

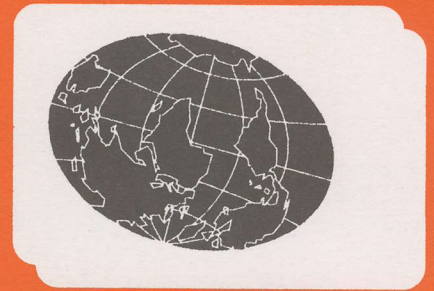
15-10-02 10AM

Bob Cooper's

OCTOBER 15 2002

SatFACTS

MONTHLY



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

IN THIS ISSUE

**Humax mods
allows user
interfaces**

**WIN-TV/Nexus
PC card does
satellite TV**

**Neighbourhood
FM; MeaSat
148E loading**

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- ✓ Optus C1 Footprints
- ✓ Observer Reports

Vol. 9 ♦ No. 98

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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.

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our NINTH year!

COOP'S COMMENT

Proprietary software and copyright of video programming are into a defining era after which nothing we now accept as "normal" will be normal anymore.

When radio equipment was first created, a handful of resistors, capacitors, a spool of wire and modest other component parts were interconnected to form a functional receiver (or transmitter). No one firm held a "patent" on a complete radio set because each portion of the receiver had been

developed by independent designers often working alone on a garage workbench. The formation of the USA RCA corporation was the result of US Government intervention to create a "patent clearing house" where one authority would hold a combination of patents to expedite one-stop "patent licensing" and allow complete radio set production.

But patents are very specific as to their design and implementation. A patented radio circuit using a series of 330 ohm resistors could be modified to use 220 ohm resistors and the "developer" of the 220 ohm circuit could rightfully claim a new circuit (and file for a new patent). RCA spent millions of dollars in the 1920s and 30s launching court battles against anyone and everyone who "dared" to try to go around an RCA patent by changing component part values or making minor circuit changes.

Today we have an almost identical scenario repeating itself with software "designs." Patents are the legal protection for physical circuits made up of component parts (resistors, capacitors and the like). Copyright is the modern day equivalent of patents in software derived "circuits."

A microprocessor (such as those chip devices found in smart cards) are the electronic equivalent of California freeways. Within a microprocessor chip are infinite "pathways" waiting to be filled with "traffic." The pathways are like a freeway network with no vehicles - the software sent to the microprocessor creates the "traffic" and the traffic "flows" through the microprocessor freeway system as the software instructs.

Software is computer language developed for the purpose of arriving at a microprocessor (freeway) "off-ramp" after some desired function has occurred within the microprocessor chip. Internally, the microprocessor can provide an almost infinite (unlimited) number of electronic "pathways" and subject to the design limitations of the chip's "freeway system" the electronic data that flows into the chip can be routed around to accomplish a wide variety of results.

Seca, Nagravision and Irdeto are copyright protected software programs. But like the 330 ohm versus 220 ohm resistor ploys of the 1920s, their software programs can be rewritten (either subtly or massively) with the singular purpose of "getting around" the copyrights while still retaining the same end result at the microprocessor chip's output.

In this issue we begin a two-part series describing how a reasonably competent individual using home workshop tools can modify a Humax brand receiver so that it will accept "new software." As our front cover illustrates, Humax is not in favour of you doing this ("*Alteration of software prohibited by law*"). But is it prohibited "by law"?

The software to be modified is within the Humax receiver under a licensing agreement with Irdeto (or some other CA middleware supplier). Humax does not own this software - it pays a license fee to the CA firm (\$\$ per receiver manufactured) so that Humax products can then be utilised with Irdeto (or other) CA programming sources. If Humax were to lose their "license" to build-in (embed) the CA firm's software, receiver sales would end in that market.

Enter Linux. Before there can be software there must be a "language." Microsoft is the computer language for almost all software. But Linux is an "open computer operating system" which offers users the possibility of writing software without Microsoft limitations (both financial and technical). It is 330 versus 220 ohm resistors, déjà vu.

In Volume 9 ♦ Number 98

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Ramsey's FM100 neighbourhood FM -p. 15

WIN-TV/Nexus PC Card for satellite reception -p. 20

MeaSat 148E Mux offering -p. 22

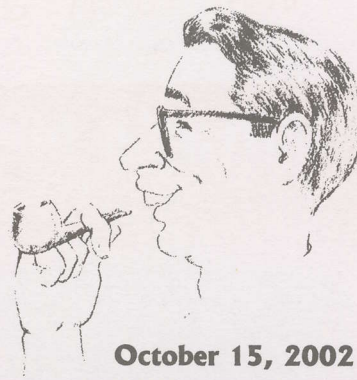
Departments

Programmer/Programming Update -p.2; Hardware/Equipment Update -p. 4; SatFACTS Digital Watch -p. 24; Supplemental Digital Data -p. 26; With The Observers -p. 28; SKY NZ adds TT; Hong Kong's Star TV Bailout? - p. 29; At Sign-Off (Can you find Singapore on the map?)

-ON THE COVER-

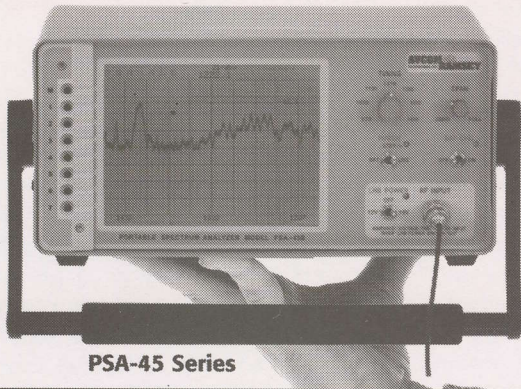
Making your Humax IRD do "special" things. Page 6.

SatFACTS Monthly October 2002 ♦ page AA



October 15, 2002

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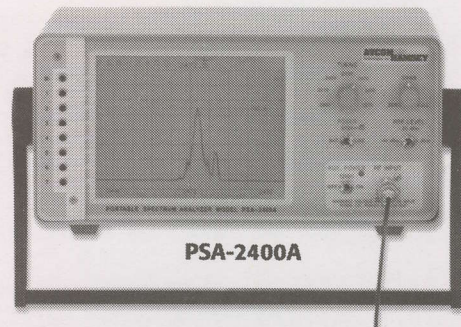
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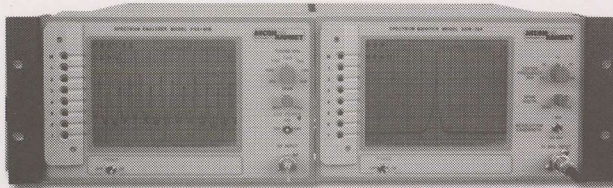
PSA-2400A \$2,775.00



PSA-2400A



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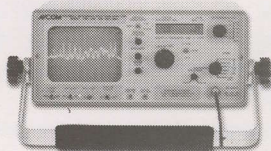
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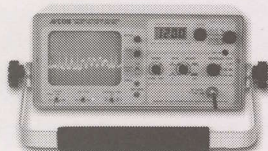
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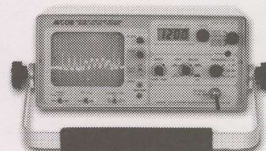
PSA-37D



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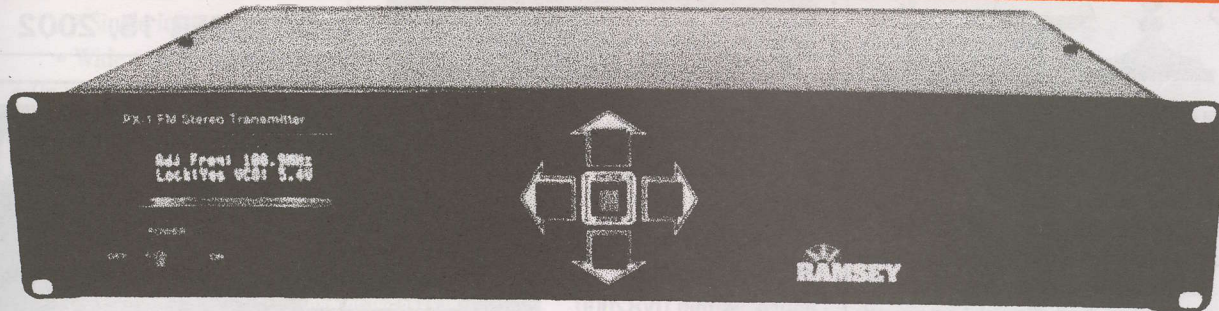
PTR-25D B&W \$1,395.00
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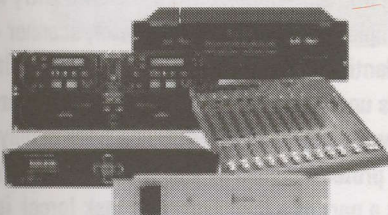
- Set-up and use is fast and simple with just 5 buttons to access all parameters - power, frequency, modulation, and more.
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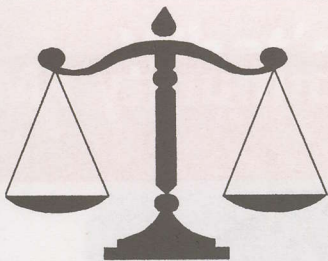
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**B3 cross pole integrity**

"After reading your report on 'Optus C1 and Cross Pole' in the August edition of SatFACTS, I am writing to disagree with what you say about Optus B3 being no longer axis-stable. I live in Newman in the northwest of Western Australia and for lasts 6 years have been monitoring the horizontal services from this satellite (going back to the Galaxy days). The dish I am currently using to receive this service is a 3.0m SRS fitted with a Cal Amp 0.7dB LNB. With this set-up the best C/N it can produce on the horizontal transponders with the vertical totally nulled out is between 10 and 11dB, however this figure drops up to 3dB during the course of a 24 hour period. Using the Data Logger function on a Prolink level meter shows that the signal is at its best in late afternoon (about 5pm WA time) and then starts to drop quite fast until it gets to its lowest point at about 11 - 12pm. The transponders stay at about 7 - 8dB until 3 to 4am and then starts to very slowly rise again during the day until it peaks again in late afternoon. I have checked the polarity and dish alignment when the signal is at its lowest and the vertical transponders are still totally nulled and the dish still aligned. Looking at the horizontal transponders on a spectrum analyser shows the only difference between 5pm and midnight is a reduction in signal power with no increase in opposite polarity signal. Maybe it would be better for out of area reception of the horizontal transponders if it was the polarity that was rotating (and not a reduction in power level) as the LNB could be positioned between the two extremes to give a more stable signal level. From memory the B3 satellite went into service in 1995 and this reduction in power level at night has been present since at least 1996."

Brad Howard, bhoward@norcom.net.au
\$50/\$75/\$100 a month?

"Having read the 'letters' SatFACTS Aug feel the need to enlighten you and many others describing the benefits of subscribing to pay-tv. While I do not have nor condone pirate TV, I've seen many would punters gypped on 'receive all bargains' for 1 & 2 thousands of dollars then someone saying for a similar price they can get subscriptions for 2,5,10 & 200 years. It appears no one knows the real price of subs. Namely, Austar \$108.00 per month + pay per view + Optus + Foxtel a far cry from the 50 bucks you mentioned. Oh yes, I think SatFACTS is a great magazine."

Chev

About piracy. It is essential that all industry participants realise piracy is a symptom of a bad business plan, not the cause of a failing business.

USA's DirecTV somehow manages to stay in business even with 25% (3 million!) non-paying viewers. Piracy is not AIDS although neither has yet found a successful vaccine. Issuing smart cards to authorised viewers is apparently not a satisfactory business format. To ignore the impact of piracy would be a bad mistake and that is why we encourage Rolf Deubel's timely reports.

**PROGRAMMER
PROGRAMMING
PROMOTION****UPDATE****OCTOBER 15, 2002**

ORIGINAL copyright?
With lawsuits flying left and right and more threatened, it is "amusing" to locate "copyright notice" within DVB2000 Mediamaster Software which of course is at the core of Nokia d-Box and 9200/9500 series "special skills." Copyright law is complex, but basically says, "if you create something which does new

functions not previously possible, you can enforce copyright protection." DVB2000 creator Uli Herrmann has never pressed those who have "patched" his original work but with so much court activity now underway, even he may be forced to adopt a legal posture.

"**LINUX takes STB world like a storm.**" It had to happen. With intense legal pressure from Irdeto/SECA/Nagravision and others attempting to shutdown rapid deployment of "all" CAM products (see p. 4, here), the Microsoft "language" CA CAMs plus operating software firms are fighting back, especially in European courts. Linux seems to be answer. Linux operating system is "free/shareware" available without dastardly Microsoft copyrights (or quirks) and if you can create same end result using Linux, why even mess with Microsoft? One reason is cost - USA computer firms in September through major chain WalMart stores offered entry level home PC systems for under US\$400 (complete with software, monitor, scanner - the works), which is \$400 to \$600 below identical function home PC packages built around Microsoft. A Linux "license" costs under US\$15 for all operating software per home PC; comparable Microsoft software starts at US\$400 and rises rapidly. Reason two is to get "around" copyright protection held by Irdeto/SECA/Nagravision (and others). SatFACTS' Rolf Deubel (as a part of a joint European task force) is developing a complete Linux operating system for Humax 5400, 5410Z and non-Z versions and we'll have a DIY (do-it-yourself) step by step instruction as soon as Beta testing is completed.

CD disks. Rolf Deubel's growing repertory of SatFACTS reports scheduled to be available on disk early in 2003. Yes - we do (usually) minor editing of his original manuscripts and yes - for every photo we select for publication Rolf typically submits 2 or 3. Which means CD versions for your reference and study will be more detailed than SF reports - just because there is far more space on a CD than in SF! Stay tuned - pricing will be reasonable.

RIGHT way / wrong way. Mike Boulos, the main man at TARBS, is sticking to his "all or none" marketing plan based upon 65 channels (plus radio) for A\$62.95. This includes 7 more or less English but may contain as few as 1 of the ethnic language of interest. Piracy is his latest challenge as folks have worked out how to "match numbers" between the smart card and the receiver but it only works - at present - with a "genuine" TARBS MDS-brand receiver. Strangely, there seems to be an almost endless supply of both in the underground marketplace.

About

DVB2000 Mediamaster Software Project
Project-Homepage:
<http://www.dominance.net/overflow/>

in association with:
<http://www.rehtec.com>
<http://www.dvb-atop.de>
<http://www.maecon.de>

Version: 2.00.0 beta 5 - Copyright: Uli Herrmann

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GRAETZ MD11P

Missing one only

"I have been a constant reader of your publications since you started in NZ. I am missing only SF#1 which I believe was done in the style/format of CTD (Coop's Technology Digest). This is a message to say 'thank you for keeping my interest in TVRO alive.' Speaking of 'alive' - my Nokia 9500S seems to have gone brain dead and will not produce pictures even when it says they are there (i.e. loads the transponders properly). Can anyone help?"

gbarbour@xtra.co.nz

SF#1 - we've located a copy and it is in the post!
Nokia. 'Dr Rolf' suggests you load one of the DVB2000 software formats after dumping whatever is in there now!

Reference C1 replacing B3

I have been an electronics technician for 20 years & have been involved with Satellite dishes from 600mm to 10M in diameter over many years. I'm not just a hobbyist. The reason B3 is moving should be obvious. It's because C1 will be replacing it & will take it's orbital position at 156 degrees east. Any predictions about coverage over Indonesia from C1 is a bit premature before it is launched. The same goes for the 30cm dishes. The rocket may blow up yet for all we know also. If that were to happen, we would be stuck with B3 for another year or 2 before a replacement satellite could be built. This happened not long ago with AsiaSat 3 and prior to that with B2.

W. Brickman

Agreed. Any assumptions that, (1) the bird will successfully fly to 156E, (2) will work properly when it gets there, is premature. But for planning purposes, it is far better to know and understand today what they hope will happen than to be confronted with an entirely new layer of parameters in that brief period between launch and turn-on. SF addresses footprint coverage on p. 32 this issue, will explore the National A, National B and Australia + NZ beams in a future issue.

SKY NZ new consumer IRD

"Don't think Dick Smith is the logical outlet for the new (yes - there *will* be one) consumer-owned IRD (SF#97, p. 2). More likely The Warehouse, just before Christmas. There is a new PACE STB which has the smart card protruding from the front (ala the old UHF STBs), and a new Motorola STB with the card sticking out the side. The Motorola is reputed to be faster than the PACE, very quick with Open TV software. Another major difference - both are smaller and lighter than present Zenith and Pace units, similar (if not identical) to the Middle Eastern STBs one sees described in magazines.

"I work for Sky" - someplace, NZ

And it is worth noting that it is a lack of agreement between the hardware (HDD recorder) manufacturers and the copyright owners which is holding back the wide scale marketing of the hard drive units. During September while on a family sojourn to USA, we visited several dozen major consumer electronic outlets and discovered it is fruitless to attempt to "bring back" a TIVO or Replay unit - both require activation through a USA based telephone number. We'll report.

HARDWARE EQUIPMENT PARTS

UPDATE

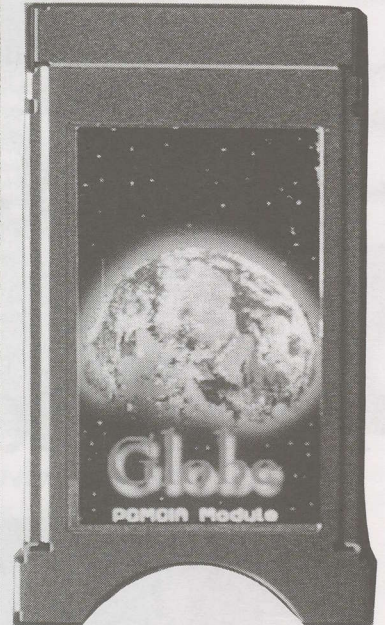
OCTOBER 15, 2002

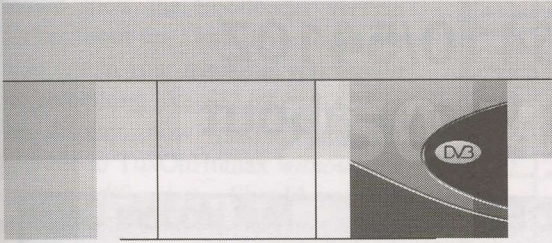
LAWSUIT time. Pressure coming from Irdeto, SECA and other "compromised" CA system providers is impacting design and manufacture of "all" CAM products. One UK firm with a 10,000 piece order at French firm building CAMs had to take partially assembled devices out of factory, ship to Asia to get metal cases wrapped around for completion so devices could then be sold. SCM, the French firm that builds CAMs for anybody and everybody, apparently has been advised by Irdeto and others to quit building "all" CAMs or be denied additional orders for the "real" products. European market price for "all" CAM product doubled overnight when word of product shortage leaked out, may double again. Next step? Asian copies from people who build to price not legal constraints.

FRAUDSTERS at ebay? Rolf Deubel advises, "In previous issues SatFACTS has announced that we will have a BIG d-BOX2 REPORT in December's anniversary issue. For this reason we also wanted to test how reliable purchases from German on-line auctions are and how seriously they are handled. SatFACTS has purchased five d-Box2 of the various models (NOKIA, SAGEM and Philips also with Intel and AMD chipsets) for our test centre. As a side effect of the test report we are able to report about bidding on ebay and handling of the winning bid. We do not want to give the whole report away here but we've lost 480 Euro (1.100 AU\$) to a fraudster who took the money but never delivered the NOKIA d-Box2 he offered on ebay. One out of five makes it 20% chance that you lose your money. The case has been reported to ebay and will be handled by the German law enforcement department. However, we don't see much chance to get our money back so take this report as a 'friendly warning'."

NO warranty here. Some enterprising folks possibly located in (mainland) China have adopted a number of product logos and names to (re)produce satellite receivers which are not, well, "genuine." Leon Senior is turning away *Strong* "brand" receivers brought in for "warranty repair" which turn out to be "imitations" of the real Strong units. A similar situation in North America involving Strong "brand" receivers has also come to our attention. If you (as a dealer) are offered claimed-to-be Strong models at "bargain pricing," consider where you will go for warranty or other service. China is a long ways away! Warranty, by the way, is a new sales tool. The (genuine) Strong SRT4610 -II is one of (it not *the*) first in the industry to offer two full years.

America's cup coverage. Rumour that is not true. That TVNZ is to use their new DVB-T test transmitter (Auckland) for "special" non broadcast coverage of Louis Vitton Cup prelim and races. Simply not true and the guy bragging he has "exclusive rights" to distribute this "service" (\$2500 a pop!) is wrong; no such service. Satellite coverage is on 180E, encrypted, being fed to USA's Outdoor Life Network by contract. Can you "tap in" or get permission to view? Contact TVNZ's man at email dsteven@attglobal.net.





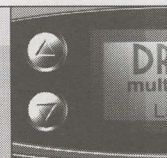
MPEG4

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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.

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

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

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

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- various applications such Web-Browser or Mail-clients
- supports multiple LNB-Switching control (supports DiSEqC)
- fully adaptable OSD in many languages (skin-support)
- SPDIF Interface for digital bit stream out (AC-3 / DTS)
- 2 x Scart-interfaces (fully controlled by software)

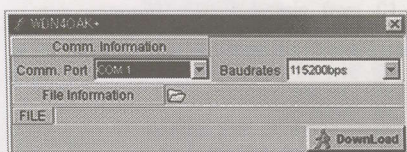
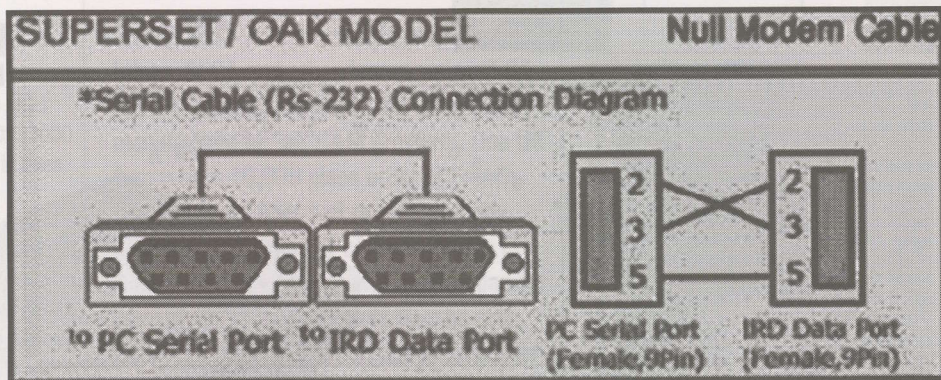


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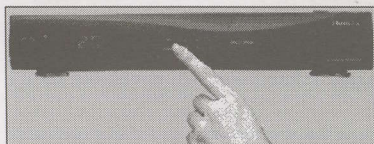
Rolf Deubel sets the record straight

Humax 5400/5400Z/5410/5410Z features you might not know about

What can a 'stock standard' HUMAX 5400 IRCI do? Using the manufacturer's embedded Firmware, you can decode all true Irdeto encrypted programs, if you put an appropriate smartcard into the card reader slot, making use of the built in Irdeto CAM module (Software CAM). Note: German Premiere uses Irdeto based BetaCrypt which can



- COM 1 Click to select you COM port
- 115200 bps Click to select your baud rate
- Click to select your desired .HDF file
- Download Click to start downloading .HDF file to HUMAX



Then press "Standby" on HUMAX IRCI to initiate flashing of your new Firmware into IRD

the right card and files you don't need extra CIs to handle these other encryption systems.

Is my 5400 IRCI ready to be 'patched'?

With a HUMAX 5400 IRCI the patch works right away. Newer 5400Z IRCI require some hardware intervention in order to be ready for the new software. This report will explain in detail how to do it. There are many dealers who sell the HUMAX 5400Z already patched. For inexperienced SatFACTS readers we recommend this option, as you'll have the (dealer's) warranty for the work as well (*hopefully!*) for your receiver's hardware.

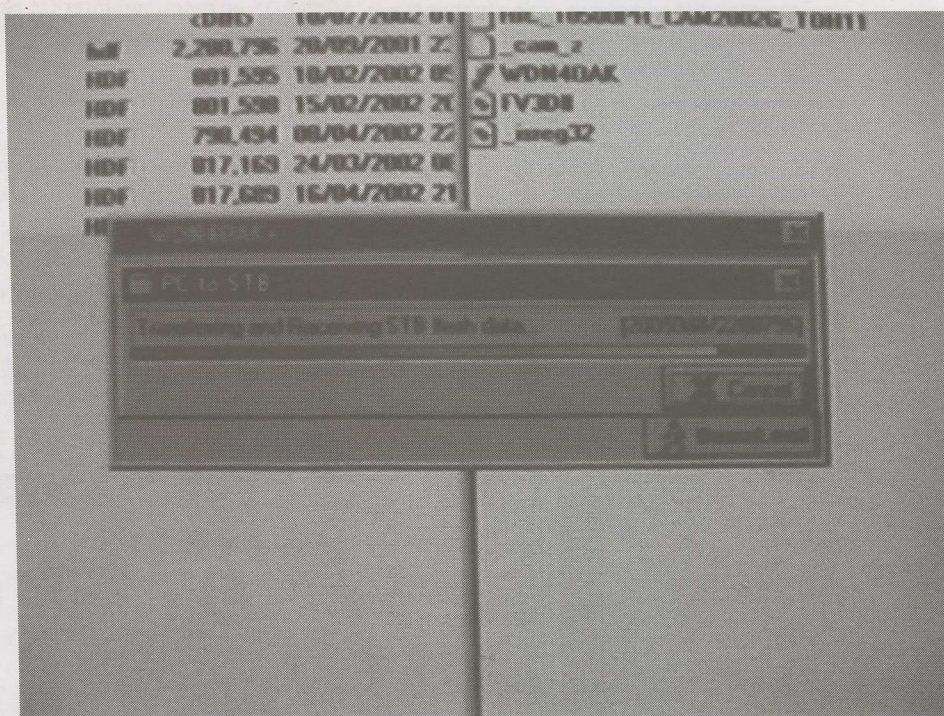
Basically the result of this intervention is to have the right 'Bootloader' in the receiver. HUMAX did some changes to the Bootloader of the 5400 series in order to "disable" the RS232 port on the 5400Z and the cheaper 5410Z to prevent customers from "upgrading" the receiver to the "MultiCrypt" +CAM Firmware after Irdeto complained. You can check your

not be decrypted with a standard HUMAX 5400 series IRD!

All FTA (Free-To-Air means not encrypted at all) programs can be watched too. If you want to be able to view more TV programs, protected by other encryption systems, you need to buy one CI module (Common Interface CAM module) for each encryption system you wish to watch.

Why was a patch created and what does it do?

Some German and Dutch satellite enthusiasts have improved the above standard features. They changed the standard software, also called "patching," and called their product "TuxOnHumax" (TOH; also known as +CAM) Firmware which, after uploading it into the HUMAX 5400 IRCI, allows you to decode Irdeto, SECA, VIACCESS, NagraVision, Cryptoworks and Germany's Irdeto based BetaCrypt, via the software embedded CAM module. By using



Bootloader version easily when you start up the receiver. The display should show the Bootloader version during "boot up," and if you have the right one in your machine, you should see something like H2.08 or L2.08 in the display, now you're ready for upgrade to TuxOnHumax *without any other modification*. Should you see anything other than the version H2.08 or L2.08, then your IRCI's Bootloader needs to be changed too.

How can I install this Firmware patch?

The patched Firmware can be installed the same way one would install official HUMAX Firmware, using your PC or Laptop and a Nullmodem cable. Connect your PC to your HUMAX receiver and use the right software; just follow the easy steps described here:

1. Download WDN4OAK+, the original HUMAX uploader from the Internet.

Unzip the 'WDN4OAK+.zip' file into a separate folder, then run 'setup.exe' program. Go through the installation process using default values.

2. Download the +CAM software which you have to install in your receiver in order to have the multi-CAM mode. It's a file with the extension .HDF, and is created by PH. There are several locations where you can download it.

Download the AllCAM firmware here. On all locations, search for the latest release. At the time this was written, the latest one was 'HIC10500PH +CAM2002G +TOH11'; later versions may now exist. The file is usually zipped. Unzip it, and a new file with HDF extension will result. The "magic" word on the file name is: '+CAM2002G' in fact the +CAM only, that make the difference from the original firmware.

3. Turn off your HUMAX (STAND-BY mode).

4. Connect your PC to the HUMAX with RS-232C Null Modem Cable.

5. Follow steps at the top of page 6. You then will have to select the HDF file you have downloaded before at step 2.

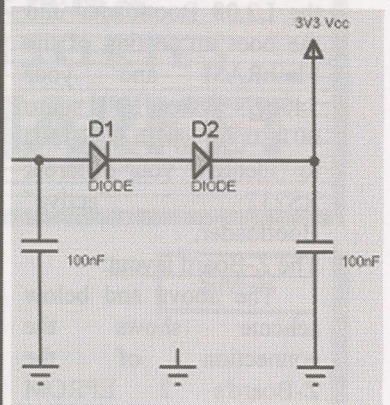
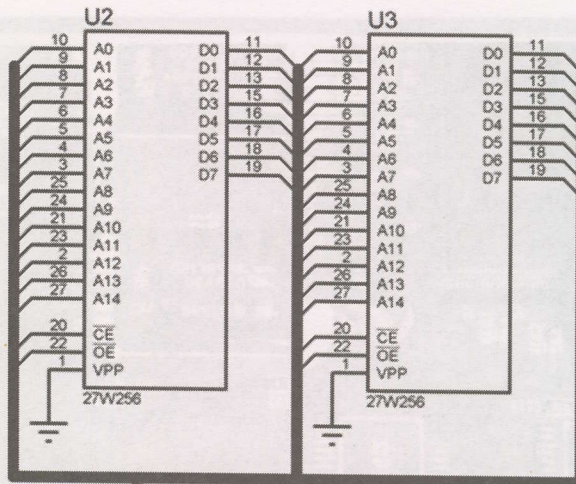
6. As you see, in the picture (to the right), you need to turn on the HUMAX from Stand-by button to have the download started. During the process, you should see a progress bar.

7. After 100% is completed, a window opens and tells you to turn your HUMAX "ON". The display will show a blinking 'END' word. Push the Stand-by button again.

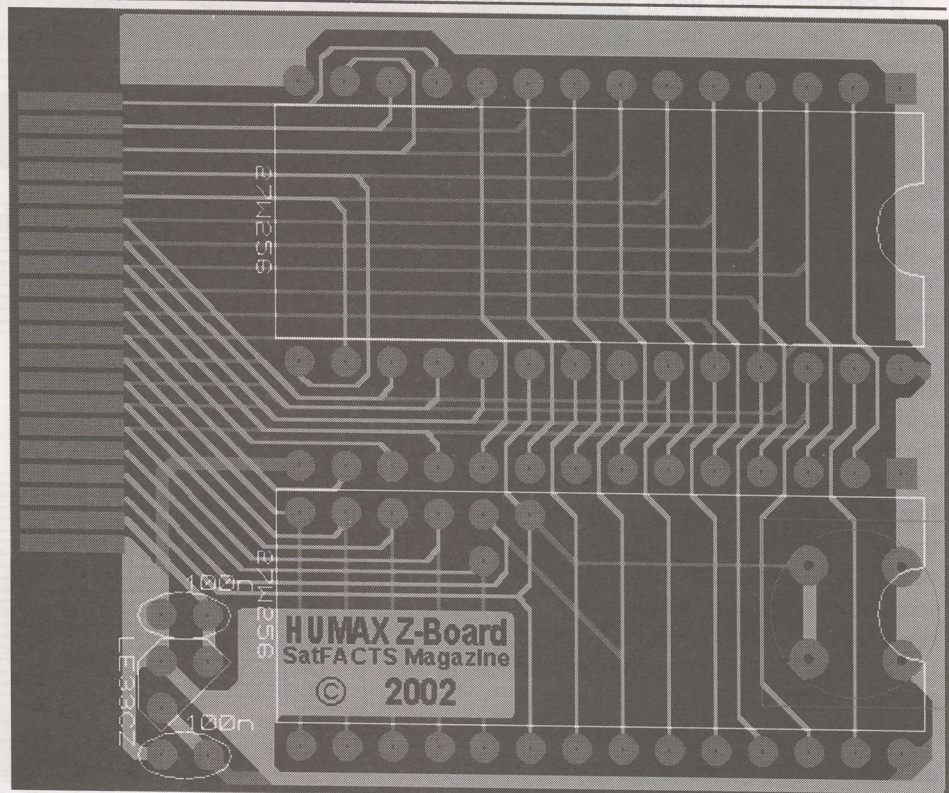
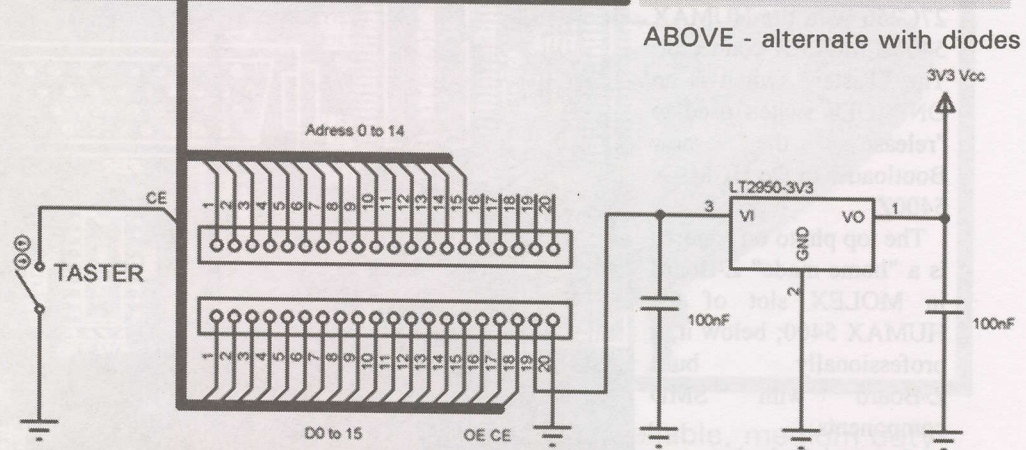
8. Now your HUMAX 5400 IRCI has a working TOH patched Firmware and you can enjoy MultiCrypt with your TV system.

How to prepare the 5400Z for this Firmware patch?

This is the bit more tricky part as you need to make up a special tool to do the Bootloader swap out! You can buy this so called Z-Board if you want to, but it is certainly more fun if you use DIY methods!



ABOVE - alternate with diodes



The Z-Board "flashes" the L2.08 Bootloader into the boot up section of the FlashRAM and your 5400Z's System ID is set to 0016.0600 which is needed to "identify" your different RS232 "active" Bootloader.

The Z-Board layout:

The above and below scheme shows the connection of the Z-Board's 2 EPROM 27C256 with the HUMAX 5400Z MOLEX connector. The "Taster" switch is an ON / OFF switch used to "release" the new Bootloader to the HUMAX 5400Z

The top photo on page 10 is a "home made" Z-Board in MOLEX slot of the HUMAX 5400; below it, a professionally built Z-Board with SMD components.

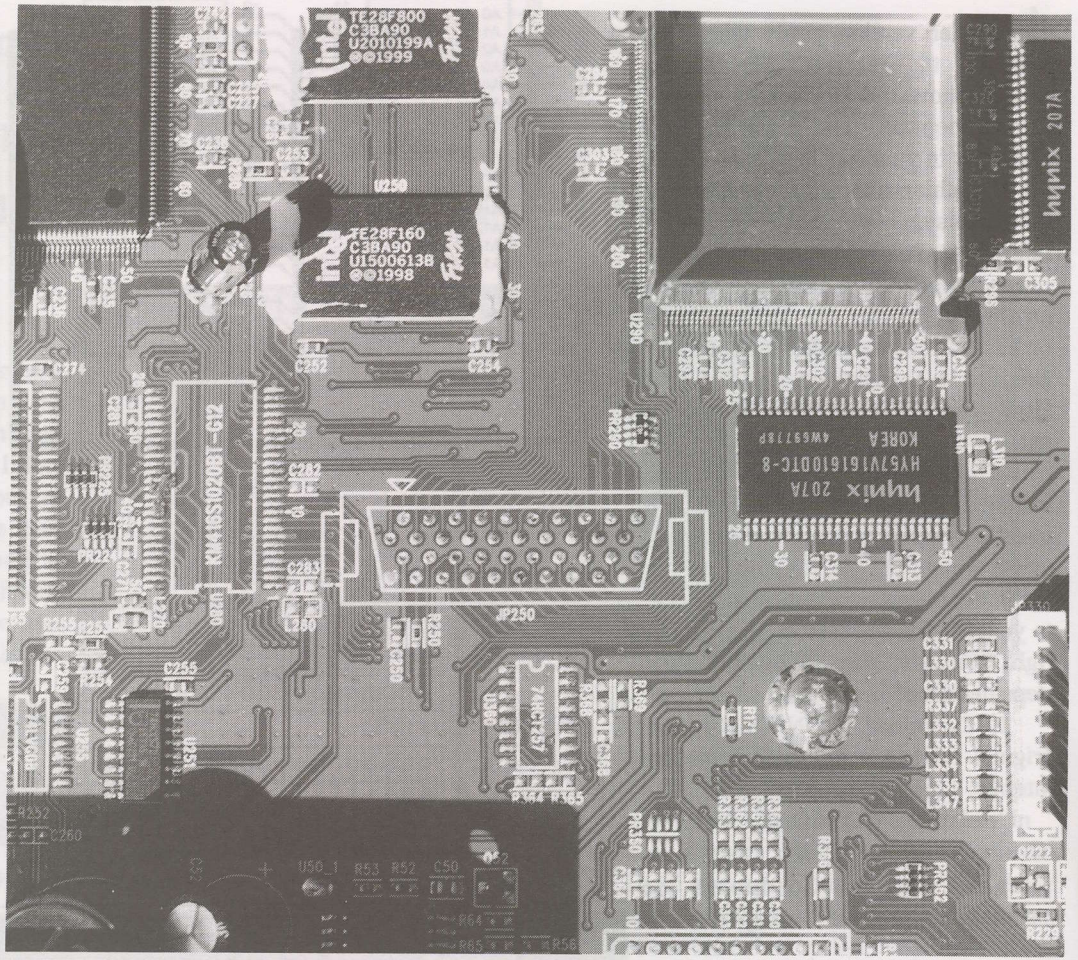
It certainly looks much neater than our home brewed toy but a.) it is much more fun to DIY your satellite accessories and b.) the going price for the professional built one sets you back +/- 200,- US\$ + Postage and Packaging.

The actual Bootloader swap out!

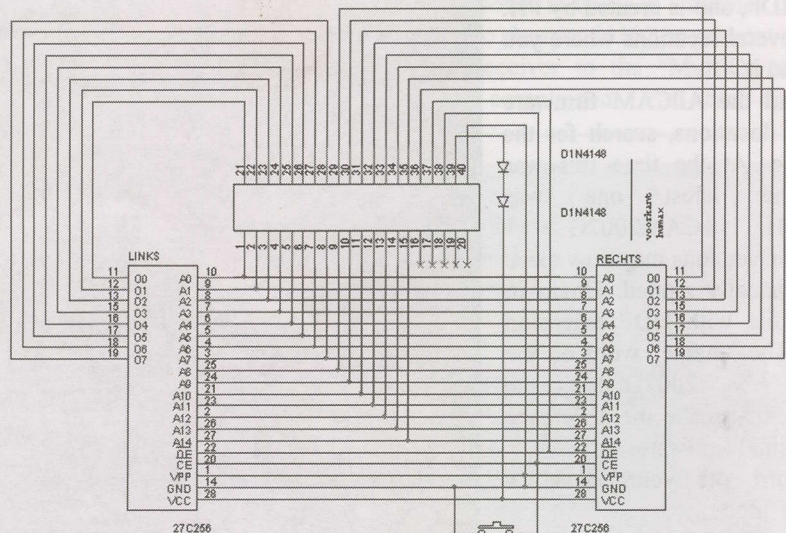
The complete board and the parts used are not very critical. If you cannot get the 3V3 regulator, you can use two diodes in series like a 1N4148. This lowers the 5 Volts to a useful value. Also possible are some other types of voltage regulators like the LP2950CZ33 or the LM2931AZ33.

Because the Board is only in use for seconds - until the loader is copied to the RAM - a little too high voltage does not matter. Also the chance that the normal "C" type of the 247C256/512 will work is improved at higher voltages.

So if you cannot get this 3V3 regulator, it is still possible to build the board. Also the capacitors are not critical - many other types and values will work - these capacitors are only used to prevent the regulator from oscillating. In other words, you can use any part you can get to build this board as long as the parameters are "near" the right ones. Or, if you put two



THE Z-board allows you to patch the receiver even if the factory has taken steps to prevent you from doing so. But it gets more complicated - read on!



diodes in series, on each diode there is a voltage drop of about 0.7 Volts; on two diodes a loss of about 1.4 Volt. Because the board has an input voltage from the connector JP250 of about 5 Volts, the voltage AFTER these two diodes is about 3.6 Volts. Because the 5V is already regulated, there is no urgent need to do this also for the 3V3.

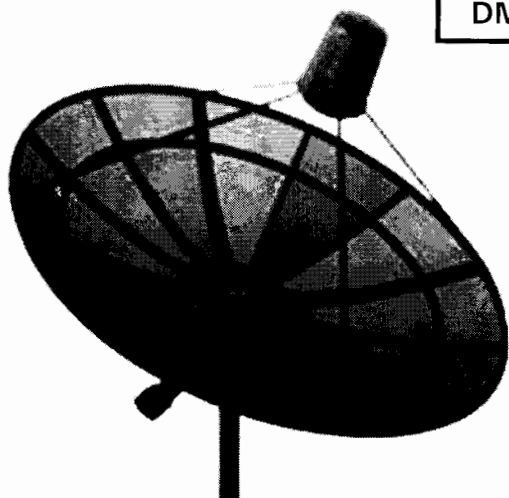
For a first test, you can use the board without programmed EPROMs on it. If you have soldered everything correctly, your HUMAX should start with the plugged in board normally. If this is so, then you can measure the voltage on pin 28 of the IC



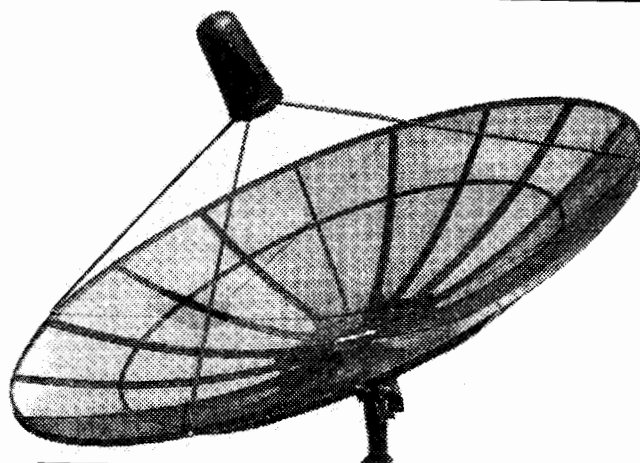
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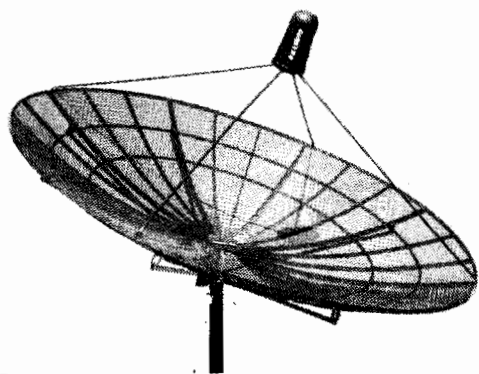


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sockets. It should be about 3.6 Volts. After that you can test the switch (single pole momentary on). If the switch is on, your Humax should be "dead" - not really - only the screen is blank and there is no sign on the front display. This shows you that the original flash is switched off and there is no code to boot.

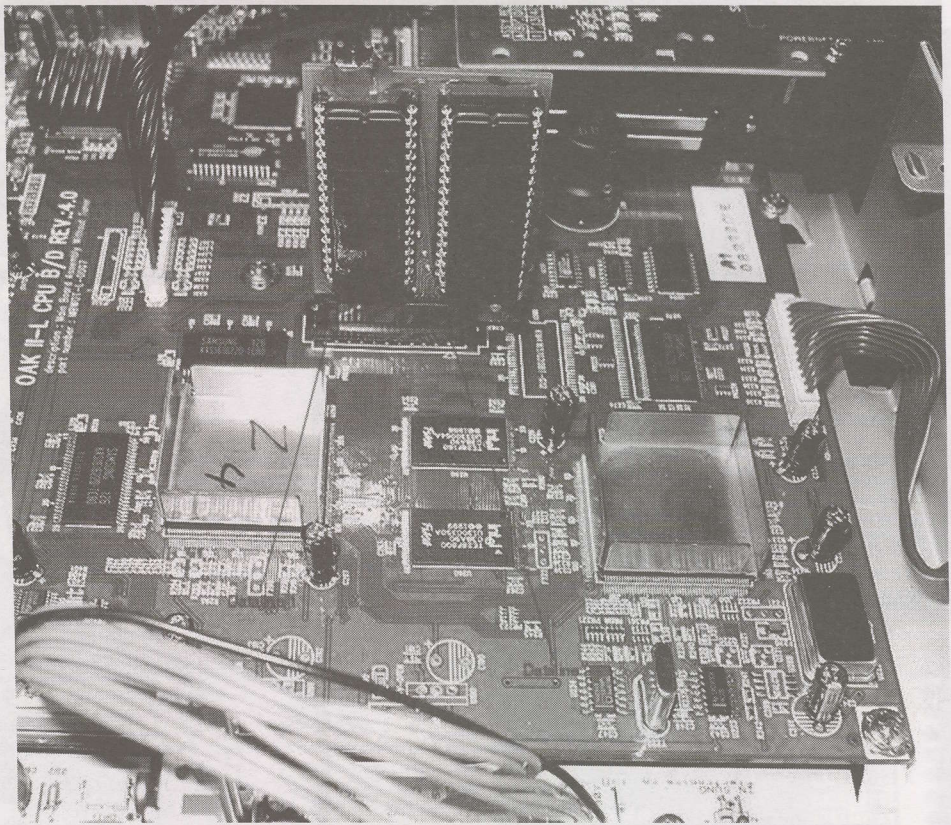
Next you should program your EPROMs (U2 left one begins with 08 40 09 00 00 00 09 25 , and U3 the right one with 3C 00 40 60 00 00 01 48). If the Z-Board is complete, you can give it a try in the posted manner, but you must load the +CAM_Z.hdf file to start with. It should show you a H208 Loader in the front display and a blue bar with the downloading percentage. After the first percent of downloading you must release the button on the board and everything should work in the expected manner. By the way, if something went wrong with the download, you can give it a second try without the Z-Board! Some times the loader is written correctly, but a checksum over the application is not calculated new. If this happens, you will get an error Ax and you must download the complete +CAM file once more - without the plugged Z-Board. But this is a very rare occasion and not worth thinking too much about; just wanted to mention it ... in case ... you know!

You can also go this way directly. For the first time, with the plugged in Z-Board, you can download the enclosed H208 loader alone (this only takes seconds) and in the second step you can download in the same way the complete firmware. If you go this way, there is no chance to get an error message about a wrong CRC.

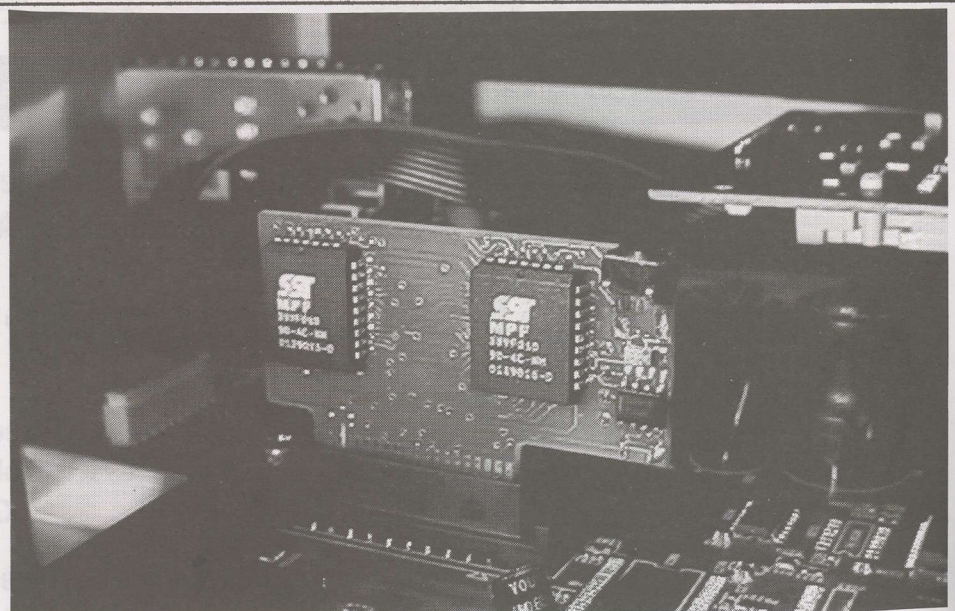
To find out if you have a culprit you have to check every pin, every solder point and so on with a magnifier and an ohmmeter. Only one address or data line without the right contact makes the board useless!

Might there be some problems with 27C256 with a very slow access time? In our test board we are using parts with 100nS. As far as we know, the 27C256 in older mask revisions can have up to 250nS. Some of our readers have built this board with flash memories 28F040, 27C512, 27C256 - but the slowest device had 100nS (the fastest 45nS).

1. Disconnect your "Z" from the mains with rear panel switch.



YOU can create your own Z-Board to allow patching of your receiver if the cost of a commercial version (US\$100) is a hurdle.



2. Identify JP250 on your HUMAX mainboard and plug the ROM Board (Z-Board) into the Molex as shown in the pictures here.

3. Connect the "Z" via a RS232 Nullmodem cable to the PC.

4. Open WDN400AK and open the file +CAM_Z.HDF; the baud rate can be as high as 112500 baud, and check your COM port.

5. Click on download -> waiting for connection

6. Press the button on the Z-Board to activate it and switch on the mains with the rear switch.

7. Now the "Z" begins booting with the H208 Loader and also begins downloading from the PC. At this point you must release the button on the Z-Board.



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8. After the complete downloading and programming, you have to press the Standby-button once more.

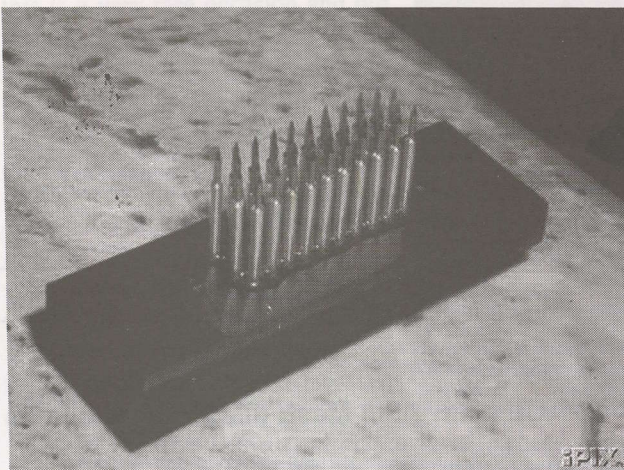
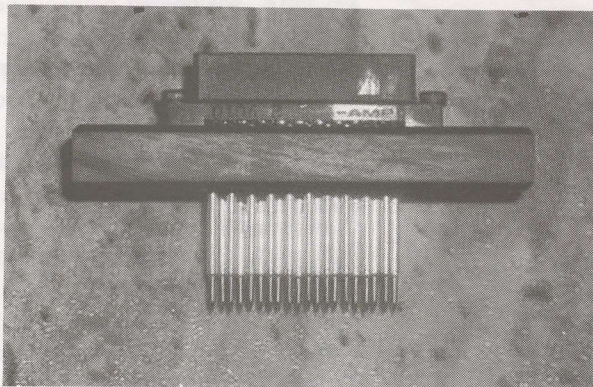
After that, you must disconnect the HUMAX 5400Z - no, it is actually not a "Z" anymore - from the mains and remove the Z-Board. Only now you can patch your box with the latest update file which is currently version 2002G. Is that all?

No, we are not done yet; later 5400Zs created more problems! Again the HUMAX factory in Korea, after realising that all their efforts were not good enough, thought of a new plan to prevent DIY satellite enthusiasts from modifying their boxes into MultiCrypt boxes. They removed the JP250 MOLEX plug (where the Z-Board had easily plugged in) and covered the contacts with a warranty sticker (see front cover photo).

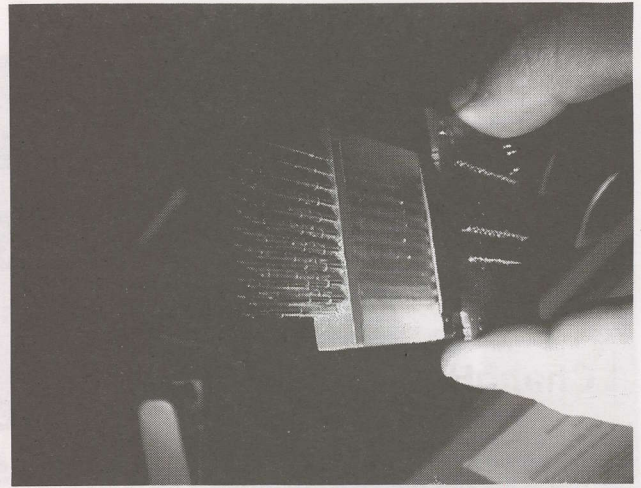
New Z-Nadel/Needle board solution

The challenges kept on going and a new "non solder" solution by the DIY guys has been developed: the "Z-Nadelboard."

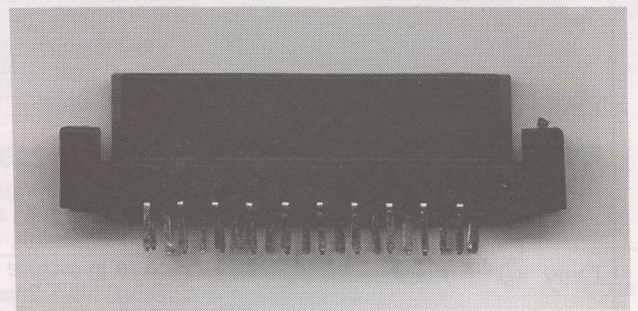
The easy / early versions consisted of a loose MOLEX plug with needles soldered to the pins (not a joke)! Later more



sophisticated versions were released with a PC board between MOLEX plug and needles. Individual ideas and creations result in a variety of solutions and the target is only to get the result and not to win a "Beauty Contest." But SF would like to urge you to work clean and with care when you decide to give it a try! Remember: DO IT RIGHT THE FIRST TIME when you do it! This should be your slogan! It is much more difficult if you have to fix errors and mistakes and do it a second time



CLEVER is as clever does. Parts from a local watch repair shop and your ingenuity will do the job!



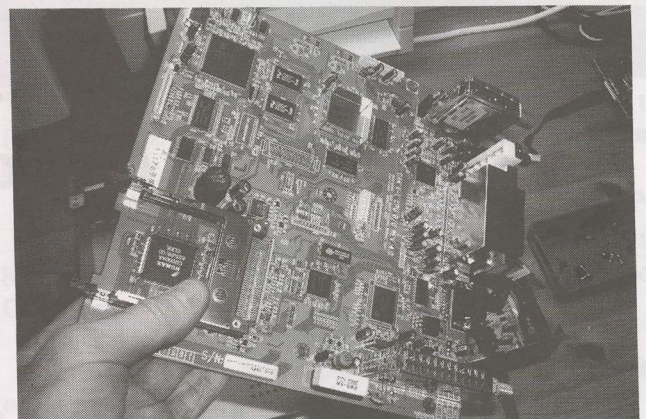
again with less clean and / or neat material. Our "base" is the original MOLEX plug used on the HUMAX 5400.

Let's get started

SatFACTS will show you how to patch your HUMAX 5400Z series box and assume that your box does not have the Molex "interface plug" mounted on the mainboard.

So ... we have to overcome this problem. We do not only show you the DIY Z-Board solution with a DIY Needle board attached; the professional purchased Z-Board with needle board is actually very expensive (ready made Needle boards are available at +/- 100,- US\$ inclusive P+P). We also show you how to do it with a much more cost effective soldering solution. Let's start with that one!

Firstly, you need to disassemble your HUMAX 5400Z series box. There is nothing really difficult about it. Get yourself a small container and keep all screws and washers in this container.



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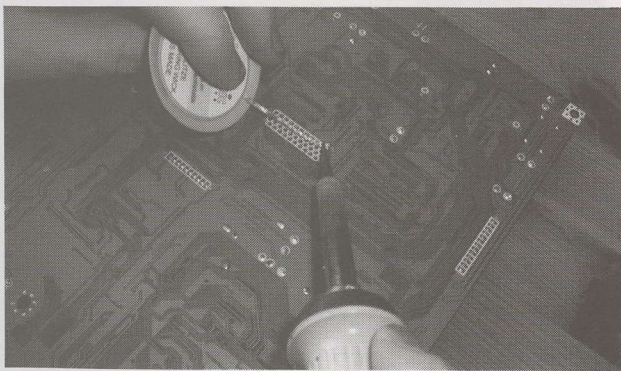


What do we need?

A soldering station, best with temperature control, and a very fine soldering tip. The temperature should not exceed 350°C so as to not damage the mainboard of your HUMAX. There is one exception which is when you unsolder and then resolder Pin 40 which is GND (ground). It is soldered throughout with lots of solder material and the temperature needs to be set to 400°C to do this. You also need a vacuum pump to suck the melted solder away from the mainboard.

If you do not have a vacuum pump, you can use unsoldering copper wire to get the solder off the mainboard. You can see this like a hurdle sprint race whereby the task is not to get to the finish in the shortest possible time but to overcome the hurdles in the best and cleanest possible way. In our case, the hurdles consist of 40 solder points on your HUMAX mainboard which we need to clear from the solder and then again solder the 40 pins of the Molex socket to the mainboard.

First we need to identify where JP250 used to be on the mainboard. Instead of the Molex socket you will locate the 40 pin solder points labelled JP250. You also need the desoldering wire which should be easily obtainable at any electronic store. Set your temperature of your soldering station not too high (350°C should be sufficient) but depending on the

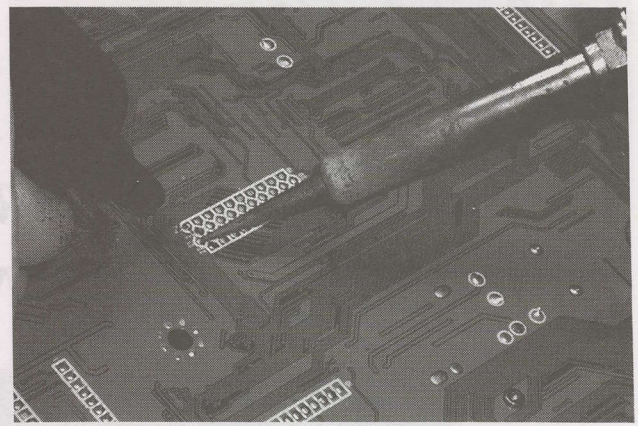


desoldering wire you might have to adjust it higher or even lower. Do one soldering point at a time allowing the mainboard to cool down each time you've done another step.

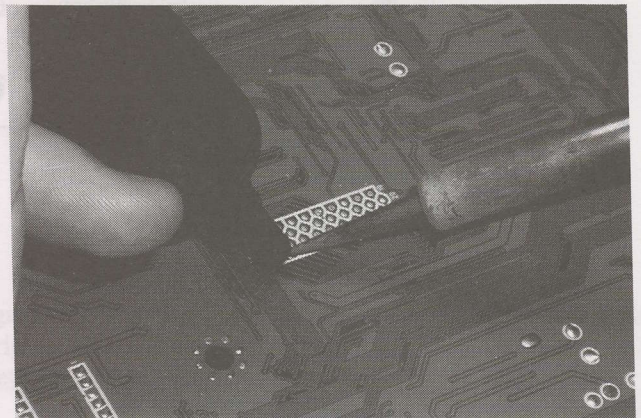
Be very careful when you use the desolder wire method as you can damage your mainboard seriously if you overheat the board. Tracks can come off the board or can get burned out. Rather take a bit more time with that or better yet - get a vacuum pump!

The solution with the vacuum pump:

Heat your soldering iron to 350°C, turn your mainboard to the rear side and start unsoldering the connector solder points slowly one by one. The solder, when heated to its melting



SCORCHING the main board with excessive heating can be the end of your IRD. A vacuum solder pump plus great care not to overheat the board is a must.



point, can easily be "vacuum cleaned" away from the mainboard with your solder vacuum pump allowing you to do a clean job. As with the unsoldering wire, allow the mainboard to cool down between unsoldering the points. Again and we can not tell this enough times: Take your time to do this project!

Immediately remove the soldering iron from the solder point not to overheat the mainboard. It will take about 2-3 seconds to heat up the point and to melt the solder. Use the vacuum pump as soon as the solder in the point melts to suck it away from the board.

When all solder points are open, clean the mainboard and socket area with either professional PC board cleaner or another grease dissolving agent. Use some kind of a brush to loosen even tight sitting grease off the board. Hint: If I do not have a professional spray can with brush attached, I use an old tooth brush and a mixture of non oily nail cleaner from my female partner!

When you are done and the main board is clean it actually should look like the board came fresh out of the factory with all solder points open to take our new Molex socket. We are half way done with the soldering work and I suggest you now take a deep breath, have a cup of coffee or smoke a cigarette before we approach the last 40 soldering hurdles close to the finish line.

Continued: Hold your questions!

Updating the 54XX series of receivers will complete in SF#99. Please hold your questions until we have completed this two-part series as the answers you require very likely will be found in the November issue of SatFACTS!

Ramey's latest FM100 FM transmitter is better than ever

This is one of the least complex "expansion" projects available to you in TVRO/DTH. And it has a myriad of uses including amusing yourself and *servicing* your neighbourhood.

It is FM radio retransmission of one (or more) satellite intercepted radio services. The DTH/TVRO reception antenna system (plus an IRD or analogue receiver) probably already exists; in the most extreme case you may need to add an extra IRD/analogue receiver to dedicate to "radio" (or sound/audio) reception from a specific satellite channel or channels (thereby leaving your present IRD/analogue receiver free for TV watching).

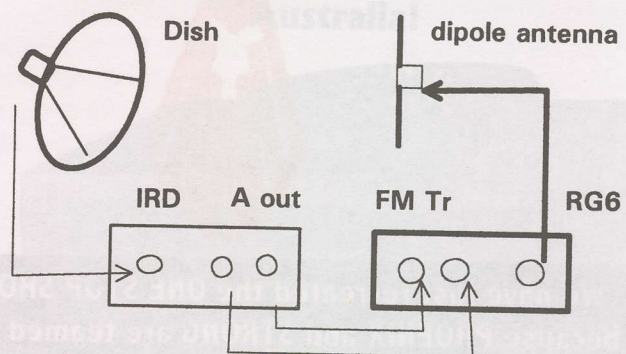
FM radio occupies the radio spectrum from 88.0 to 108.0 MHz; approximately 3 metre wavelengths. Most cars and trucks, virtually every home already has an FM capable receiver. All you need to do to rebroadcast your satellite received audio/sound service(s) is to connect the IRD/analogue receiver's audio output through an RCA-male to RCA-male jumper cable into a low power FM transmitter. And connect the FM transmitter to a suitable FM band "resonant" transmission antenna.

A 100 mW (milliwatt) unlicensed FM transmitter connected to a "dipole" transmission antenna 10 metres above ground will cover a radius of 1-4km. Most countries allow 100 mW unlicensed transmitters to operate without approval of (or application to) "the authorities" provided only that the transmission frequency has been selected so as to not create reception interference to other licensed transmitters. Some such as New Zealand allow greater unlicensed power (300 mW).

There are several hundred radio-only (audio) services available on satellite, virtually all free to air and ready for you to pick up and (re) broadcast locally. And, while it might seem like a silly idea at first, the sound portion of TV channels can also be (re)broadcast through such a transmission system. But why would you want to do such a thing?

Use your imagination. Selfish reasons first. You are an ardent fan of the "Oldies Radio Service" found on AFRTS (180E, 4175 LHC) which although the transponder is CA, the radio services (3) and TV sound (3 more) are FTA. It does not make a great deal of sense sitting there with your entire TVRO system tied down to this CA TV service just so you can listen to "Super Hits from the 60s." So stick up a 1.2m dish, fix it on 180E, connect to a low cost IRD and then connect the IRD audio output to a 100 mW unlicensed FM transmitter. Now - every FM radio in your home as well as the one in your car or truck can stay tuned to "Super Hits from the 60s," without getting in the way of your TV reception. Best of all, you can do it anyplace in your "neighbourhood" even with a portable shirt-pocket FM radio.

Business reasons next. There is a neighbourhood (perhaps an entire community) of Italian speaking folks. A handful - but not many - have invested in a 2m region dish for reception from RAI International. And you've sold those that have been bought. But dozens, hundreds more could be sold. How do you



TAP into the audio service through your TVRO/DTH receiver, use a jumper cable to patch from the satellite receiver to a low power FM transmitter.

Connect the FM transmitter to a simplistic transmission antenna (p. 18), select a locally available FM channel and push "on."

Power	5m ant	10m ant	20m ant	40m ant
100 mW	1km	2km	4km	
250 mW	2km	3km	6km	10km
1 watt	3km	5km	10km	20km
10 watts	6km	8km	15km	30km
100 watts	10km	15km	25km	50km

Range to be expected is a function of (1) transmitter power, (2) height of transmitting antenna, and, (3) local terrain.

wet their appetite sufficiently that they come to you pleading for a TVRO dish install? Or, do you sit back and wait for TARBS to finally break down their sales resistance?

Go to one of the existing systems and "split" the audio output of the RAI television channel. The folks who own the dish still have RAI sound, you use a "Y" adapter to gain a second audio line service. Now run that line to the 100 mW FM transmitter, hang a simplistic dipole antenna on the roof or in a tree, and put RAI TV's audio portion into the ether. Marketing next: Print up a sheet of paper inviting folks to tune-in, "RAI television by tuning their FM radio to 107.1." And be sure to include your business name and contact number at the bottom, right after the line, "Provided as a community service by (your name)...".

How long do you suppose it takes for folks "listening" to TV audio - but unable to actually "see" the picture to "lose self control," to rationalise why they "must have a DTH system for RAI?" Count the time in days. Listening to "TV sound" is at first an exciting discovery but it soon becomes a frustrating experience when they "know" the picture is also available.



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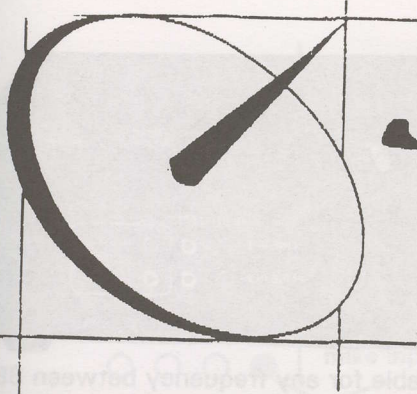
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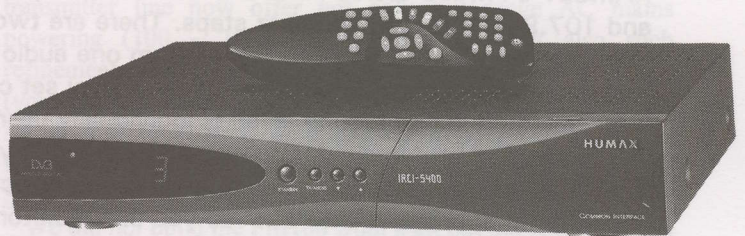
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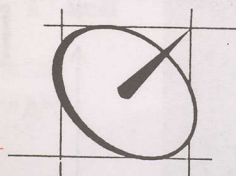
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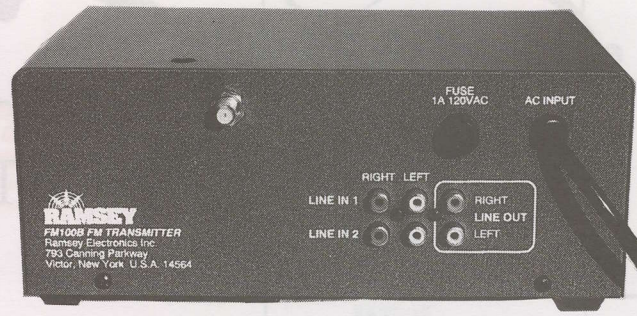
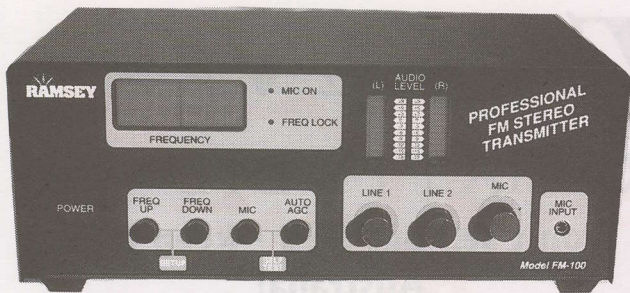
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RAMSEY's FM100 stereo FM transmitter is front panel button adjustable for any frequency between 88.1 and 107.9 MHz in 100 kilohertz steps. There are two "line" (audio level) inputs with individual front panel audio level controls so you can "fade" from one audio source to another smoothly and professionally; and, a separate "microphone" input with its own level set control so you can "talk over" your programme audio. The audio modulation (sound level) is individually user adjustable with the front panel controls shown for all 3 inputs and an "Audio Automatic AGC" ensures you cannot "over modulate" (exceed the modulation capabilities of clean sounding audio) even if you get careless. On the rear panel (right), two "line" inputs for two different sources, a line "out" so you can monitor your transmitter through a local speaker, and, the "F" connector we all know and love for connection through RG6 coax to your transmission antenna (below).

FM transmission is inexpensive, effective, and if you are in this as a commercial operation, perhaps the most dramatic way to increase your own "penetration" of the marketplace.

The transmission antenna

It does not get much simpler than this to get you "on the air." The transmission antenna is constructed from two identical, short lengths of copper wire suspended tautly between two "insulators" and separated in the middle by a third "insulator." Two pieces of Schedule 40 PVC joined in the middle with a PVC "T" connector form the "frame" and the copper wires are suspended within the PVC to protect the connections from weathering - and, to provide a suitable technique for attaching the "frame" to a support mast or pre-existing tower using (stainless steel to prevent corrosion) "muffler clamps."

The length ("A" in diagram) of the two identical-length dipole-halves depends upon your transmission frequency. The overall length of each half is a quarter wavelength (half of a half-wavelength) multiplied by 0.95 to correct for the effects of the PVC housing, and, wire antenna diameter. Purists will notice we are connecting unbalanced coaxial line (all coaxial

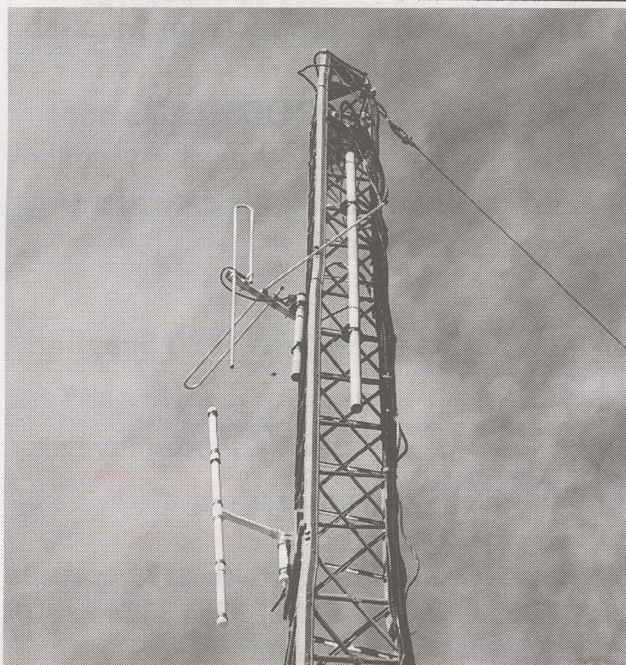
line is "un"balanced in the electrical sense because uneven

Frequency	"A" length	Frequency	"A" length
88 MHz	1.54m	100 MHz	1.35m
92 MHz	1.47m	104 MHz	1.30m
96 MHz	1.41m	108 MHz	1.25m

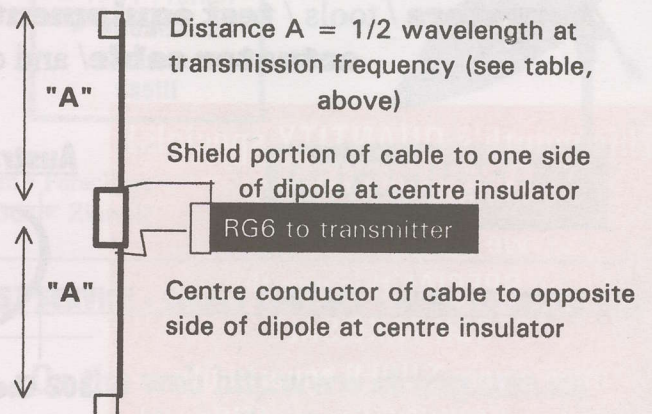
currents flow on the centre conductor and the shield) to a "balanced" (dipole) antenna (the antenna is "balanced because each half is identical in size to the other half). A 1:1 balun (unbalanced 75 ohm to balanced 75 ohm) installed between the dipole and the RG6 (or larger 75 ohm) transmission line cable would correct this but at the 1 watt and down power level, such attention to "detail" is excessive.

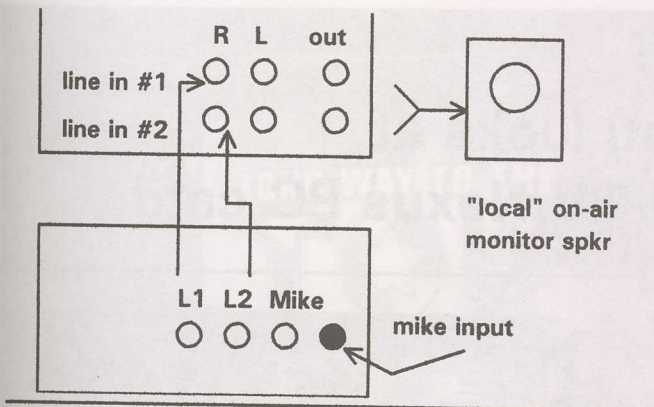
Programming and what you do with it

One of the nice features of the FM100 is the built-in trio of suitable inputs with front panel operator/user control of the "volume" (modulation) level from each input. The "line inputs" are for connecting the audio sources - each can be in



FM "dipole" transmission antenna consists of two correct-lengths of copper wire (DSE or local electrical shop) housed inside of protective PVC pipe supported from a mast or tower as shown.





stereo (R and L inputs on rear of FM100) or they can be monaural (in which case you would use only the R[ight] side RCA socket when connecting to the source). The potentiometer front panel "volume" controls determine how "loudly" the audio source "modulates" the transmitter. There are two assists here:

1) Just above the "Line 1" and "Line 2" front panel volume/level controls are a pair of bargraphs which are "calibrated" with percentage of modulation. When a sound is transmitted, the bar graph lights up, varying as the intensity of the sound varies. By turning the pot up (cw) or down (ccw) the bar graph tracks to tell you how close to "100% modulation" you might be.

2) Just to the left of the Line 1 front panel pot is a button labelled "Auto AGC." This is a fail-safe - you can't screw this up - setting. Push AGC "on" and within reasonable limits even if you have misadjusted the Line 1 or Line 2 "volume/modulation" controls, the AGC (automatic gain control) will act as a "limiter" stopping the transmitter from exceeding 100 (87.5%, actually) modulation.

Lower and higher power

Not every application requires 1 watt of transmitter power (see table, p. 15). Ramsey's FM transmitter line-up (www.ramseykits.com) covers various output power levels from 5uW (microwatts) through 500 watts. With pricing to match. Most products (except the 35/250/500 watt versions) are also available as self-assembly kits with exceptionally well done step-by-step instructions. Lower power models operate from "wall wart" power supplies, the 1-watt and up have 110-260V AC mains supplies. The least expensive, the FM10A, provides 10 mW and with a built-in whip transmitting antenna is priced under US\$35. In Ramsey's hundreds of kits on offer, you can do some clever stuff to actually automate your FM radio station.

For example: Use their "Bullshooter" endless loop digital voice storage (records and plays back voice or music for up to 8 minutes length - US\$60) and their VS1 Voice Activated Switch (US\$6.95) to automatically create a voice message for your radio station which runs on "cue" at appointed times. How or why would you want to automatically "interrupt" your FM station's normal programme relay with a local announcement? Use your imagination:

"This FM radio service brought to you by BCD Satellite Service where right now you can purchase a full home satellite dish system to receive the complete 6 channel Indian television service for as little as \$1495 installed."

There are numerous Ramsey kits (over half are also offered wired and tested [w/t] if you are afraid of using a soldering iron) which can be integrated into an FM radio station after

Top Five (FTA) rebroadcasting sources - English
#1/ USA's DTS/AFRTS 3 radio services I701 LHC
#2/ World Radio Network As2 4000Hz
#3/ VOA As2 3880Hz
#4/ ABC Radio (NZ only) B1 12.256Vt
#5/ ESPN Sports (Radio) PAS8 4020Hz

you have made the basic selection of a transmitter. For 29 years Ramsey has been designing and providing kits world-wide and it is good to see that products such as the FM transmitter line now offer not only full range AC mains powering (100 - 260V AC is common) but also such refinements as switchable 50 or 75 microsecond pre-emphasis (you may not realise that North American FM standards are slightly different than those in use in Europe, for example and we are not just talking about frequency bands here).

Synopsis

We did *not* build the FM100 from a kit but did spend several hours reading the step by step instruction or wiring and assembly manual. If you ever built a Heathkit back in the olden days, Ramsey's manual is even more complete. If you routinely solder and trouble shoot misbehaving electronic equipment, you'll have no difficulty building the FM100 from a kit and having it work first time.

For about the price of a new 5400/5410 you could be broadcasting stereo FM to your neighbourhood, or community. If there is a commercial side to what you do, this could well be the best promotion effort you can make in your area. If you have no interest in being commercial, the lower cost 10/20/25mW FM transmitters will allow you to receive TV audio or satellite audio up to a kilometre away from your home on your car radio or a portable shirt-pocket radio. It may not be as exciting as SDStv.com's TV links but it sure beats leaving your satellite reception behind when you are sent out on an errand in the neighbourhood.

FM Transmitters / some of the Ramsey options

FM10A/ Runs on 9V battery or wall part, settable to any frequency between 88 and 108 MHz stereo; about 10mW with built-in antenna; kit - US\$34.95

MP3FM/ Wall wart supply, synthesised any frequency 88 - 108 MHz, around 20mW with built-in antenna; kit US\$99.95

FM25B/ Wall wart supply, PLL synthesised for high stability 88-108 MHz, audio loop thru input, high quality stereo generator, around 25mW; kit US\$129.95

FM100/ Internal 100-260VAC supply, see review here, 1 watt output; kit US\$329.95

PX1/ fully assembled ready to plug in and operate 35 watt output 88.0-108.0 MHz FM stereo transmitter; fully commercial in every way. US\$1795.

PX250C/ 250 watt version of PX1; US\$3295

PX500C/ 500 watt version of PX1; US\$3995

Contacts: Ramsey Electronics Inc., USA toll free (+ +) 800 446 2295, Fax + + 1 716 924 4886

web www.ramseykits.com where there is a tremendous variety of material available describing user tips for a range of Ramsey products.

And if you have a PC?

Jamie Valenti looks at the Hauppauge WIN-TV/Nexus PC card

With all the models of satellite TV boxes available, a somewhat different receiver enters the market. So what's the hype mean? The *talk* is all about a new way of accessing your satellite TV programming - not with a standard set top box but rather a PCI card, that slides into your desktop computer's PCI slot, with all standard features of STB, *and more*.

Remote control function, A/V TV out, and as an option you can connect the CI module adapter for CI CAMs or record function on your PC Hard drive. And use third party software, which makes the Nexus power as powerful as the software.

The Hauppauge Win-TV Nexus-DVB-S card uses you PC's processor to receive satellite pictures as well as Internet data services via an ISP. What's required is a spare PCI slot. A minimum 400 MHz PC processor to view pictures and a minimum of 233MHz for data services.

Installation is a breeze - just a matter of pushing the card into the PCI slot, plug in your satellite dish (F connector on card), start the PC to install the satellite software and you're away. At this point I would recommend installing the new (software) Ver 2.10 for XP users - one advantage over the ver 2.09 is the ver 2.10 has satellite settings visible to the Asia Pacific region along with world settings.

You will download at: http://www.hauppauge.co.uk/html/dvb_sw.htm

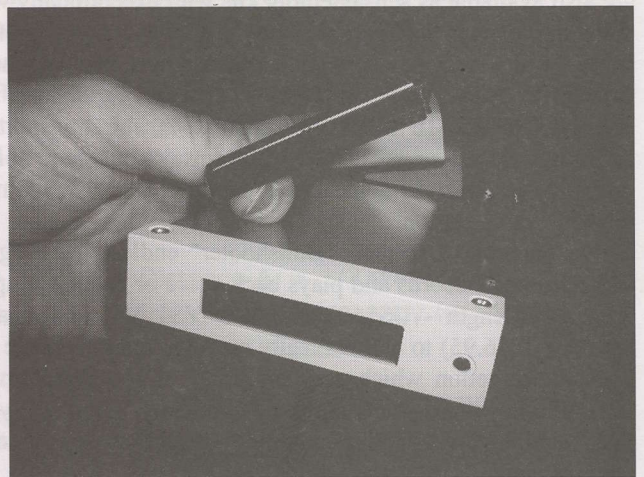
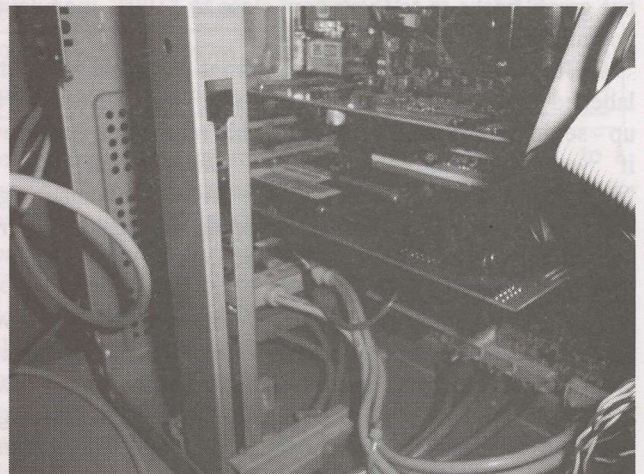
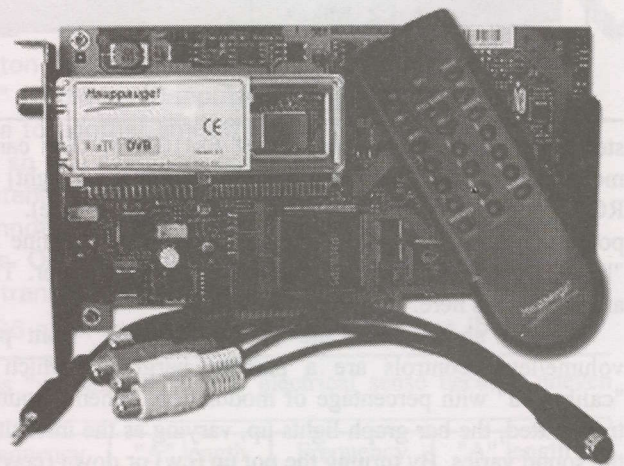
I installed the PCI card in my 2GHz PC 256 RAM computer. The (PC card) manufacturer's minimum requirement is 400MHz. As I am running XP, I download the ver 2.10 drivers. I quickly found this version has the Australian satellite settings (located in the transponder folder) and at the same time I installed the CI module adapter which sits neatly in your spare 3.5 inch FDD front slot. The CI adapter accepts 2 x CI CAMs and has the remote control PIR sensor built in so no need to run the cable PRI that is supplied with the card. I now hooked up the A/V output to my TV and I was ready to play.

To start the software I opened settings (Spanner Icon). I set the DiSEqC to none, opened the drop menu tap and selected my satellite - in this case B3. I then hit the button next to the drop menu, which opened a test satellite page, and opening LNB settings, set LOF2 to 11300 for Ku-band. And hit OK. An attention page appeared informing me that satellite settings have changed, asking do I wish to proceed? I hit yes.

Now on the main program page again. I noticed the satellite name B3 at the top of the page. I then opened the Binocular icon, hit auto scan and waited as the transponders loaded up. Once finished I returned to the main page and found the channels names had appeared on the page. I now select a FTA channel - one without a Hash Mark next to it. Like TRT International (for example) and bingo!

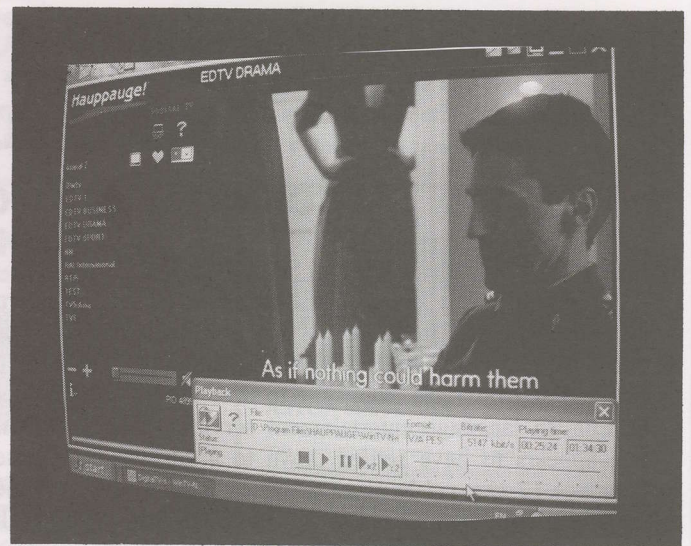
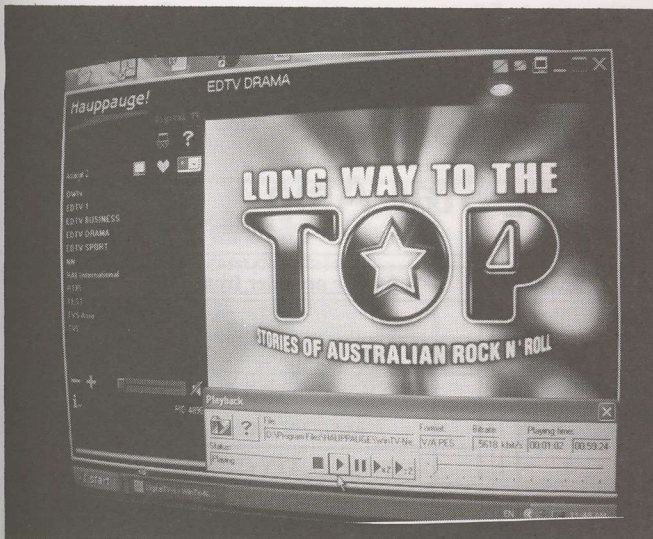
I now have a picture on my desktop (PC) monitor, which can be adjusted to full screen as well as on my TV with audio pumping through my desk speakers and audio system.

I now placed a 2.06ver CI cam loaded with an authorised smart card and the pay services were alive as well.



I then fired the unit up on C-Band - AsiaSat 2, 3 PAS 2, 8 all FTA services. There are some problems with third party software, unlike Prog DVB. The main problem being the Nexus factory s/w seems only to support Ku band, although you can get C- band to fire up with some work.

The benefits are obvious; not only can I work in different computer tasks including surfing the Internet at the same time



as watching these digital satellite channels, I can even record broadcasts digitally on my PC hard disk. The software also has a timer so you can record while you're away.

The TV output is high quality, like the best grade of STB. The MPEG quality of the record function on playback is so good it is almost impossible to see the difference from the live pictures. Of course its take up lots disk space - a 90min program chew's 3.69GB. The beauty of having this file on you HDD is that you can change format and burn to something like S-VCD.

Other features include a Teletext tuner that can display information pages immediately and an Electronic Program Guide that shows time and title information. I've been operating the card for over 200 hours non-stop with no lock up, while at the same time connecting on and off the Internet.

The card is as reliable as any STB but keep in mind I am running a fast processor.

The card is also compatible for data services via an Internet provider and with the software like IPDVB one can "snoop" on un-encrypted Internet services, making it a very versatile "machine" for the dedicated and serious enthusiast.

As this is written for SatFACTS, third party software like ProgDVB, Multideck, have the ability to emulate cam and card with the Nexus PC card. The rumours are running hot with some claiming that services "protected" with Irdeto and SECA have been undermined by the Nexus card and that future services may fall to the same fate. It seems as if as the software gets more powerful so does the card, which in my estimation is a view of the future. Software is the name of the game and if your PC is in charge, so are you.

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Information that is hard to come by?

Channel Loading for Measat 2 Astro Mux, Star Asia

Measat 2 / Astro Mux 11.602H, Sr 41.500, 3/4

This service is on a spot beam that includes Eastern Australia at sufficient level to "play" on dishes as small as 60cm in portions of NSW and Queensland. The satellite (located at 148E) has from time to time provided a number of English language entertainment services, briefly, but of late appears to have settled down to a Chinese/Cantonese language 17 channel bouquet of which 3 are FTA. Note the unusually high symbol rate (41.500) which may be difficult for some receivers to handle. Loading this service is also made difficult by the use of Chinese "text" characters which are in place of the normal ASCII text. The table here lists the channels as loaded on an eMTEch 100 model in NSW. There is possibly a specific-software IRD being offered for this service which "clears up" the muddled text situation created by the use of non-ASCII characters.

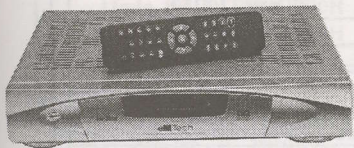
The STAR Asia bouquets (6 transponders on AsiaSat 3S, 105.5E) were loaded to a Hyundai HSS-100C and a Nokia 9500S, by transponders - not network (NIT) loaded. The within-transponder sequence will vary from receiver to receiver - do not be alarmed if your own loading differs slightly from that shown here. See footnotes for FTA.

Channel	Service provider from eMTEch 100
1	Afa TV
2	ETTV-N (possibly ETTV News?)
3	ETTV-W (World? Possibly international)
4	MAC TV (Macau TV? FTA)
5	TTV (Taiwan)
6	CTS (Taiwan)
7	FTV (Formosa TV from Taiwan)
8	Mandarin label; possibly SBN?
9	Mandarin label; possibly Hunan TV
10	Mandarin label; possibly Guangdong TV
11	CCTV4
12	Mandarin label; may be Phoenix Chinese
13	Mandarin label; may be Phoenix Info News
14	HOT
15	CTV
16	Tzu Chi (not same as Mediasat B3); FTA
17	A-Skynet (slide advertising service; FTA)

	3780V/28.100/3-4	9	409 STAR Spt SE As	12	606 Sky News	7	753 CNBC
1	710 ESPN India	10	410 STAR Spt SE As	13	712 Sky News	8	752Channel [V] India
2	STAR Movies	11	705 STAR Sports	14	VIVA Cinema	9	751 STAR World India
3	501	12	412 STAR Spt India	15	608 VIVA Cinema	10	CHannel [V]
4	701 STAR Movies	13	411 STAR Spt India	16	714 VIVA Cinema	11	STAR World
5	STAR Plus	14	STAR Sports	17	724 National Geo	12	CNBC
6	503	15	ESPN Asia	18	730 National (Geo)		4000H/26.850/7-8
7	703 STAR Plus	16	ESPN Philippines	19	National Geographic	1	Subtitle-Test
8	STAR News	17	ESPN Philippines	20	755 STAR Mov ME	2	715 Phn'x Movies
9	505	18	STAR Sports SEA		3940V/26.850/7-8	3	721 Movie Int Ch/SEA
10	709 STAR News	19	720 ESPN India	1	725 STAR World As	4	STAR Mov.IntCh/SEA
11	708 National Geo	20	ESPN India	2	735 STAR Movies	5	726 Phoenix Info News
12	National Geographic	21	490 ESS Con.	3	736 [V] Taiwan	6	739 Movie Int./Ch/SEA
13	508		3880H/26.850/7-8	4	737 National Geo	7	743 Phoenix Chin. Ch
14	722 STAR Gold	1	STAR Movies ME	5	738 STAR Movies	8	XING XONG
15	STAR Gold	2	STAR World	6	733 STARChin. Ch	9	
	3860V/27.500/3-4	3	602 STAR World	7	STAR World		
1	402 ESPN Taiwan	4	702 STAR World		3980V/28.100/3-4		
2	401 ESPN Taiwan	5	Channel [V] Int.	1	STAR Plus		
3	413 STAR Sports Tai	6	603 Channel [V] Int.	2	741 Adventure One		
4	414 STAR Sports Tai	7	711 Channel [V] Int.	3	Adventure One		
5	405 ESPN Asia	8	FOX News	4	510		
6	406 ESPN Asia	9	605 Fox News	5	511		
7	407 ESPN Asia	10	713 FOX News	6	754 STAR Plus Pakis		
8	408 ESPN Asia	11	Sky News				

Footnotes:
 Within the Measat Aston 2 (top box), 3 FTA channels. Within the STAR Asia bouquets, 4 FTA channels (all are bold face 'black' marked).

eMTEch Satco DX compatible



eM300 eMTEch PVR/CI receiver \$A800

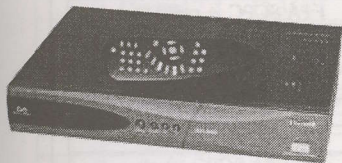
Some demo models available for \$A600

The eM300 is the latest PVR model from eMTEch. 40GB HDD gives up to 22 hours of recording/playback at 4MB/sec. The unit has 2 x CI slots and can be used for encrypted services with the relevant CI module and authorised smart card. Time shift function allows you to pause live off-satellite program and resume after a period up to 22 hours, and continue watching the program with the time shift. The receiver will continue to record the incoming live program while you watch the delayed program! USB port allows to upload and download PVR files to and from your PC. USB lead and driver supplied. Dolby AC3 digital optical bitstream output lets you patch into a high quality audio surround system.

eM200 Receiver + 2 CI \$A400

The eM200 is high quality digital MPEG 2 receiver with 2 CI slots.

HUMAX

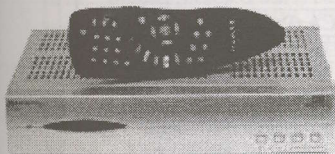


IRCI-5400Z \$A600

This receiver has one embedded irdeto slot and two CI slots suitable for Irdeto, Seca, Nagravision, Cryptoworks, Viaccess and Conax. In Australia, with an original authorised smart card, it is suitable for the Aurora service on Optus B3 without requiring any CI cams. With an Aston CI cam and authorised smart card, it is suitable for the LBF on Intelsat 701 KU band. It will work on all free to Air, DVB un-encrypted satellite signals.

IR-5410Z \$A500

Has one embedded Irdeto slot. Works on Free to air DVB signals. In Australia, with an original authorised smart card, it is suitable for the Aurora service on Optus B3. RCA Audio/Video output jack plus PLL modulator RF output. No smart connectors or 0/12V output on this receiver. Works on the same services as the 5400Z.

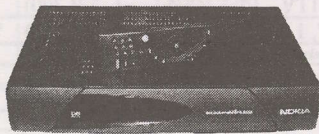


ID Digital F-10M \$A299

Manufactured by Humax, the F-10M is a digital satellite free to air receiver. Works on DVB un-encrypted services in C and KU band. This receiver has no card slots, or CI slots and cannot accept a smart card. Mains voltage 90-260VAC.



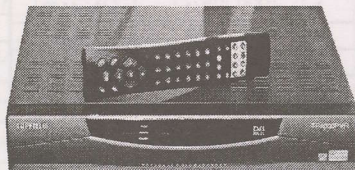
NOKIA New receivers



Brand new Nokia 9500S \$A1350

These Nokias come with 12 months warranty. They include Irdeto CAM and SCSI port, original Nokia software and 2.00UNS bootloader, and NDT1006A tuner.

TOPFIELD



TF4000PVR PVR with Dual Tuners and 40G HDD \$A1000

Features -
 Recording capacity : 25 hours for 4Mbps stream with 40GB HDD
 Time-shift function in a live program
 Fast Forward/Reverse when replaying recorded contents
 Replaying selected region repeatedly
 2 Tuners (Recording a program while watching other program from other TP simultaneously)
 Delayed Recording in EPG
 Book Marking Function
 MPEG-2 Digital & Fully DVB Compliant
 2 x Common Interface (CI) Slots
 Input Frequency 950 - 2150 MHz
 2 LNB Input (F-Type), IF Signal Loop Through
 5000 Channels TV & RADIO Programmable
 Subtitle & Teletext (VBI insertion) Supported
 Teletext by software emulation
 MPEG Layer 1 and 2, CD Quality Audio Sound
 DiSEqC 1.0 & DiSEqC 1.2 Control Compatible
 S/PDIF for Digital Audio
 Program / TP editing by PC.

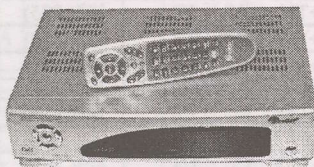
TF3000CIP Pro \$A420

Topfield digital receiver with 2 x CI slots & positioner

TF3100FEP Pro \$A360

Topfield digital receiver with 2 x CI slots.

ASTON

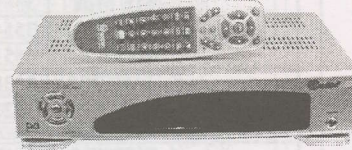


SIMBA 201SV \$A500

Manufactured for Aston France, has one embedded Viaccess2 slot This is the official receiver for reception of Fashion Television from AsiaSat2 in the Pacific Rim Countries
 Fashion TV Parameters on AsiaSat2-
 Frequency 3796 MHz, Polarity Vertical, Symbol Rate 2626 MS/Sec, FEC 3/4.

Fashion TV Smart cards \$A600

Price includes 12 months subscription for Commercial premises such as Hair Salons, Gymnasiums etc.



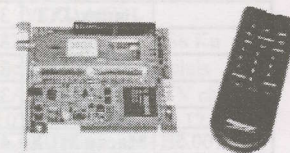
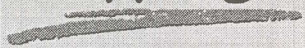
ASTON Simba 201SA \$A500

AstonCrypt embedded receiver. Has one embedded card slot. This encryption will work on Seca and Mediaguard A valid original smart card is required from the provider Suitable for the French bouquet (LBF) on Intelsat 701 (KU band), and the ZEE TV bouquet on AsiaSat3 (C Band)

ASTON Simba 202S \$A550

AstonCrypt and Viaccess embedded receiver. Has two smart card slots- One for Aston (Seca/Mediaguard) and the other for Viaccess2. AstonCrypt is suitable for the French bouquet (LBF) on Intelsat 701 (KU band), and the ZEE TV bouquet on AsiaSat3 (C Band), and Viaccess 2 is suitable for Fashion TV from AsiaSat2. A valid smart card is required in each case.

Hauppauge!



WinTV NOVA USB Satellite receiver \$A447

Supports Windows 95/98/2000/NT4.0/ME/XP
 Reception of DVB data services
 (Maximum download speed 40Mbit/sec)
 Live digital TV from satellite in re-sizeable window
 Digital stereo radio
 Recording and Playback of digital TV using MPEG-2 compression.

WinTV NOVA PCI slot Satellite receiver \$A191

Fits into a PCI slot in your PC
 Supports Windows 95/98/2000/NT4.0/ME/XP
 Reception of DVB data services
 (Maximum download speed 40Mbit/sec)
 Live digital TV from satellite in re-sizeable window
 Digital stereo radio
 Recording and Playback of digital TV using MPEG-2 compression.

WinTV NEXUS PCI slot Satellite receiver \$A450

Fits into a PCI slot in your PC
 Supports Windows 95/98/2000/NT4.0/ME/XP
 Reception of DVB data services
 (Maximum download speed 40Mbit/sec)
 Live digital TV from satellite in re-sizeable window on your PC, or on your TV set
 Digital stereo radio on your PC or on your home theatre system
 Recording and Playback of digital TV and Radio services on your PCs hard drive.. Play back on your PC or TV set. Includes High performance MPEG-2 decoder
 Optional CI interface slot, Includes remote control.

WinTV NOVA Satellite receiver with CI slot \$A314

Fits into a PCI slot in your PC
 Supports Windows 95/98/2000/NT4.0/ME/XP
 Reception of DVB data services
 (Maximum download speed 40Mbit/sec)
 Live digital TV from satellite in re-sizeable window
 Digital stereo radio
 Recording and Playback of digital TV using MPEG-2 compression
 Includes CI slot for CI cams and remote control.

WinTV CI slot for floppy bay \$A164

Optional accessory to provide 2 CI slots to the WinTV Nexus-S PCI card

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 October 2002

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	
Thcm3/78.5	SkyChAust	3695/1455V	up to 3	3/4	5(,000)	
	MRTV-Myn	3676/1474H	1	2/3	6(,000)	
	MidEst Mux	3640/1510H	up to 12	3/4	28(,066)	
	Mahar/DD1	3600/1550H	up to 8	3/4	26(,661)	
	ME Mux	3569/1581H	up to 4	3/4	9(,000)	
	Nepal TV+	3554/1596V	3+ in mux	3/4	13(,333)	
	3ABN +	3551/1600H	4+ TV, radio	3/4	13(,330)	
	JAIN TV	3538/1612V	1TV	3/4	3(,300)	
	PTV1 +	3521/1629V	1TV, 1 radio	3/4	3(,333)	
	TARBS	3520/1630H	unknown	3/4	28(,062)	
InSat 2E/83	TARBS/5	3480/1670H	6+ TV?	3/4	18(,180)	
	Thai Global	3425/1725V	up to 7?	2/3	27(,500)	
	ETV mux	4005/1145V	6+ TV	3/4	27(,000)	
	Hyd Dig 2E	3910/1240V	1	3/4	5(,000)	
	Kairali TV	3699/1451V	1	3/4	3(,184)	
	Indian mux	3643/1507V	3	3/4	19(,351)	
	Jaya TV	3615/1535V	1	3/4	3(,255)	
	ETV Mux#2	3485//1665V	4+TV	3/4	27(,000)	
	ST1/88E	MMBN	3632/1518V	12TV	3/4	26(,667)
	As2/100.5E	Euro Bouq	4000/1150H	6TV, 21r	3/4	28(,125)
5-Star Med		3951/1199H	3TV	3/4	13(,185)	
WorldNet		3880/1270H	4+/28radio	1/2	20(,400)	
Hubei/HBT		3854/1296H	1	3/4	4(,418)	
Hunan/SRT		3847/1303H	1	3/4	4(,418)	
Guan./GDT		3840/1310H	1	3/4	4(,418)	
In. Mongolia		3828/1322H	2	3/4	8(,397)	
APTN Asia		3799/1351H	1	3/4	5(,632)	
Reuters/Sing.		3775/1375H	1	3/4	5(,631)	
Liaonin/Svc2		3734/1416H	1	3/4	4(,418)	
Jiangx/JXT		3727/1423H	1	3/4	4(,418)	
Fujian/SET		3720/1430H	1	3/4	4(,418)	
Hubei TV		3713/1437H	1	3/4	4(,418)	
Henan/Main		3706/1444H	1	3/4	4(,418)	
Egypt/Nilesat		3640/1510H	7+, radio	3/4	27(,850)	
Macau MUX		4148/1002V	5TV	3/4	11(,850)	
Feeds		4086/1064V	1	3/4	5(,632)	
Dubai MUX		4020/11430V	4+, radio	3/4	27(,500)	
Jilin Sat TV		3875/1275V	1	3/4	4(,418)	
HeiLongJian		3834/1316V	1	3/4	4(,418)	
JSTV	3827/1323V	1	3/4	4(,418)		
Anhui TV	3820/1330V	1	3/4	4(,418)		
ShaanxiQQ	3813/1337V	1	3/4	4(,418)		
Guan/GXTV	3806/1344V	1	3/4	4(,418)		
Fashion TV	3795/1355V	1	3/4	2(,533)		
Modelflat	3792/1358V	1	3/4	2(,730)		
Myawady	3766/1384V	1	7/8	5(,080)		
Saudi TV1	3660/1490V	5+/tests	3/4	27(,500)		
As3S/105.5E	Telstra 1-Net	12.596H	no TV	5/6	30(,000)	
	Zee bouquet	3700/1450V	10TV	3/4	27(,500)	
	Macau MUX	3713/1437H	2TV	3/4	5(,868)	
	Arirang TV	3755/1395V	1	7/8	4(,418)	
	Now TV +	3760/1390H	up to 8TV	7/8	26(,000)	
	Star TV	3780/1370V	15(+TV)	3/4	28(,100)	
	Star TV	3860/1290V	21(+TV)	3/4	27(,500)	
	Star TV	3880/1270H	20(+TV)	7/8	26(,850)	
	HK Mux	3900/1250V	2+TV	7/8	27(,895)	
	Star TV	3940/1210V	7(+TV)	7/8	26(,850)	
	CNNI	3960/1190H	8(+TV)	3/4	27(,500)	
	StarTV	3980/1170V	12+TV	3/4	28(,100)	
	Star TV	4000/1150H	9(+TV)	7/8	26(,850)	
	Sun TV	4095/1055H	1	3/4	5(,554)	
	CCTV bqt	4129/1021H	4(+TV)	3/4	13(,240)	
Zee Bqt #2	4140/1010V	8(+TV)	3/4	22(,000)		
Cak1/107.5	Indovision (S-band)	2,536, 2,566, 2,596, 2,626	33(+TV)	7/8	20(,000)	
T'Kom/108E	IndoBqt	3460/1690H	up to 6	3/4	28(,000)	
C2M/113E	TPI	4185/965V	1	3/4	6(,700)	
	Anteve	4144/1006V	1	3/4	6(,510)	

Receivers and Errata
Finally settled here from As2
erratic service
Now essentially all CA
USA religion chs, CMM music FTA
possibly TARBS?
FTA + CA mux
3 Angels USA, Ch of Hope, + 9 radio
PIDs 4132/4133
frequency change
MUX testing
TARBS labell, CA-no SIDs
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
New 07/02; corrections 09/02
SCPC; OK E. Aust. wide beam
Several new ETV here; Asia beam
Nagravision, some FTA; erratic
FTA TV + radio
Macau MUX
FTA; Now here full time
FTA SCPC, teletext
FTA SCPC, teletext
FTA SCPC, radio APID 81
FTA: #1 Mongolian, #2 Mandarin
Sometimes FTA; also 3895Vt
FTA & CA
FTA SCPC, radio APID 256
FTA SCPC, teletext, radio APID 81
FTA SCPC, + radio APID 80
FTA SCPC, radio APID 80
FTA SCPC, + radio
Thru TARBS Aust, occ. FTA
5 chs TV, FTA, some tests
FTA SCPC feeds
FTA including sport
FTA SCPC, + radio
FTA SCPC
FTA SCPC, + radio
FTA SCPC + radio
FTA SCPC, radio APID 81
FTA SCPC, radio APID 257
Now Viaccess version 2 CA
Off air (new in June) in July
FTA SCPC - difficult to load
FTA MCPC; some testing here
Signal useful for dish testing - no TV
Mediaguard (SECA) CA; 2 FTA
New June 2002; low res MUX
FTA SCPC; audio now OK
CA + NOW, B'berg, NOW, Indus FTA
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DV211, Zenith)
FTA PAL + occ. feeds
NDS CA as above
PowVu CA; new SR Apr 29
NDS CA (Pace DVS211, Zenith)
NDS CA w/ 4(Chinese) FTA
"History Channel" testing SCPC
moved from 4115
Mediaguard (SECA) CA
NDS CA using RCA/Thomson, Pace IRDs
also 3586H/17.500, 3496H/19.615
FTA SCPA; NT/NC only
change from 4055V; FTA SCPC

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(C2M)	Indo Mux	4080/1070H	5+ TV	3/4	28(.125)
	Indosiar	4074/1076V	1	3/4	6(.500)
	SCTV	4048/1102V	1	3/4	6(.618)
	Indone.Mux	4000/1250H	6+TV	3/4	26(.085)
	Satelindo	3935/1215H	1TV	3/4	6(.700)
	Bali TV	3926/1224H	1TV	3/4	4(.208)
	Indo. MUX	3880/1270H	3+ TV	3/4	28(.125)
	GlobalMUX	3760/1390H	up to 12 TV?	3/4	26(.087)
	Brunei/Sing	3733/1417H	1TV	3/4	6(.000)
	RCTI	3473/1677H	2	3/4	8(.000)
	Myawad TV	3706/1444H	1	3/4	5(.924)
Jc3/12	Miracle Net	3996/1154V	3 up to 6	5/6	22(.000)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)
Jc28/54	BYU tests	3.915/1245V	2	3/4	3(425)
MeaSs2	New Mux	12.532H	17	3/4	41(.500)
	Astro Mux	11.602H	up to 17TV	3/4	41(.500)
	VTV MUX	11.522Vt	3 TV	3/4	9(766)
B3/156	Mediasat	12.336V/T2	10TV, 4+radio	2/3	30(.000)
	Aurora	12.407V/T3		2/3	30(.000)
	Aurora	12.532V/T5	Inc Zee TV	2/3	30(.000)
	Aurora	12.595V/T6		3/4	30(.000)
	Aurora	12.657V/T7	data only?	2/3	30(.000)
	Aurora	12.720V/T8		3/4	30(.000)
	Austar	12.313H/T9	iTV + here	3/4	30(.000)
	Austar/Optus	12.376H/T10		3/4	29(.473)
	Austar/Foxtl	12.438H/T11		3/4	29(.473)
	Austar/Foxtl	12.501H/T12		3/4	29(.473)
	Austar/Foxtl	12.564H/T13		3/4	29(.473)
	Austar/Foxtl	12.626H/T14		3/4	29(.473)
	Austar/Foxtl	12.688H/T15	(some FTA ra)	3/4	29(.473)
B1/160	ABC NT fd	12.258V	1TV, 3 radio	3/4	5(.026)
	ABC feeds	12.317H	1	3/4	6(.980)
	Net 7 service	12.397H	1	3/4	7(.200)
	Central 7	12.354H	1TV + 1 radio	3/4	3(.688)
	Imparja mx	12.360H	2TV + 8 radio	3/4	5(.424)
	Sport feeds	12.420V	1	3/4	6(.110)
	Mediasat#3	12.424H	3+ TV	2/3	19(.800)
	TVNZ DTH	12.483/456V	4+TV	3/4	22(.500)
	Nine Net	12.512H	1 TV typ.	3/4	5(.632)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(.500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)
	Sky NZ	12.644/67TV	9TV	3/4	22(.500)
	ABC HDTV	12.603H	5TV	7/8	14(.300)
	Sky NZ	12.707/733V	8+TV	3/4	22(.500)
P8/166	ABC A-P	12.301H	1TV, 2 radio	5/6	5(.858)
	TARBS3	12.326H	13TV + radio	3/4	28(.066)
	TARBS	12.526H	13TV + radio	3/4	28(.066)
	TARBS2	12.606H	13TV + radio	3/4	28(.066)
	TARBS5	12.646H	testing	3/4	28(.066)
	TARBS4	12.726H	13TV + radio	3/4	28(.066)
	JEDI/TVB	12.686H	11+ TV	3/4	28(.126)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(.500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(.125)
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(.470)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(.470)
	Discovery	3980/1170H	8 typ.	3/4	27(.690)
	CalBqt/Pas8	3940/1210H	up to 8TV	7/8	27(.690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)
	FilipinoMUX	3880/1270V	up to 8TV+radio	3/4	28(.694)
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(.000)
	CCTV Mux	3839/1311H	up to 4	3/4	13(.240)
	DVBS-N	3836/1314V	1FTA, 4+ CA	3/4	22(.000)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(.632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(.000)
	MTV	3740/1410H	8	2/3	27(.500)
P2/169E	P2/169	12.281V	2+ TV, radio	2/3	27(.500)
	WA PowVu	12.637(.5)V	4TV, 8 radio	1/2	18(.500)
	TARBS (?)	4087V	9TV + radio	3/4	21(.000)
	TVB(S)	4020/1130V	1TV	3/4	6(.620)
	Fox Bouquet	3992/1158V	8TV/data	7/8	26(.470)
	Feeds	3966/1184V	1	2/3	6(.620)
	Feeds	3957/1193V	1	2/3	6(.620)
	Feeds	3929/1221V	1	3/4	10(.850)
	Feeds	3912/1238V	1	2/3	6(.620)
	Feeds	3898/1252V	1	2/3	12(.000)
	Middle East	3836/1314V	4 typ	3/4	13(.331)
	Feeds	3803/1347V	1	3/4	6(.000)
	BBC +	3743/1407V	3	3/4	21(.800)

Receivers and Errata
Global TV - frequent changes in lineup
FTA; solid on 3.5m in New Caledonia
FTA SCPC; NT/NC only
unstable platform - testing?
Test card only reported
New PIDs Sept; reload
TVRI, others FTA
Testing- 12 chs promised; 2-12 tests
FTA; share time, Brunei-23hrs, Sing 1h
FTA SCPC, Australia, NC OK
may be test; svc has been erratic
PowVu, some FTA (ch # 1,3)
CA & FTA NTSC: Japan, Taiwan
not fulltime; very strong NZ, Aust
New Sept 2002; unknown source
Aust East beam - 3 FTA + 14 CA
WA only? Skew path, intended Asia
Adding Star + India October?
Aust, NZ 90 cm
cvrs Aust, NZ 90 cm; CA + ABC Nat
Aust only; - smart card p. 26
cvrs Aust, NZ 90cm (no TV, radio)
Aust only; * - smart card p. 26
Austar Interactive + demos; p. 29, SF#97
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
V832, A833
also 12.326, 12.335; ex PAS8 Ku
Full schedule less commercials
V1280, A 1281; occ. 2nd TV ch
V1024, A1025, P1024; also try 12.379
Weekend footy feeds reported-FTA
FTA 4 channels (TVNZ x 4)
testing digital feeds; Sr may be incor.
NDS CA, subscription available NZ
NDS CA, subscription available NZ
NDS CA, subscription available NZ
also 12..626, 643, 670, 688, & 706H
NDS CA, subscriptions available NZ
Feed, Adelaide; not permanent
TPG/EurodecMDS CA, occ. FTA
TPG/Eurodec MDS CA, radio FTA
TPG/Eurodec MDS CA; TRT FTA
TPG/Eurodec MDS CA
TPG/Eurdec MDS CA; Thai TV, FTA
June 2002-Irdeto-2 CA
Dateline west; east PAS2, 3901
PowVu CA
PowVu CA & FTA; subscription avail
PowVu CA; ch 11 DCP-CCP bootload; new FEC
PowVu/CA (some audio FTA)
PowVu CA & FTA (EWTN)
FTA at this time
Myx FTA V1960, A1920 + radio FTA
some TV FTA; radio may require PIDs
PowVu FTA, replaces PAS-2 svc
Difficult because of CCTV cross pole
was As2; PowVu CA
PowVu, CNN/CNNI now CA
#2, 8 MTV China FTA; rest CA
PowVu CA, WIN, ABC NT
PowVu CA, WA only - D9234
New Sept 2002; possibly TARBS
feeds to (USA) pay-TV
Pv, CA/FTA (FTA ch3 test card)
PowVu (FTA) occ feeds
PowVu (FTA) occ feeds
PowVu (FTA) occ sport feeds
PowVu(FTA) occ feeds
PowVu (FTA) occ feeds
RAI TV, radio FTA; balance CA
PowVu (FTA) occ sport feeds
BBC FTA, others CA usually

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS-2/169)	Feeds	4040/1010H	1	3/4	10(.850)
	7thDayAdv.	3872/1278H	1	3/4	6(.620)
	Feeds	3868/1182H	1	2/3	6(.620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)
	HK bouquet	3850/1300H	up to 8	2/3	24(900)
	occ feeds	3776/1374H	1 typ	3/4	5(.560)
	Korean Bqt	3762/1388H	up to 3	3/4	11(.570))
I702/176E	RFO Poly	4027/1123L	1TV	3/4	4(566)
I701/180E	TNTV	11.060&11.514	9	3/4	30(.000)
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)
	TVNZ	4195/955RHC	1	3/4	5(.632)
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)
	TVNZ	4178/972RHC	1	3/4	5(.632)
	AFRTS	4175/975L	3 TV, 3 radio	2/3	3(680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)
	TVNZ/feeds	4161/989RHC	1	3/4	5(.632)
	RFO-Canal+	4086/1064L	4TV, radio	5/6	12(.041))
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)
	TVNZ feeds	4044/1106R	1	3/4	5(.632)
	NZ Prime TV	4024/1126L	1	2/3	6(.876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(.000)
	Ioarana	3772/1378L	1	3/4	4(.566)
	TVNZ	3846/1304R	1	3/4	5(.632)
	10 Australia	3769/1381R	4	7/8	20(.000)
	USA feeds	3749/1401R	4?	?	26(400)

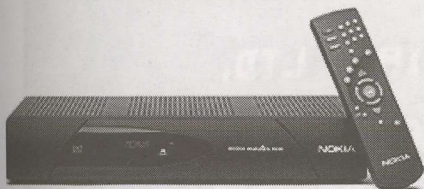
Receivers and Errata
PowVu occ FTA feeds
Sat, Sun 0030, 0900+UTC ? need verif
FTA (occ sport); also try 3863, Sr6.100
FTA-typ NTSC-occ sport, live Shuttle
PowVu CA + FTA (BBC gone)
was 4148Vt; some FTA
occ feeds, typ FTA; also Sr 5.600
Korean MUX, reload June 01
SE spot beam
east spot; 10TV + r each, vertical pol.
1+ FTA, Mediaguard; also 10.975 weak
DMV/NTL early vers., occ feds, typ ca
DMV/NTL early vers. occ feds, typ ca
DMV/NTL early vers., occ feds, typ ca
'DTS' radio, TV audio FTA some IRDs
DMV/NTL early vers. occ feds, typ ca
DMV/NTL early vers., occ feds, typ ca
east hemi 20.5 dBw thru 2003+; new Sr
DMV/NTL early vers., occ feeds, typ ca
SCPC, mixed CA and FTA feeds
PowVu CA; Auckland net feeds
CA, Leitch encoded
New Feb 2002; vert strong NZ, Pacific
FTA SCPC; East Hemi Beam-Tahiti
SCPC, mixed CA & FTA, feeds
PowVu CA & FTA; #3 TBN
16-QAM (not MPEG-2 compatible)

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

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 DB8800-CL. 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-CL. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).
Humax ICRI 5400. Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, review SF#76.
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.
MediaStar Simba 201. Embedded SECA (Zee, Canal +); review SF#97. MediaStar Comm, contacts 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. Se 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-820 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 work 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, Teisat 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; faulty P/S. Norsat 61-8-9451-8300.
UEC680. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700720. 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, fx 64-9-814-9447.
Xanadu. DVB compliant special-priced receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)
Accessories:
Aurora smart cards. New v1.6 now available, 1.2 no longer available for RABS. Price now A\$105, Sciteq 61-8-9306-3738.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

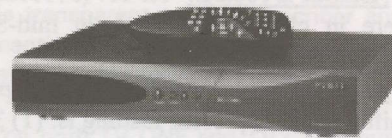
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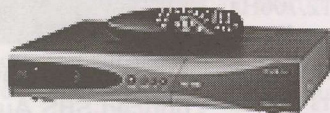
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WITH THE OBSERVERS

AT PRESS DEADLINE

Change in line-up of Mediasat B3 12.336Vt (Sr 30.000, 2/3). Channel 4 (Globecast occ. feeds) has become (they say) '21' but in fact on UEC loads as 10. Star + (India) likely to become new occupant Ch 4; new radio channel also loads "at end" of string.

Major "loss" in signal for Austar/Foxtel 12.438 and 12.314Hz 0500 UTC Friday Oct. 4 perhaps traced to cross-pole uplink error.

AsiaSat 2/100.5E: "APTN (3799Hz) and Reuters (3773Hz) were in clear for a week in mid-September." (Benjamin Taylor, PNG)

AsiaSat 3S/105.5E: "Star TV transponders have done major shifting again, present loading is: (1) 3780Vt Sr 28.100, 3/4 = 14 CA TV; (2) 3860Vt Sr 27.500, 3/4 = 21 CA TV; (3) 3880Hz Sr 26.850, 7/8 = 20 CA TV; (4) 3940Vt, Sr 26.850, 7/8 = 7 CA TV; (5) 3980Vt, Sr 28.100, 3/4 = 14 CA TV; (6) 4000Hz, Sr 26.850, 7/8 = 6 CA TV, 4 FTA TV. The NIT also indicates 3932Vt, Sr 14.100, 3/4 but there is no signal there." (IF, Qld). "Indus vision now full time 3760Hz (within NOW bouquet - was 3900Vt), Sr 26.000, 7/8)." (DM, NSW)

Gorizont 31 (now at 103E): This satellite is now testing at this location; reception reports encouraged, in particular how it might be affecting AsiaSat 2 at 100.5 or AsiaSat 3s at 105E. Check 3675RHC, SECAM tests from Telekanal Rossiya.

Intelsat 701/180E: "TV Caledonie which was FTA for some time remains CA; bad news for those who depended upon this French language service." (DM, NSW)

JcSat 2-8A/164E: "BYU-TV now loads with two services (Sr 3.425, 3/4). Original TV channel remains non-labelled, second is 'MainPacRim' and is BYU in FTA NTSC. Previously, Hyundai HSS 100C would not load this service - now it loads new second channel (only) plus 8 audio channels." (IF, Qld)

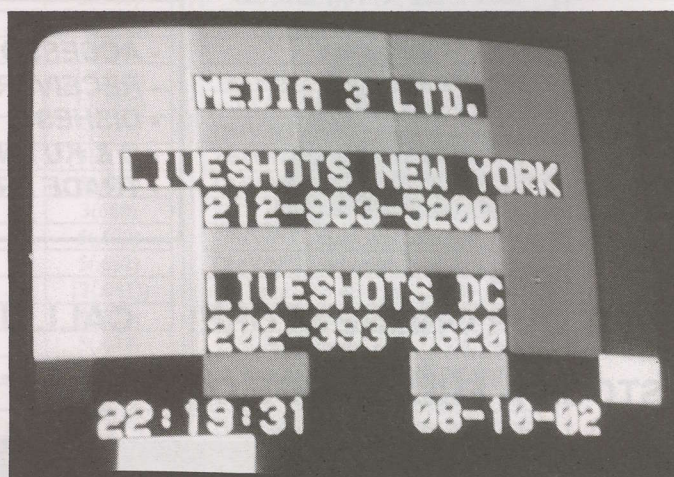
MeaSat 2/148E: "Suggest casual observers reload the 11.602Hz (Sr 41.500, 3/4) package - PIDs have changed and previous memory loads may not work." (IF, Qld) "Another new MUX on 12.532Hz, Sr 41.500, 3/4 has begun; full extent of coverage unknown; 17 channels including 'Hollywood Movie Channel'." (Benjamin Taylor, PNG)

Optus B1/160E: "Reload IRD for 12.688Hz and 12.706Hz, new PIDs for ABC-TV." (IF, Qld)

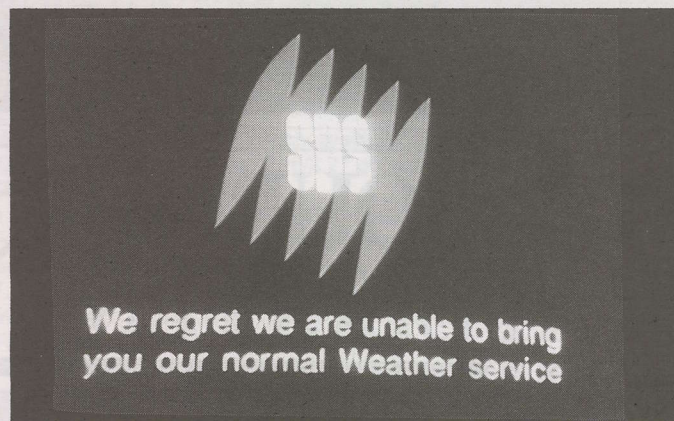
Optus B3/156E: "Hum bars in video, 50/60 hertz hum on audio of Indian SET within Mediasat bouquet appears to be at uplink or perhaps is being fed by satellite from India; shame on them for allowing it to continue (uncorrected)!" (IF, Qld.)

Palapa C2M/113E: "New PIDS for Bali TV (3926Hz, Sr 4.208, 3/4) VPID 33, APID 36." (Arnold, NT) "Global MUX promising 12 channels with promos has reverted to test cards; another bad business plan?" (IF, Qld). "Metro TV, TBN and test cards are gone from 4040Hz." (DM, NSW)

PanAmSat PAS2/169E: "4087Vt, Sr 21.000, 3/4 is new with (1) NITV (VPID 518, APID 646), (2) TVC Chile (VPID



ONE of the best ad-hoc feed options available from USA to Pacific continues to run FTA on I701 (180E), 3769RHC, Sr 20.000, 7/8.



OR much of anything else (into NZ) unless you have noticed SBS Australia is now operating on 12.407Vt using same Sr (30.000) / FEC (2/3).

519, APID 647), (3-9 colour test cards + designated radio channels 01-09; suspect this is TARBS related; subsequently, KISB3, unknown origin, began programming as well (VPID 516, APID 644)." (Bill Richards, Aust) "4020Vt, Sr 6.620, 2/3 with unknown 'entertainment news' programming." (Bill Richards, Aust) "TV Chile is now gone from California Bouquet 3901Hz." (DM, NSW - and moved to 4087; Ed)

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 f5.5/F8 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 November 15th issue: November 3 by mail or 5PM NZST November 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

With the observers: extended dialogue on issues of the day

Sky NZ and TVNZ expand satellite offerings; now limited teletext

Teletext on Sky officially began September 3 as TVNZ & Sky Digital commence the TVNZ Regional Service, which in simple terms provides three regional advertising versions of TVNZ channels to Sky Digital subscribers. In simple terms again Sky Digital viewers north of Taupo will receive the Auckland advertisements, between Taupo and Cook Strait will receive Wellington advertisements, and everyone south of Cook Strait will receive Christchurch oriented advertisements. This is consistent generally with TVNZ analogue services which provide six different regional advertising versions.

The delivery of the different versions of TVNZ channels into the Sky decoder is transparent to the subscriber and there is no action required their part, however those who wish to view closed captions (Teletext Line 21/334), or Teletext generally, will need to of course have a Teletext equipped TV set and be already able to view Teletext that is delivered via the vertical blanking interval (VBI).

Sky Digital subscribers south of Taupo as of September 3 had access to Teletext on both TV ONE and TV2, however due to delays in supply of new equipment at TVNZ, Sky Digital subscribers north of Taupo only had access to Teletext on TV ONE. By the end of September Teletext was to be available on both TVNZ channels for Sky Digital subscribers north of Taupo.

FTA STB viewers can of course select any of these channels for viewing. Teletext was scheduled to similarly be available on all six channels by end of September. FTA viewers have the additional benefit that some STBs deliver Teletext both via the VBI and OSD, (on screen display). This latter facility, if it exists in the STB, will provide Teletext viewing on any TV set or video monitor since the information is delivered as a graphical image in the video stream output of the set top box. The image quality however is not as good as the standard VBI image quality. Teletext via a Teletext equipped TV set is activated by the TV set remote control unit. Teletext via OSD is activated by the set-top-box remote control unit.

Report from Hong Kong

"What a world - remember when I sent you that article about STAR TV 'going' from Hong Kong in December 2000! I wondered why I got so much 'heat' so suddenly from a few people - its seems I may have accidentally stumbled over a long term plan which has now surfaced in their announcement to scale down in Hong Kong, sell the earth station, and contract out uplinking. Murdoch seems to have gotten nowhere in India and probably never will. China is fraught with risk - witness the control of the Internet. Taiwan - where is that all going? The BBC seems to be in the doldrums and does not know how to sell its products and where! Just like many other investors

"I want to fly a kite with you and everyone else in the satellite business in Asia. 'Us' satellite installers who do all the donkey work for the providers and earn little, know more about what customers want than channel providers themselves. In Hong Kong I have been in the homes of some astute businessmen who have said to me, 'Why don't you come and see some of us 'money people' and set up your own satellite service'!

"In Hong Kong the Government seems not to care two figs about foreign satellite decoders coming into Hong Kong so we now have a thriving business in copyright infringing decoders from Thailand and the Philippines strewn all over the foot print area (China, Macau, Laos, Vietnam, Cambodia etc.) as well as Hong Kong. The channel providers do not seem to care a damn about copyright infringement because I guess that they are happy to be paid at all, and, secondly, they would be pouring mega bucks down the drain to even try doing anything about it.

"Can you imagine if 'we' all got together and had an 'agreed' set of channels deliverable to (say) the AsiaSat 3S footprint area and charged in US\$ as a common subscription currency? The channel providers seem to have got too big for their boots and think they rule the roost. I now lease out the (South African) Multichoice service decoder boxes for HK\$1000 per month - US\$128. One client pays HK\$1,300 - US\$166 per month. All these people want is 'good TV to watch' and it doesn't matter if they are Chinese or European. Content providers who talk about Asian people wanting Asian content are talking out of their backside. I have always thought that in the modern era, satellite television channels should be like flowers in a florist shop, the customer just goes in and says I want this and that, and that and that, and that etc. Copyright based on countries (for satellite television purposes) is - I think - doomed - what we need is Copyright based on satellite bouquet, or, satellite footprint.

"Can we see some discussion in SatFACTS to test the water for international rather than the present and doomed pseudo-'nationalistic' approach being fronted by Murodch and his ilk?"

"Univision + NITV have left 3901Hz." (Clyde Carl, Qld - see Bill Richards 4087 report, this satellite - ed.) "TVBS has been seen on 4020Vt, Sr 6.620, 2/4 VPID 33, APID 34; then replaced with TVBS NewsNet - apparently fed to USA." (Bill Richards, Aust)

PanAmSat PAS8/166.5E: "CTS, CTV, FTV, FTV News and TTV has left 3860Hz (Sr 28.000, 5/6); PTS VPID 410, APID 411 is new." (Benjamin, PNG)

Thaicom3/78.5E: "New channels (3) on 3480Hz, FTA." (Benjamin Taylor, PNG)

Soapbox:

"My 3.7m solid dish installed for reception from Canal+ (I80E) is working really great; never loses lock. Is this a NZ first?" (P. Escher) "10 people have been charged with 'dishonesty using a computer' in Canberra, which has a maximum of ten years in jail. The group was investigated from May until their mid-September arrests, and apparently were using PCs to emulate the Foxtel decryption routine in lieu of authorised smart cards." (DL, NSW). "Does anyone know the (SA) Network ID for EMTV, using the D9234 IRD?" (FTA,

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Au) "Rhythm FM, previously 'gay radio', has changed formats to 'Pirate Radio' with a distinctive 'macho' sound." (IF, Qld.)

"Warning: KingRay DSB modulators that claim to run on 14-18V (as labelled) actually will not function at 14 volts because of voltage drop across regulator." (IF, Qld.) "In 1996 I bought one of Garry Cratt's 'improve scalar ring' feeds but found with my 1.8m dish there was absolutely no difference over a conventional feed. However, I recently tried it out on a 4.6m which happens to have the same f/D as the 1.8. The performance 'boost' is quite noticeable. The 1.8m has a very sharply defined focal point whereas the 4.6m has a 'soft' (not well defined) focus. The Garry Cratt design scalar rings are a larger diameter than conventional feeds; perhaps they 'catch' more signal as a result?" (IF, Qld.) "Amusing department. The music chosen by Austar for their interactive aDemo channel in the background behind the narrator is from a USA band called OPUS - think of the group as OPTUS without the T (as in OPUS - Telecommunications). OPUS is best known for the music they create for "adult" movies - perhaps Austar did not realise this when selecting the music, or, perhaps it was simply the least expensive music around (if in fact they even pay to use it!)." (AI, Queensland) "Beware of Super VHS outputs on STBs - Austar/Foxtel channels, especially movies, are so highly compressed that any attempt by consumer to improve definition (such as S-VHS output) is a dismal mistake - it gets far worse when the video processor can't find enough video bandwidth to properly reproduce even a medium definition picture. The more channels they cram into a transponder, the worse it gets!" (DM, NSW) "Universal and Multi-Band Tone LNBs: In the menu section of an (older) Pace analogue receiver, this information appears. (1) Universal Low Band FSSA - 9.750 (LO); High Band BSS - 10.600 (LO). (2) The settings available for this (Universal) LNB are low-band (no tone) 10.700 to 11.900, and High Band with (22 kHz) tone 11.700 to 12.750. For a 'Multi-Band Tone LNB' with LOs of (FSSA) 9.750 and High Band DBS 10.750: (3) Low Band (no tone) 10.700 to 11.900, (4) High Band with (22 kHz) tone 11.450 to 12.900. (IF, Qld.) "Turner (CNN/Cartoons/TCM) CEO Jamie Kellner made press when he stated, 'When a viewer watches an advertising supported program, he/she is part of a contract which includes their tacit agreement to 'watch the commercials.' He went on to say, 'If viewers persist in purchasing PVR (personal video recorder) devices that fast forward through the commercials, we will look for a legal way to stop PVRs and return the viewers to their part of the 'viewing contract.'" Of note: competitive USA networks CBS and NBC have invested heavily in PVR firm technology as a hedge on their own futures. "For all your upgrades and latest information on eMtechs go to http://www.sat-news.co.uk/_eM_team/index-em.html."

(John V.) "Copper heat sink in 9500S has 340VDC peak/120V DC average on it. Anyone playing around with cover off should be aware (and wary)!" (IF, Qld.) "I found boards in my 9500S clearly marked, "Made in USA." What is this in a European/Swedish sourced product???" (Anthony, NSW) "ABC seems to have given up 16:9, programming is now routinely 14:9 compromise only. FLY-TV, 'Rage', runs parallel to ABC same show but when music clip is in widescreen (Austar ABC-2), Fly is 4:3." (IF, Qld) "Statistics - Australians currently spend A\$780 million each month of mobile telephone calls and send on average 7 million SMS/text messages daily." (IF, Qld)

AT

Sign-off

Can anyone find Singapore???

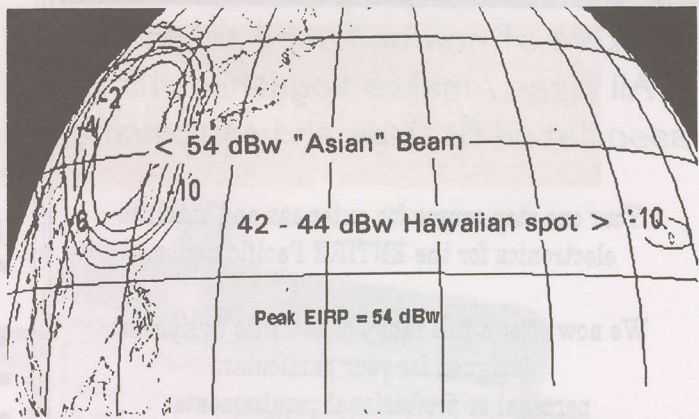
Our report describing the potential chaos ahead when Optus C1 replaces B3 at 156E (September SF) left unanswered the critical question of coverage. Singapore's Optus masters have been especially guarded with their "footprint" or coverage maps, possibly because the actual transmit beam antenna patterns are still being fine-tweaked by satellite designer engineers. The precise alignment of the satellite's transmit antennas are critical to the economic success of the satellite. As PanAmSat learned with PAS-8, AsiaSat with As3R, a small error in the transmit antenna array can produce devastating results - a beam that is supposed to produce +52 dBw shifts and the best the satellite can do is +46 dBw. *Just as one example*, users waiting to use such a satellite with 52cm dishes are suddenly forced to revamp that planning around 1m dishes. Not only will 1m dishes cost more money, and require twice as long to install, but where local councils have rules in place limiting home dish sizes to 90cm or less, suddenly the system planner is faced with tens/hundreds of thousands of "antenna permits."

And although the world's most skilled antenna designers work on satellite projects, there are elements in the system which are beyond their final control - not the least being the 22,300 mile elevation above the equator where no human can drop by to do an antenna service call after launch and positioning. So until C1 successfully launches, successfully transitions to geostationary/Clarke orbit, unfurls its solar array and erects its antennas - it is a very big crap shoot. You will recall there is no such animal as Optus B2.

Perhaps another reason why Optus has not released proposed footprint or coverage maps is political. As our table explained (SF September, p. 22), there will be 24 Ku-band transponders of varying bandwidths (40 to 84 MHz) with four possible transmit antenna patterns (Australia + NZ, Australia National A, Australia National B, "North" Asia). And various combinations of transponders and bandwidths which through the four transmit antennas can be directed at various on-ground (boresight or centre of pattern) "targets" by remote (operator) control from the ground flight control centre.

We (SatFACTS) always thought Singapore's description of their Asian Beam as "North Asia" was a geography error on the part of someone charged with naming the beams. Singapore - the city/country - is in Southeast Asia and we had assumed (in error) that if you were building a new satellite, lived and were headquartered in Singapore, you would naturally include Singapore inside of its "Asian" footprint coverage region.

A set of four proposed footprints (projected - remember, until the satellite launches and is flight tested - all footprint maps are merely hopeful projections), one for each antenna configuration, has recently become available. One of these jumps out at you. Singapore is not included in the Asian



coverage area. Short of a monster antenna, you won't be able to get to C1 from Singapore.

You may recall the political flack that followed the announcement of Singapore Tel's purchase of Optus (and the under construction C1 satellite). Australian journalists painted fanciful scenarios involving Singapore military personnel eaves dropping on Australian military communications from downtown Singapore because of the "Asian beam" capability of C1.

The projected footprints clearly indicate the "North" Asian beam is pretty much as described - a whopping 54 dBw (which translates to a 30cm dish for Ku) hoped for into a very major portion of China; centred on Wuhan, Nanjing (30.35N/114.19E). Taiwan is inside of the boresight centre as well. The map above suffers from being multi-generational but you can grasp the concept - from Fox studios in Sydney or Melbourne live and direct to more than 1 billion Chinese folks.

Two of the C1 beams have another interesting twist. A "spot" beam to Hawaii at -10 dB from the boresight centre (National A or North Asia beams). What this means is Optus clients will be able to feed directly from the USA domestic satellite system into Australia (or in return to North America). It also means that any Foxtel pay-TV channels using the National A antenna pattern of C1 will arrive into Hawaii at 42 dBw. Translation: 1.61m Ku band dish in Hawaii feeding into an Australian sourced Foxtel receiver could gain access to the Australian pay-TV content. Hotels in Honolulu will now be able to offer special "Australian home-TV packages" to guests! (No, this will not work to Samoa or Fiji - this is a spot beam that if practice follows the design intent will only cover the Hawaiian Islands.)

The true business plan for C1 remains cloaked in mystery although it now appears we have sufficient technical details (transponder and power data in SF September, this report) to begin to put together at least a hazy game plan. This is a very complex bird with four separate design objectives (each being a different transmit beam) covering all four quadrants (NE, NW, SE, SW of the bird proper). We cannot recall any similar satellite design for Ku band which suggests that when the satellite is finally on station, tested and operating there are likely to be some unforeseen reception (coverage) opportunities the designers simply overlooked. Anyone within eyesight of 156E could well end up having a "shot" at C1; stranger things have happened. The folks in Brazil getting big time European signals on Ku, the folks in Peru accessing Canadian Ku signals - it could well happen out here as well.

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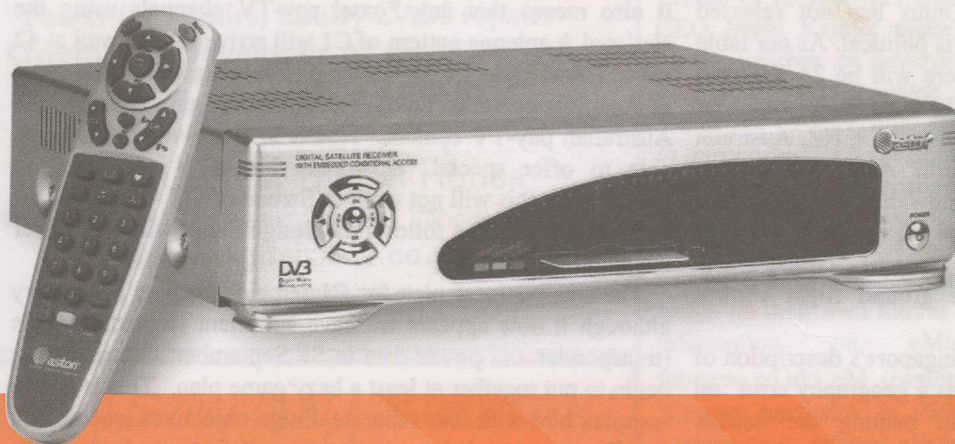
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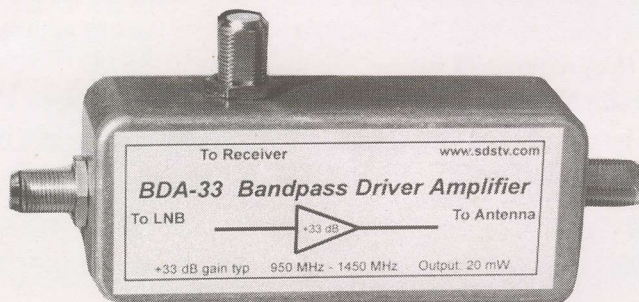
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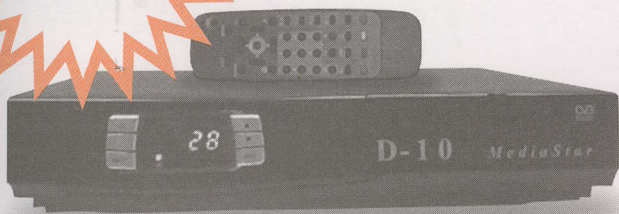
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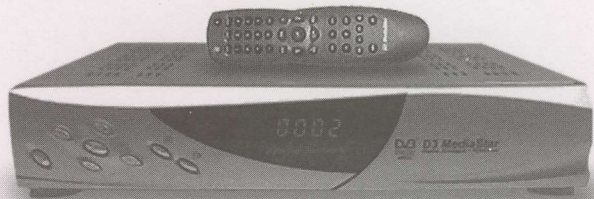
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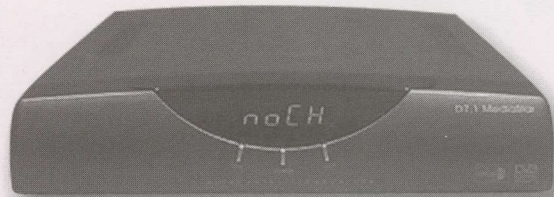
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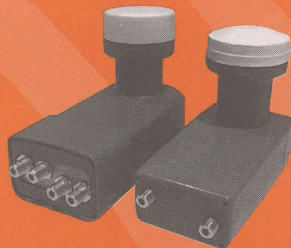


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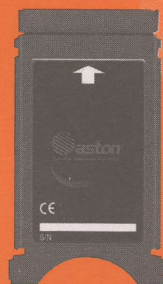
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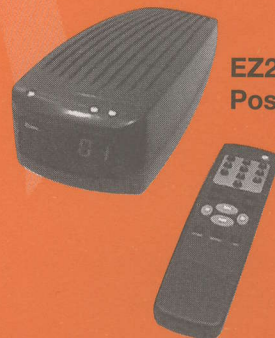
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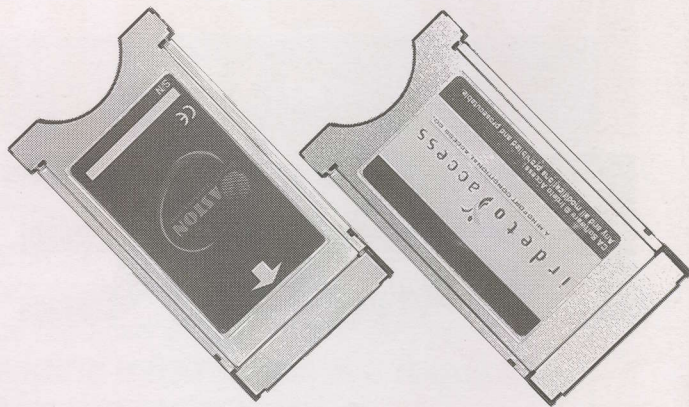
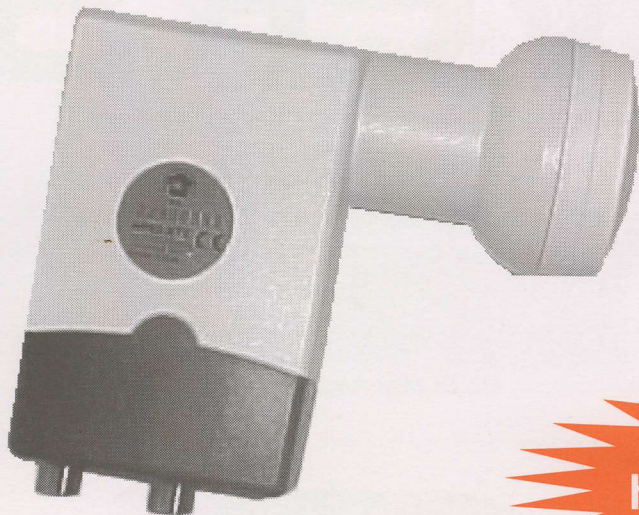


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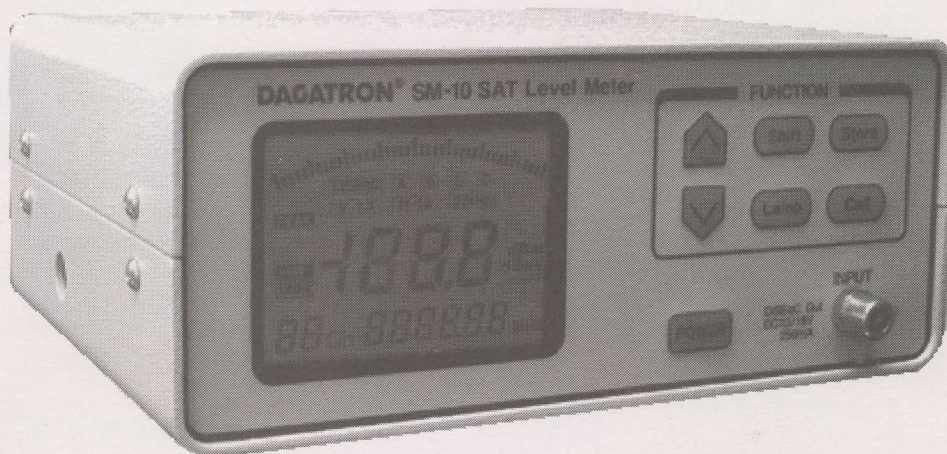
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