pre-send inserts on one or more of these otherwise unused programme channels, record them on the PVR (hard drive personal video recorder) of the DTH receiver and then when the insert takes place send the viewer's screen to their region's pre-recorded inserts?

Sound complex and costly? Yes - and, no. Complex yes, costly? Well, it costs far less over even a short time than tying up 30/40/50 programme channels (3 to 5 transponders) to send the *same* NBC programme material repetitously.

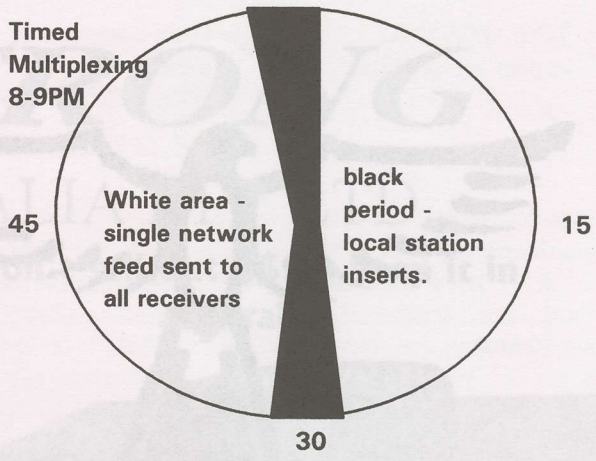
Could that work for Australia's regional affiliates? It could, but it would require major changes in the way affiliates currently conduct their transmission operations. And at the same time, as long as the existing analogue service transmitters continue to operate, perhaps another 5 to 8 years, regional affiliates would be required to operate two parallel systems; one for the satellite viewers and one for the terrestrial viewers.

Here's the reason why it makes economic sense. Affiliate stations can cut way back on their expensive analogue to digital transition expenditures, perhaps even going so far as to <u>not</u> transition to (high power) digital at all; <u>*ever*</u>. The millions of yet-to-invest dollars for this transition will more than fund a parallel terrestrial plus satellite fed system in the interim.

In the United States, several new-to-air digital TV stations are not running parallel to pre-existing analogue channels. Because there was no prior analogue channel - they have come on the air for the first time since digital launched there. How can they survive when only 1/4 of 1% of homes have digital receiving equipment?

The answer is cable plus satellite. These stations have negotiated cable-dial and satellite-multiplexing agreements *before* signing on the air. Between cable and satellite they reach 85% of their potential viewing audience and very probably *not one* of their viewers is receiving them off-air! Why go to the expense and bother of building a 1,000 foot tower and a 5 million watt digital transmitter when a 100 foot "stick" and 1 kilowatt gets them into the cable headend plus the local satellite uplink multiplexing point?

This is the new approach to telecasting in America and the odds are it will catch on world-wide shortly, local regulations permitting. In a phrase, "why go to the trouble and cost of building a powerful transmitter when a very modest transmitter allows you to reach your audience with someone else handling the actual signal delivery into the home?" Or, why must a "broadcaster" be "broad-in-(terrestrial) coverage" to survive if some other entity is willing to 'spread' their signal for them?



<u>The rural outlet's future</u>

Perhaps the most complex equation involves the "interim operation" of stations such as Imparja, Central 7, WIN and GWN. Using Imparja as an example, they entered the Aurora digital world with high hopes of perhaps becoming Australia's largest coverage, widest geographic area television service. Remember that Aurora digital was a replacement for pre-existing HABCSS or the rural analogue B-MAC encrypted service. As an "affiliate" of both Nine-Net and 10-Net, Imparja believed it could go via satellite to reach every Australian home outside of terrestrial 9 and 10 reach. They even produced a map (see illustration, p. 14) which depicted regions in Australia where initially Imparja <u>expected</u> to be able to serve, via satellite. In distant Tasmania, for example, Imparja attended local public fairs and agricultural shows to promote their "commercial television availability via satellite," even producing bumper stickers to promote their Tasmanian service (p. 12). Alas, it was not to be. What Imparja received in response to its creativity was a black eye from the ABA and high level negative feedback from the affiliate managers at 9 and 10.

Will there be a market (a need) for Imparja, Central 7, WIN and GWN <u>after</u> the terrestrial transition to Foxtel and Austar is complete?

Most regional telecasters in Australia operate multiple transmitter sites (translators or relays to cover behind mountain ranges and into valleys not penetrated by their primary transmitter). Even portions of Sydney are served by "translator" stations. Each such relay occupies a VHF (or UHF) channel allocation, must be "protected" from terrestrial co-channel (same channel) and adjacent channel interference and for the ABA (which administers the channel allocation scheme) they are a headache. The addition of terrestrial digital requires a complete new set of "digital channel spaces" for each of these translators. The UK experience is illustrative - there are simply not enough channels to allow this to happen (one analogue, one digital channel for each TV "relay"). Yes, at that uncertain future date when the analogue transmitters are shut down, there might be enough channel room but to get to that point from the present two times one situation is an almost impossible hurdle. That is why the recent turn-on of new digital transmitters in NSW has been such a concern. As in America and in the UK, when a new digital transmitter turns on there are new, serious, interference problems with the pre-existing analogues. Remember - it is the present day analogue transmitters which reach the viewers, <u>not</u> the new (nobody is watching anyhow) digital transmitters.

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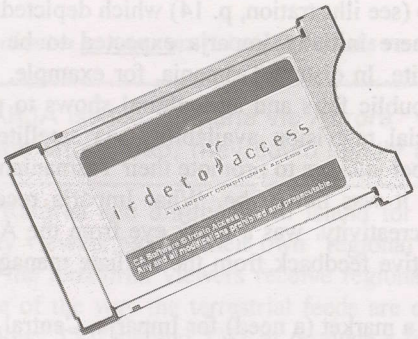

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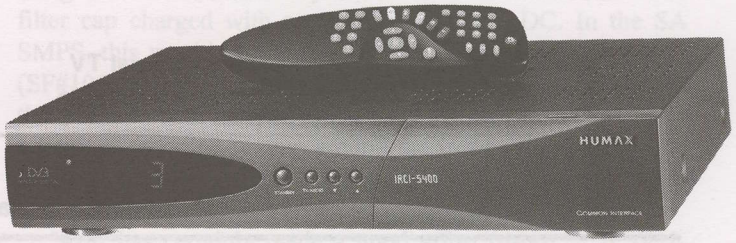

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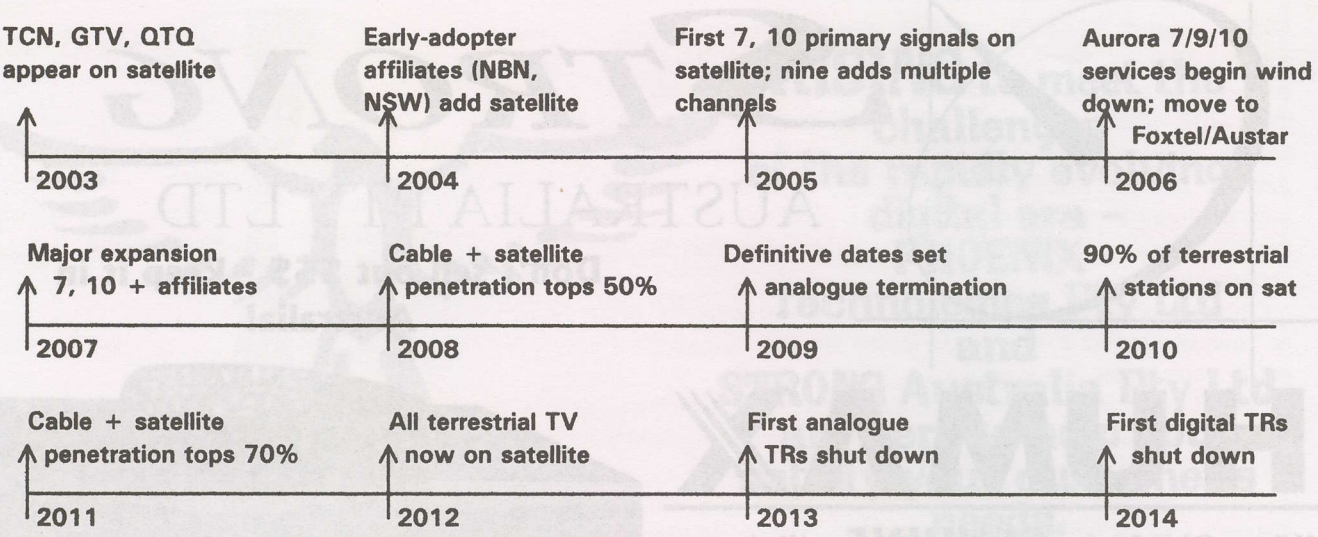


Possible Australian "time-line" to digital

Add to this equation the now accepted fact that the digital "threshold" means there is no such thing as a "digital fringe reception region" (where people can receive an impaired signal which they will watch) and you have an engineering dilemma: To cover the same wide area that analogue now reaches (with sub-40 dB C/NR service) with digital will require 2, 3 or 4 times as many "relays" or translators as are now required for analogue coverage of the same area. Additional digital transmitters to "fill in" the "fringe reception" areas" will either require their own transmission channels, or some very clever on-channel relays. In the best case, they will multiply by two times or more the *cost* of covering the same area analogue now serves with digital; simply because new, additional transmission sites must be created and each will require new towers, new transmitters, new maintenance schedules and expenses.

What this says is that "community self-help" and other groups that have formed to take Imparja (Central 7, GWN and WIN) into small, rural communities are facing very significant capital (dollar) expenditures to make the conversion to digital. None of this will be necessary if through Optus C1's improved coverage individual homes can *directly* receive Imparja (et al) without the help of a local self-help translator relay. In fact, why does Imparja need to exist at all other than as a rural regional affiliate of 9 (and/or 10)? Could 9 (and/or 10) not accomplish the same *direct* coverage of the region Imparja now seeks to serve by creating their own Melbourne based "rural area service?"

Aurora? When Imparja, Central 7, WIN and GWN launched using the Aurora platform, it was the only delivery game "in town." With the dictums of the ABA and the constant meddling of the terrestrial affiliates of 7, 9 and 10, the original business plan for all four services (but Imparja in particular) has been circumcised by the sharp knife of nervous competitors. The only reason these four services exist today via Aurora is due to the failure of the "system" to provide alternatives. The Nine-Net plus Foxtel (Austar) agreement will create a new "option" for these rural viewing families. Will Aurora die? Not immediately, but certainly much sooner than without the Nine/Foxtel agreement. Will Imparja survive as a regional affiliate of 9 (or 9 + 10) within the new Foxtel/Austar bouquet? Most probably for at least a few years.

The coming years

Subject to the successful launch and deployment of Optus C1 (and C2 to follow which by the way is likely to include Ku band coverage beams for such diverse regions as New Caledonia, Fiji and New Zealand), the coming 2 to 5 year period will be one of tremendous change in the Australian television system delivery world. What we now have will shortly become a fading memory, just as the 1980s era C-band Intelsat services from 177 and 180E have faded from view. It is a brave, new world - welcome to the 21st century!

The new technical opportunities? There is no "exact" Australia-situation anyplace else in the world. Australian cable and DTH lag behind the home-penetration numbers of the USA or UK, for example. In the USA, outdoor TV antenna sales are rapidly disappearing into the sunset while in the UK, because of the very recent success of "Freeview," UHF aerials have suddenly come back into demand. And because UK DTT power levels continue to be "down" (to protect existing analogue transmitters), high gain aerials fitted with masthead amps are very common.

New Zealand rooftop aerial sales have, ahead of prediction, dropped by more than 40% in just the 12 months since TVNZ's TV One and TV2 joined the Sky satellite MUX. When rooftop aerial sales plummet, all associated component parts (plastic enclosed VHF/UHF splitters, masthead and indoor amplifiers) also join the history parade.

If we assume that within a year 7, 9 and 10 networks will be commonly available through satellite (as well as cable), the forecast for continued sales growth of terrestrial outdoor receiving antennas (and associated parts) is not good. The public is not passionately attached to a set of aluminium rods vibrating in the wind attached to the roof. Having all channels with equal clarity coming through a 60cm dish will increasingly become the common sense answer to suitable television reception.

For the seller - installer of home distribution systems, it is primarily a hardware change; from VHF-UHF parts to L-band parts, and a small learning curve related to these new parts and less forgiving requirements. How long might this transition from terrestrial to satellite take? Based upon experience in other countries already down this road overseas, five years seems like a reasonable time frame. Now, today, however is not too soon to plan adjustments to your existing business plan.

TECHNICAL TOPIX

SA power supplies - revisited

"Reference SF#101, p. 19. This is the category of SMPS that most repair shops like; they can make money from it every couple of years when the same capacitors require replacement! There is a better way of repairing it, however; one that increases the odds the receiver will not go back into the shop as frequently.

"The .22uF 100V capacitor is present in the circuit simply to kick-start the (SMPS) oscillator. That is why the receiver continues to run, as long as power is not shut off, even when this capacitor has dried out. When the IRD is powered down and allowed to cool for a couple of hours, that is when you will find it won't restart. This same problem was also typical of many of the early SMPS designs used in TV sets.

"Reference SF's suggestion that 'most any similar value capacitor' can be used, I would normally not replace this capacitor with another electrolytic. A polyester capacitor (i.e.: greencap) is a much better replacement. For reliability and safety, the best replacement currently available is probably a Metallised Polyester (i.e.: MMK type , e.g.: RS Components as www.rswww.com.au - catalogue number 179-4403).

"Note that any polyester capacitor of this value (.22uF 100V) will be physically larger that the electrolytic it is replacing so care must be taken in locating it so as to not present a safety hazard (it should be mounted away from the metal case and away from the metal board holding bracket). This is why I recommend the MKK type as it is encapsulated in a glass fibre reinforced flame-retardant plastic case sealed with epoxy resin. As it is in the live section of the SMPS, I believe it is a better choice than a cheap greencap, which I have seen with their green coating blown off in SMPSs that have taken power surges from lightning strikes.

"And the 47uF 25V electrolytic. It is used to provide a filtered DC supply to power the electronics in the oscillator and control circuit. In that application, it would be preferable to replace with a 47uF 35V Tantalum capacitor. I recommend the slightly higher voltage rating because Tantalums are less tolerant to voltage spikes than electrolytic capacitors. Also note: As with the other capacitor the Tantalum is also physically larger than the electrolytic so similar precautions as with the .22uF are required when selecting a suitable location.

"If Laurie Mathews is correct about all the electrolytics in the SMPS needing replacement, it is quite probably because the wrong values and/or type of electrolytic capacitors were used by the manufacturer. There is a huge difference between 85C general purpose capacitors and long life low impedance 105C capacitors. And there is also the possibility that SA made the same mistake as the UEC642 SMPS and used too small capacity values, resulting in a shorter capacitor life due to increased internally generated heat.

"Certainly a fan cooling the SMPS is a good idea. From the large heatsink (depicted in the photos) located near the middle of the board, I am guessing that there may be linear regulator ICs (or one large IC containing several regulators) on the secondary side of the SMPS. That would help explain the unusual amount of heat reported with the SA receiver. Another possibility (I, like everyone else, do not have a schematic of the SA supply) - if the chopper is a BJT transistor rather than a FET, that would also explain why heat on two closely mounted capacitors would cause failures here.

"Finally something nasty to be avoided. Some poorly designed SMPSs, when they fail to start, will have their main filter cap charged with approximately 340V DC. In the SA SMPS, this would be the 400V cap with the label stuck to it (SF#101, p. 19). Hopefully the SA designer planned ahead for this problem and includes a discharge resistor in the circuit or otherwise someone poking around the power supply could be in for a nasty shock!" (IF, Queensland)

Laplink cable - revisited

"Rolf has certainly made a good effort (d-box 2, p. 6-18, SF#101) at untangling what is obviously a potentially very confusing subject. However:

"I believe Rolf's identification on the 'Laplink Cable' is incorrect. Laplink is a registered trademark, it was originally software developed ten or more years ago to allow Laptops to talk directly with normal PCs. The early software allowed the use of a serial null-modem cable, but later a specific cable was developed to connect from the printer (parallel) port of the PC to the laptop's printer port. This crossover parallel cable is correctly called a 'parallel data transfer cable', or, 'Laplink' cable. That lead is 25 pin male to 25 pin male and it is configured quite different to a serial null-modem cable." (Charles G, NSW)

And Rolf Deubel's response:

The correct name is 'Nullmodem Cable'! You will find it with this keyword if you search the web. Laplink cable as an expression which people got used to after Laplink Inc. launched their product with exactly that cable for serial transfer and subsequently also a parallel "Laplink Cable" to make use of the eight times faster Printer Ports. However, it is in fact NOT necessarily a 25-pin to 25-pin cable, which would "only" make an extension cable, it could also be a 9-pin to 9-pin cable but it MUST be crossed over to make it a 'Laplink Cable' or 'Nullmodem Cable'. Hope this clears it a bit!

d-box2 print out

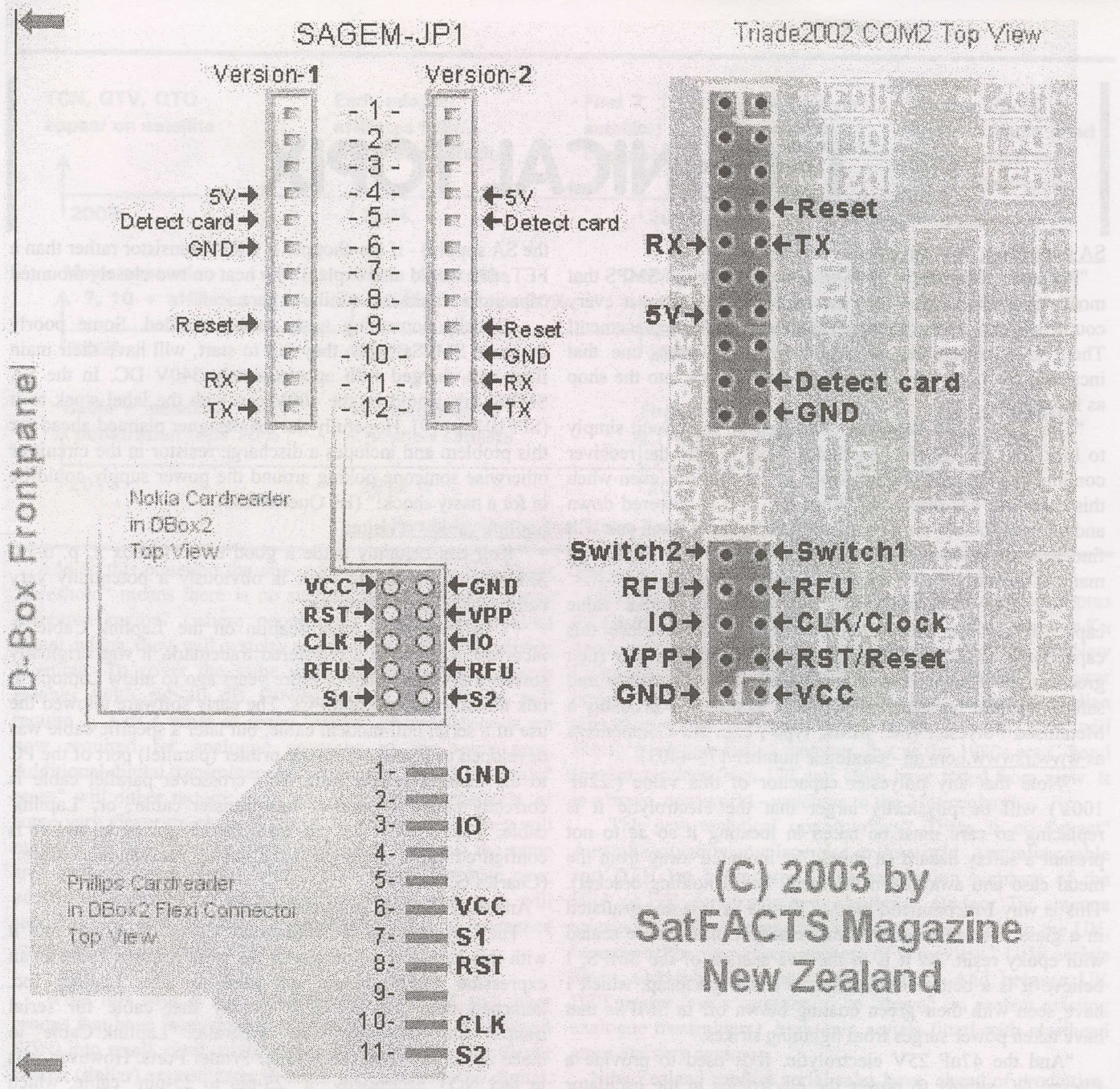
"The printout at the top of p. 18 is obviously not from a network load as the symbol rate listed for the 12.313 transponder (and also, B3 is at 156E currently)." (AI, NSW)

Answer: Obviously. Kind of hard to access B3 from South Africa (!) but the layout was, we thought, instructive as a guide for others to follow, inserting the correct numbers as applies to a real (B3) download.

USB port on eMTech em300?

"With respect to SF#101, p. 31 and Robert A's report on his difficulty getting his PC to talk to the IRD via a USB cable. I offer the following for discussion only, not with any confidence that I have anything definitive to contribute!

"I suggest the system might work if a 'USB Networking Neighbourhood Converter' were fitted to the system. I suggest this (not inexpensive) gadget is required for the same reason as the Cat-5 crossover network cable and the serial null-modem cable are needed. A PC and an IRD are both what is termed DTE (Data Terminal Equipment). So effectively it is like



Reference d-box2 (SF#101): Cardreader MultiCAM schematics for connection

trying to get two PCs to talk to one another. This cannot be done by connecting A USB cable between the two. The USB Network Neighbourhood Converter simply fits in the USB line between the PC and IRD. They are touted to be 'plug and play' although delightfully I recall the first (and televised) public demonstration that Microsoft gave of USB PnP and it did not work; Bill Gates, quick to recover from such potential disasters, blamed it on 'equipment damaged while it was being shipped' (to Australia)!

"In the same vein, Robert A may also be coming up against a type of Macrovision protection system. This is now used on some DVDs, notably Disney product, to prevent pirate (DVD or VHS) copies being made by simple 'dubbing'. If you read the fine print in advertisements for HDD home recorders, you will see they carry a disclaimer advising the system will not work with Macrovision protected 'masters'. " (Arnold L., NSW)

eM-300PVR in Solomon Islands

"We have installed our first dish after carefully reading SatFACTS for some three years now. We are located in the Marovo wilderness (Solomon Islands). From SatFACTS we have ordered in the Satlook Digital Spectrum Analyser and as a receiver the eM300PVR from Kristal Electronics. The only satellite we seem able to locate is just above us and 14 degrees east. We tried to get the receiver to tell us which satellite this is and what it says is as follows: (1) ABC Asia Pacific from Hotbird (unlikely), MTV China and MTV Asia from Astra 2 (equally unlikely), several CNBCs from Nilesat (which went encrypted January 10) and many encrypted signals. The software in the satellite may be faulty - can you define which satellite this is? PAS-8???

"There are no other satellites on the SpecAn strong enough for reception - perhaps our dish is too small, or, we have not set it up correctly? Perhaps we simply have the wrong receiver for our location - would a d-box or Humax 5400 be a better choice. I only receive mail here every other month, or in the best of times once a month!" (H.J. Beldi)

Answer: Satellite "names" (i.e. Nilesat) are embedded into the receiver at the factory along with the known transponders and transponder parameters for each at the time of manufacture. You have apparently been successful in changing the transponder parameters or you would not be receiving

ABC, MTV from PAS-8 C-band - even if the satellite's name remains as set at the factory. If your dish is 3m or larger, you should have very strong signals from a variety of satellites including AsiaSat 2 and 3, Palapa C2M as a minimum at your location.

It appears your dish is not tracking (properly following the geostationary/Clark orbit belt) as you move it from position to position. If your mount is a polar mount, try this: Go east from PAS-8 and see if there is any indication of signal from PAS-2 at 169E on the SpecAn. Now adjust the elevation setting on the dish for best signal and enter the California bouquet numbers (3901Hz, Sr 30.800, 3/4) into a spare C-band position on the receiver. If this produces FTA signals that work, the answer rests with the dish installation and making it "track" properly the orbit belt. Then go to www.google.com and search for "polar mount tracking" assistance.

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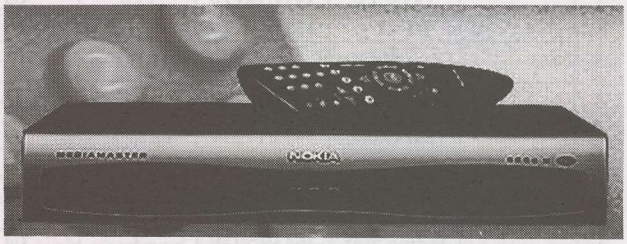

NOKIA 9660 2CI	$369-00
ASTON SECA CAM	$190-00
IRDETO 2.06 CAM	$350-00
IRDETO 2.09 CAM	$170-00
LNBF Ku-band	$18-00
OFFSET DISH 90cm (rolled edge).	$35-00
CABLE RG-6U 300m	$59-00

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Pieces and parts which relate to prior articles detailing conversions of various d-box/Humax receivers

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✓ **d-box2** + LINUX + GBox Multicrypt Plugin + COM2 Board + EMU Plugin + preset for Australia (for legal and ethical reasons, no keys included!); SF#101. US$999 + US$70 air shipping (A$1817 at this time)
✓ **Nokia 9500-S** (or equivalent) with Beta8 Antares patch installed, Australian settings, FatCAM (ready to modify; SF#97). US$399 + US$70 air shipping (A$797 at this time).
✓ **Nokia 9500-S** with all 9500-S (above) + AMON4.3 CAM patch (SF#95/96/97). US$499 + US$70 air shipping (A$967 at this time).
✓ **Z-Board to patch 54xxZ (SF#98/99); US$195**

✓ **COM2 Multicrypt board** (specify which d-box2 model [brand] you will use with; i.e. Sagem, Nokia, Philips); SF#101. US$60 inclusive of shipping (A$102 at this time).
✓ **Flash RAM chip** (d-box1) 1MB 29F800 (SF#95); US$29(*)
✓ **2MB RAM chip** (d-box1) to upgrade RAM to 3MB (SF#96); US$25 (*)
✓ **AC3 Dolby** Digital Kit for Nokia (SF#100); US$39 (*)
✓ **AMON4.1/4.3 kit** for CAM (SF#97); US$39 (*)
✓ **MOLEX JP250 socket** (Humax 54xxZ) (SF#98/99); US$25 (*).
✓ **Needle Set** for Humax 54xxZ needle board (SF#99); US$40 (*)
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SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 Febuary 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)
	Indiavision	3685/1465H	1	3/4	6(.830)	Tests Jan 2003; not permanent
	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
NSS6/95E	Tests	12.600H	?	5/6	30(.000)	Test signals noted January 2003
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; multiple audio services
	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
	QinghaiTV	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	7/8	28(.121)	FTA; Sr, FEC change 01/03
	GlobalMUX	3760/1390H	up to 11 TV?	7/8	28(.121)	Test cards (11); new Sr, FEC -1/03
	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; occ. drops power 10dB
	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
	7 digital feeds	12.397H	1TV	3/4	7(.200)	Occ digital feeds, FTA
	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; TARBS input links
	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 nominally CA

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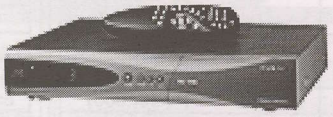

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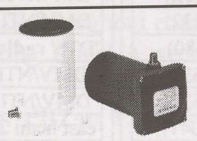

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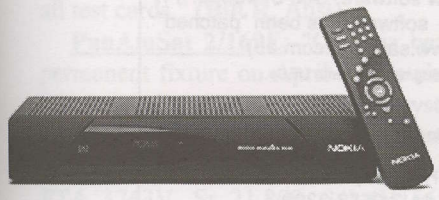

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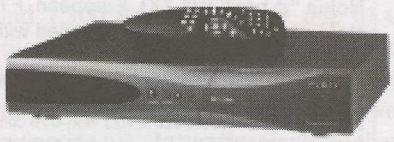

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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(PA8/169E)	Feeds	4040/1010H	1	3/4	10(.850)	PowVu occ FTA feeds
	7thDayAdv.	3872/1278H	1	3/4	6(.620)	Sat, Sun 0030, 0900+UTC?)
	Feeds	3868/1182H	1	2/3	6(.620)	FTA (occ sport); 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!)

WITH THE OBSERVERS

AT PRESS DEADLINE

Globe/Mediasat 12.336Vt: (1) SET, (2) Zee, (3) Zee Cinema, (4) Star Plus/News India, (5) TRT, (6) Trinity, (7) Da Al, (8) MedTV, (9) HRT 1/2/3, (10) TV Korea, (11) Adhoc feeds; Radio (1) TRT FM, (2) VOT, (3) ABS, (4)Tamil, (5) SNG 1FB. TV 1-4, 9 **Irdeto V2CA.** (IF Qld) Sked MedTV is www.medtv.com.au

AsiaSat 4/122E: Launch scheduled last half of March from Cape Kennedy; first C-band customer announced: REACH, a combined voice, IPLC and data delivery firm, 1 transponder.

Intelsat 701/180E: Fiji Telecom has been granted government approval to lease 1/2 of Ku band transponder here to establish rural telephone/data links throughout country using footprint almost identical to existing Canal + service. Stay tuned - there may be more coming.

JcSat2/154W: "Carrier without PID or PAT, 4050V, Sr 26.500, 7/8; strong!" (**Bill R.**, Aust).

NSS6/95E: "New Ku-only bird here found testing with strong signal into WA; 12.600Hz, Sr 30.000, 5/6." (**Bell**, WA).

Optus B1/160E: "Astralinks test card, SNG Tamworth 12.490V, Sr 6.110, 3/4." (**Bill R**, Aust). "12.391, Sr20.500, 1/2 with no PID or PAT; 12.418, Sr20.500, 1/32 test card 'Two Carriers Test'." (**Bill R**, Aust - ed's note: Some speculation this might have something to do with Impact TV NZ proposed service). ("See here with test cards on both frequencies." (**Zapara**, WA) "Occ 7-Net feeds continue 12.397H, Sr 7.200, 3/4." (**CG**, NSW)

Optus B3/160E: "HRT within Mediasat/Globecast 12.336V appears to have switched to a CA format; subscription only with Australian contact numbers given as 1300 131012 or (61) (0)2 9331 4510" (**David**, NSW) "KBS in same 12.336 MUX appears to have added to feed from service identifying as 'TV Korea' (Sr 30.000, 2/3). " (**IF**, Qld) "Access 1 (Internet) service has shut down on 12.336V." (**Bill R.**, Aust)

Palapa C2M/113E: "Indo Mux 3880H has changed Sr to 28.121, FEC 7/8 but content remains unchanged." (**DM**, NSW) "EDTV Europe, Guangxi TV are FTA testing 4050H, Sr 13.330, 3/4." (**Clarence**, NT) "Globalvision 11 channel MUX noted 3760Hz, with new parameters - Sr 28.121, 7/8 - all test cards." (**Bill R**, Aust)

PanAmSat 2/169E: "Oceania beam scheduled to become permanent fixture on April 1, allowing creation of VSAT and other small terminal antenna systems for one-way data downloading or two-way communication; footprint is 36 dBw at centre, 2.4m dishes." (**PiP**, New Caledonia) "BBC World FTA 3743V, Sr 21.800, 3/4 (V1560, A1520); for 2 days, Discovery Ch Asia also FTA, now CA." (**Bill R**, Aust) "TV Globo Internacional (Brazil) 4087V, Sr 21.000. 3/4testing FTA within TARBS feed mux - probably not for long." (**Tony**, NS) "Unidentified 4:2:2 feed 4031H, Sr 12.300, 3/4." (**Bill R.**, Aust)

PanAmSat 8/166.5E: "Major changes in Discovery channel MUX 3980Hz; Taiwan feeds gone, Disc Aust now V2260/A2220 (Pv; Sr 27.690, 3/4). Disc HK now on 3769V (Sr 13.240, 3/4). "CNBC was back temporarily FTA within TVB Mux (12.686, Sr 28.126, 3/4)." (**Kyle**, NSW) 3860H mux Taiwan includes Hua Zhang TV, Scholar Business Network, Z Channel , PTS (Sr 28.000, 5/6)." (**George**, PNG)

Thaicom 3/78E: "Indiavision test promo noticed mid-January 3685H, Sr6.830, 3/4 V1160, A1120 (PV)." (**Bill R**, Aust)

Soapbox: "SF#101 With the observers: DM reported two different Hubei China programs on As2. The station on 3713V (4.420, 3/4) is actually Winghai Province located in the remote west of China. The signal is labelled as Hubei but I think this is only the uplink point - it appears Qinghai does not have an earth station at their studios. The radio and television broadcasts are very noisy with lots of cross channel audio and other noises behind the programs from Qinghai. I am assuming this is being introduced during the terrestrial link between Qinghai and Hubei. The link between Xining (Qinghai) and Wuhan (Hubei) is around 1,300 Km. Qinghai is one of the most interesting of the Chinese channels. During the NZ/Australia day parts it runs a very long infotainment shopping type of program in standard Chinese that is not very representative of the Province at all. But in the (local to them) time evenings, the channel truly starts their local programming in Tibetan (and other variants of Chinese) which is exceptionally unique viewing." (**Mark F**, Aust). "Australia's government has rejected a proposal that would have mandated all terrestrial DTT set-tops be capable of also functioning with satellite services (i.e. Foxtel, Austar), and the reverse - that satellite set-tops be designed so as to function also with DTT. Had the plan gone through, terrestrial digital would have been given a significant shot-in-the-pocketbook by being freed from

Calendar: Regional Launches Scheduled

AsiaSat 4: 28 C-band, 20 Ku including Australia spot-beam capability, to 122E "second half" March from Cape Canaveral. Assuming successful launch, first test signals approximately 10-14 days following launch.

InSat 2E: C-band only to 83E late March/early April.

Optus C1: Ku (+military 7 GHz) now unlikely before May-June period. Bird will replace B3 at 156E when successfully on station resulting in mammoth "moving day" exercise none of us will soon forget! (SF#99).

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. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for March 15th issue: March 3 by mail or 5PM NZST March 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

Pornographic views via satellite not popular in Pacific?

The following appeared recently throughout the South Pacific in various newspapers.

" Satellite television has brought the world to the remote islands of the Pacific - but is it a blessing or a curse? Tahiti Nui Satellite (TNS) TV, a multi-channel service funded by the territorial government in French Polynesia, was launched two years ago to provide a variety of programs to the outer islands and now boasts 10,000 customers. One channel, however, is proving very problematic, the porn channel. The pornography channel is apparently very popular with viewers but has just as many detractors. At first the satellite service was welcomed as broadening islanders' lives. Tea Hirshon, of the Opposition party, Tavini, said: 'When the company was created, the goal was to open all of French Polynesia to the outside world through different programs, which is fun.' Ms Hirshon is part of a women's group in the party that recently raised concerns about the violence and pornography screened on the satellite server. Alex Du Prel, the editor of the island's monthly news magazine, Tahiti Pacifique Magazine, said the satellite pay-TV service, which can be received across the outer islands, was of particular concern.

"'On one of the islands, Ravaivai, the mayor was also the pastor on the island,' he said. 'Since that TV came out, he shuts down the island generator at midnight and switches it on at six o'clock in the morning. In that way, he ensures nobody is going to watch.' While the Government can put limits on free-to-air TV, it is difficult to control the use of satellite TV. Mr Du Prel said: 'They did not put that channel on for the Cook Islands, but any guy in the Cook Islands can buy a subscription and get a card because the satellite doesn't know where he is.' Cook Islands Television takes only a few of the more than 20 channels provided by TNS, none with pornography.

The Cook Islands' former telecommunications minister, Norman George, said: 'Some of the programs are truly alien to our Polynesian way of life - too violent and too sexually oriented. We've gone to a lot of trouble to make sure that there is no access to pornographic material.'"

HUMAX files a legal action against Viaccess for damage to its reputation and other damages

Humax has announced that it filed a legal action in French courts against Viaccess for damage to its reputation and other damages arising out of Viaccess's public repudiation of the license agreement between the companies.

In July 2002, Viaccess sent out a notice to a large number of operators and distributors involved in the digital broadcasting industry insinuating that Humax was promoting illegal activities and stating that Viaccess had terminated the license agreement between the parties due to breaches by Humax. Humax denies any wrongdoing or breach of the license agreement, and rejects Viaccess's unilateral notice of termination.

Humax's President & CEO, Mr Byun, said "We were stunned when they distributed their notice to the industry. Even before Viaccess's public statement, we had been working on anti-piracy measures on our own and with CA companies, including Viaccess."

"We have held a series of meetings with Viaccess since July 2002 to try to assure them regarding the security of our systems and we have been implementing significant anti-piracy measures, at our cost. During that time, we agreed not to issue any specific public statements, except as mutually agreed. In spite of that, Viaccess continued to make damaging public statements and has failed to demonstrate the good faith necessary to restore a constructive relationship between our companies. That regrettably left us with no choice other than legal action to protect our rights and our reputation. But we are not closing the door to resolve the situation between two companies."

SCM Microsystems (prominent manufacturer of CAMs) Pleads for "piracy compassion"

"Increasing numbers of Common Interface Modules have been offered and advertised in Germany on the pretext of other applications such as e-mail encryption or access control for notebooks. However, their primary purpose is illegal access to pay-TV content.

Reacting to the immense economic loss by such product offerings, the European legislator passed a European Directive regarding the protection of Common Access Services which has been transformed into national law by member states. The enormous damage these (CAMs) cause to providers of conditional access services is obvious. At the end of the day, individual users will also be negatively affected as they will be prevented from benefiting from cost optimisations which would result from an increasing number of subscribers. We are absolutely convinced that only legal applications have long term future prospects. If one thinks this through to the end, it is obvious that suppliers of piracy modules and their dealers will at the end be hurting themselves as they are destroying the viability of Conditional Access Services by hindering and preventing the development of one of the most promising markets.

It is in the interest of reputable and serious market players to stop this. We consider taking all legal actions available against the manufacturing and distribution of illegal piracy modules one of our most important tasks. We very much hope that you, as a reputable and respectable dealer, will support all companies who are promoting this technology and these services for the benefit of the end user."

subsidising set-tops for their unique service. Now what is likely to happen is a renewed effort to place terrestrial digital service onto satellite, as SF explains in this issue (p. 7)." "Piracy is being made a scape goat for failures by management of Greek pay-TV service NOVA to deal with the realities of their marketplace. Greek's financial newspaper reports NOVA will shut down 'within 3 months' because, it alleges, 'pirated cards for Irdeto2 are on sale in Greece and throughout Europe'. The centre of this alleged piracy operation is said to be Cyprus where local law turns a blind eye to piracy firms headquartered here. The pay-TV service claims the cards originate in Russia. I found this intriguing because nothing in my day to day contact with the grey market indicates there is such a conspiracy from Russia to undermine NOVA. When I was held 'hostage' in Thailand, I was pointedly told that local pay provider UBC was using my detention as 'proof' of losses when they filed a 30 million baht claim with their insurance company which had through Mindport provided coverage against loss of revenue from piracy. What this tells me is NOVA is trying the same scam - their business is in shambles because of poor management, not piracy. And they plan to shut it down but in this process they will 'have a go' at their insurance carrier attempting to 'blame piracy' for their miserable financial condition. It is people like this who give 'piracy' a bad name!!!" (**RD**, RSA) "How about asking installer-readers to share some of their 'lighter moments' with us through SF? For example, I was installing a Foxtel system in the home of an apparent bachelor who directed me to his bedroom since, as he explained, '*there is where I spend most of my time*'. On the bed, a full sized, inflatable woman of unrealistic proportions; naked of course. I said nothing and he left me to do my install job. When leaving I offered, '*met your girlfriend*'. His response, '*she's OK but she doesn't say much*'." (**JV**, NSW) "Correspondence from Victor Kalachev, Marketing Department, Russian Express series birds, advises, '*The satellite capacity from 96 and 140E will be available for commercial use by the end of 2004.*' This strongly suggests plans to create new Russian birds at these two locations." (**DL**, NSW) "Thomson DTT (terrestrial) set-top boxes are now as low as A$280 (Retravision, Penrith)." (**AI**, NSW - ed's note: Matchmaster advertising UEC 22MM-STB03 at A$380 + GST.) "Nokia d-box2 with COM2 fitted, brand new condition, loaded with all B3 and I701 channels; A$1400 (jsat1@westnet.com.au)." "Against heavy odds my 1.8m has found LM1 in NSW at 3 degrees measured elevation. Malagasy TV - IDing as MTV - analogue on 3980V, sound carrier 5.58 and radio sub at 7.80. Typically P3, occasionally to P4 on non-threshold extension receiver." (**D. Mitchell**).

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PacStarST7.5	2.3m heavy duty polar mesh	$220
Joson Ku dish	0.75m w bracket, LNB	$110
	Receivers	
Dion	FTA digital + analogue	$320
D-Box	Irdeto Emb/Aur+LBC+Jade	$340
Dion513	digital w/DiSEqC	$250
COSHIP	Digital FTA	$190
	LNB	
Zinwell D21A	ZCF/ 15K C-band	$40
PBI Turbo	C-band	$25
PBI 1040	Ku (10.6M)	$30
PBI	C + Ku LNBf	$130
Zinwell -J21N	ZKF/Universal prime/offset	$30
Zinwell-H21N	ZKF/Ku (11.3M prime+off.)	$30
	Actuators	
Super Power	Jack - 18" actuator	$60
Super Power	Jack - 24" actuator	$65
	Positioners	
Super Power	EZ2000 32 memory	$60
Motec MP880	High Qual 60 memory	$80
Prostar V-Box	New generation/1.2 DiSEqC	$80
	Other	
Cable	4 wire actuator/100m roll	$50
Switch	22 kHz tone switch	$15
Bracket	wall bracket for 65gal pole	$5-$10
AV Sender		$150
Spectrum Analyser	analogue + digital Spectrum Analyser - **NEW product!**	$1,300

AT Sign-off

Some interesting mail

Service on infield digital set-top boxes remains a challenge for those who must somehow cope with decoders that stop working . We share some recent letters on this subject for your study and believe it or not, we are offering nothing in response save the obvious, "now it is time for you to have a say."

ADB Decoders. "I commend your most vitriolic attack on the ADB Decoder rot that is rampant in this country. These things were offered by Hills as 'their' decoder. 'All is the same as UEC and 3/4 the price.' We got some. The first flash of lightning and they were all back here for repairs. Contacted Hills. 'Yes, send them to us and we'll fix them.' Contacted a few days later. 'Oh - they have all gone to Sydney for repair by CASES.' 1 week, 2 weeks, 3 weeks, how much longer will they be? 'Oh shouldn't be much longer now, 1-2 weeks.' What's wrong with them? 'Er, we don't know yet.' Did you say YET? 'Yes.'

"CASES have decided that all ADBs in trouble will be sent to them in Sydney no matter where they come from in Australia. They will not give a second's thought to setting up a repair centre on this side of the nation. 'Oh they only take a few days' is sheer crap especially when you add time, in weeks, and freight $s for to and from eastern Australia.

" Today we got another one back from CASES. Drove 80 ks out the bush to a pub in 42 degrees heat. Big cheer as I come in the pub with box in hand and sat meter. Fired up, didn't work. Many loud roars coming from two bars; 'what the bloody hell are you doing?'

" Corrected all the parameters, now it will go. Didn't. Signal strength, 98% coarse tune, no fine tune. It's bugged. Leave the pub at 11 o'clock amidst boos and roars in a totally frustrated and mentally exhausted state. 'Have a drink before you go' says the publican, no thanks. All I earned is the boos and the abuse and it's justified.

Today rang CASES. 'Oh, all the managers are out and the technician is Chinese and you can't talk to him. Can you speak Mandarin?'.....No, no only English! 2 hours later, rang CASES 'Oh it was ok when it left here!' Bullsh.....

" I rang Ed ? from OPTUS after one of these attacks. No reply.

"Final Message. Don't touch ADB decoders - they are cheap to the fullest meaning of the word!.

"So what has the experience been of others reading SatFACTS? Keep up the good work!"

(Murray Joyce, Goldfields Television Services E-m golftv@bigpond.com).

Twin SMPS supplies? "The reason for two SMPSs is not always for lower power consumption (SF#101, p. 29). Unlike linear supplies, many SMPS designs behave badly when lightly loaded. Some lose regulation, some hiccup (switching on and off rapidly) while others just refuse to run once the load drops below a certain level. Most SMPSs when they are light loaded become very inefficient consuming disgusting amounts of power, just so the user has the convenience of being able to restart the appliance by the remote control.

"When there are two SMPSs, the smaller is typically present to power a small segment of the unit - such as the remote control plus a circuit to direct the main SMPS to restart. This smaller SMPS stays powered as long as the IRD is plugged into the mains. One danger here - small, sealed-to-themselves SMPS devices retain heat within their cover and this creates component heat problems. If the supply never turns off, the heat build up and retention can be considerable (see SatFACTS #101, p. 19 and the report on SA power supplies). Pricing on this small sealed version SMPS module can be as high as (A)$50; certainly an expensive 'fix' when perhaps at most there is a blown ($1) electrolytic inside the sealed case.

"An alternate approach when there are two separate supplies is found in the Hyundai HSS-100C. They use individual components mounted on the same circuit board for both the main and secondary SMPS and thus this PS can be serviced down to the individual component level.

"The Dreambox mentioned in SF#101, p. 29 and its twin supplies present another interesting question. If the box is to be used with a service that has frequent master-key changes, why does it want a low power standby mode? They must be powering down most of the IRD when the 'standby' posture is entered.

"As an example, if the Dreambox were used with a genuine Austar card and the IRD was placed in standby overnight, the next day when fully repowered (again) it could take up to 15 minutes - perhaps longer - to recollect the (new) master-key. Back when Optus was changing master-keys on Aurora, it did sometimes take 6 hours to collect the (new) master-key. Hopefully, the Dreambox has a menu option to disable the low-power consumption mode. UEC when they go to standby only power down the front panel channel display and mute the video and audio; otherwise, the receiver continues to function. Of course by doing this half-step, the IRD power consumption remains almost static whether 'on' or 'standby' and the heat generated remains essentially the same in both modes."

(IF, Queensland)

Channel 31 Perth

"Commencing January 30 a trial for at least 9 months will commence whereby Westlink will give Access 31 satellite time starting at 5.30PM (WST) to close of transmission, Friday Nights 5.30PM right through to close of transmissions on Sunday nights. This will be available to all dish owners Australia wide who receive Westlink on the Aurora service as channel 32.

"Why? Well, the City of Albany in WA has received an apparatus license to retransmit the community service on redundant council owned equipment once used for SBS there (SBS having installed their own transmitter for Albany). Other Western Australia cities seeking to be a part of this trial in the near future include Bunbury, Kalgoorlie and Port Hedland. Interested dish owners can check out future programming on www.accesstvwa.com. Westlink will continue to broadcast education, training and health information programs largely FTA to private dish owners and information on this programming (restricted or FTA) is available from www.dlgrd.wa.gov.au/westlink."

(Jon Underwood, Manager Westlink)

Note: SatFACTS observer AI in NSW reported the trial test in #101, p. 28 and now we have the correct details.

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Hard Core (Serious) "How to do it" References

☐ Tech Bulletin (TB) **9402**: MATV (master antenna terrestrial) systems - wiring up a home, motel, hotel, camp site from one set of antennas - $15 all regions

☐ TB **9404**: Home Satellite Dish Systems. "Newbie" trying to work out what all those terms means and how a home system goes together? Perfect. $15 all regions

☐ TB**9405**: Satellite to Room Systems. Combining MATV (9402) with satellite (9404) to distribute satellite TV reception to multiple outlets - 2 to 1000+! $15 all regions.

☐ TB**9301**: Terrestrial Antenna Systems to eliminate co-channel interference, stack for additional gain. $15 all regions.

☐ TB**9302**: (Terrestrial) Weak Signal Reception Techniques; off-air TV reception to 300km+. Seriously detailed. $15 all regions.

☐ TB**9303**: UHF - Big Antennas for 300km reception over ground! Seriously detailed. $15 all regions.

☐ TB**9304**: Identifying and eliminating noise interference from fence lines, signs, electrical appliances. How to cleanup marginal TV reception. $15 all areas.

☐ TB**9305**: Cable TV - the basics. How a cable system works, how you can build one! $15 all regions.

☐ **Nelson Parabolic Manual**. The "bible" of building your own 13 foot dish from scratch. Serious stuff for dedicated builders. $15 all regions (supply limited)

SOFT CORE - recent back issues of SatFACTS (while supply lasts)

☐ **SF#93** (May 2002) - European Piracy, hundreds of piracy web sites - $10 all regions.

☐ **SF#96** (August 2002) - Nokia BDM, Faster Channel Zapping with Nokia - $10 all regions

☐ **SF#98** (October 2002) Humax mods, Nexus PC Card, Low power FM broadcasting - $10 all regions

☐ **SF#99** (November 2002) FunCARDS - how they work, software mods for Humax - $10 all regions

☐ **SF#100** (December 2002) d-box2 BIG report! AC3 Surround Sound for Nokia, PanAmSat's Terrorist Problem - $10 all regions

☐ **SF#101** (January 2003) d-box2 conversion to Linux, SA power supplies - $10 all regions

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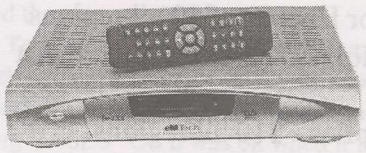

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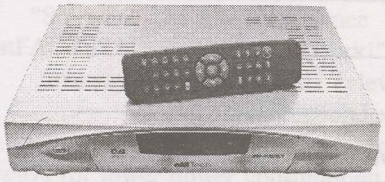

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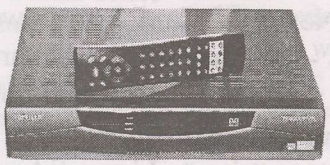
TOPFIELD



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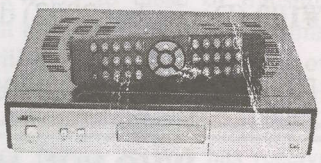

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Inner Coding Rate 1/2,2/3,3/4,5/6,7/8.
Video Formats MP@ML, Aspect Ratio 4:3 , 16:9.
Picture Resolution 720 ×576 , Connectors- RCA.
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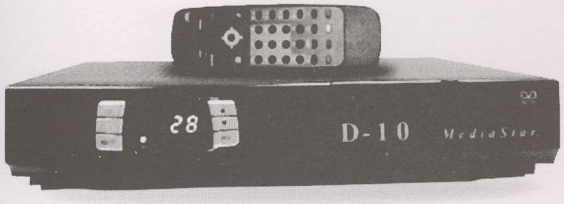
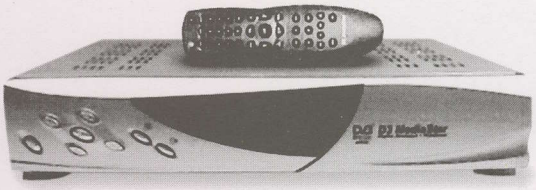
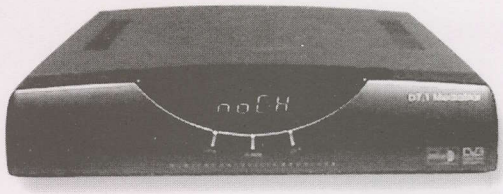
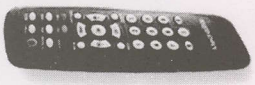


D10 Embedded IRDETO



D3 Digital Analogue and Positioner





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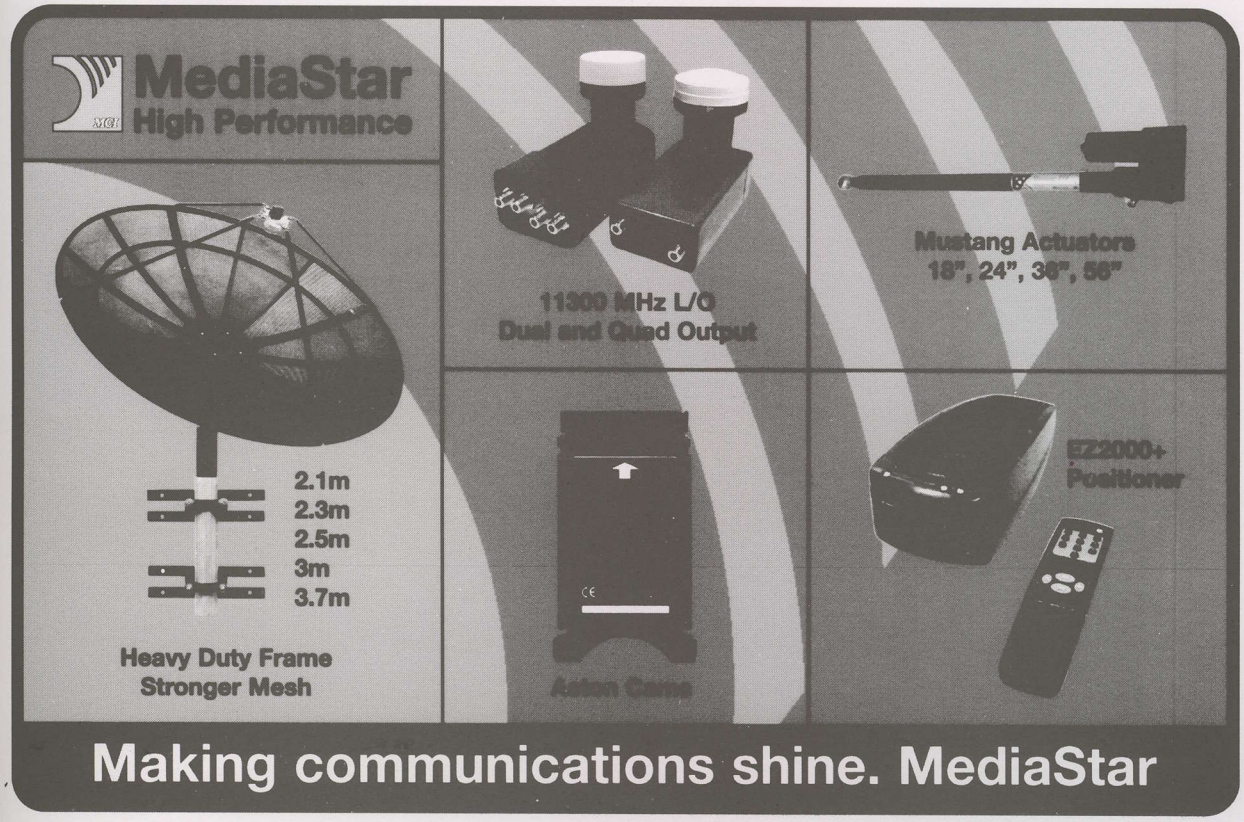

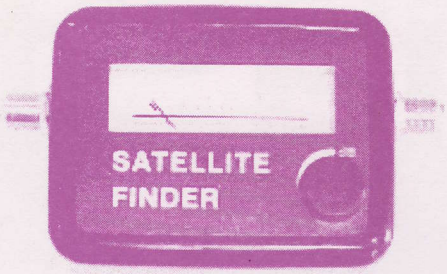

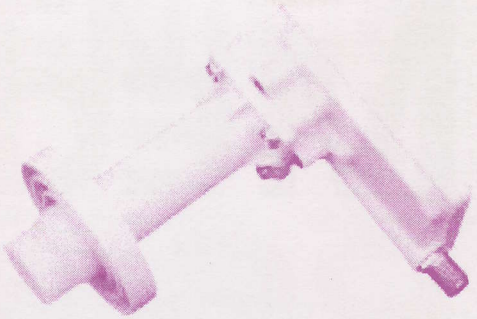

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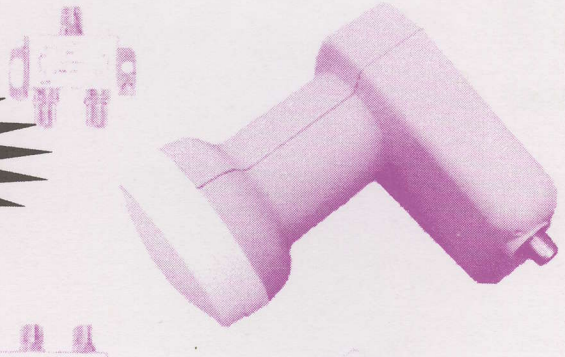

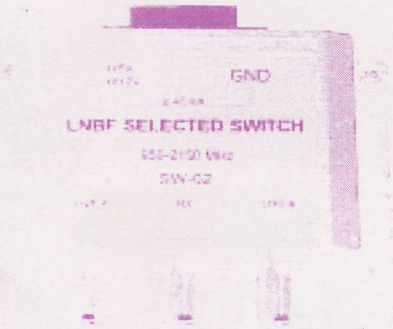

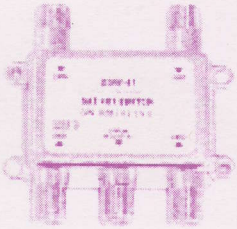

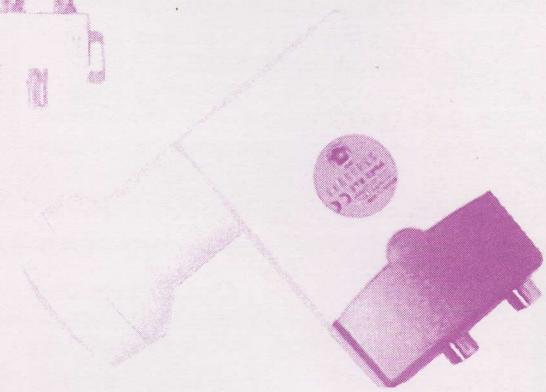

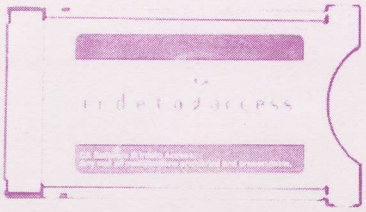

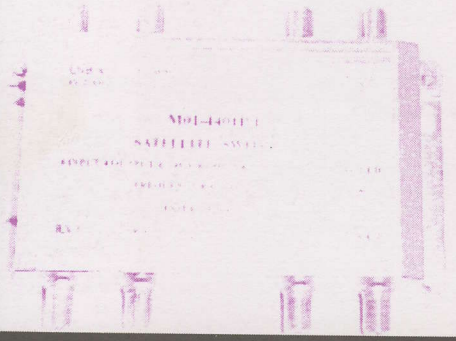

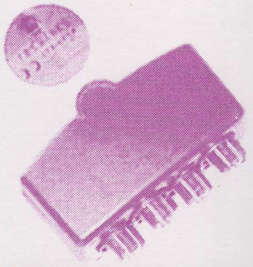

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