15-R-00 1.45pm

Bob Cooper's

December 15 2000

SatFACTS

MONTHLY

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

IN THIS ISSUE

HUMAX IRCI 5400 - Users Speak

DVB-T REAL World Antenna Challenges

Star Asia Shut Down; TVNZ to Satellite

✓ Latest Programmer News
✓ Latest Hardware News
✓ Latest SPACE Pacific Reports
✓ Cable TV Connection

Vol. 7 ◆ No. 76
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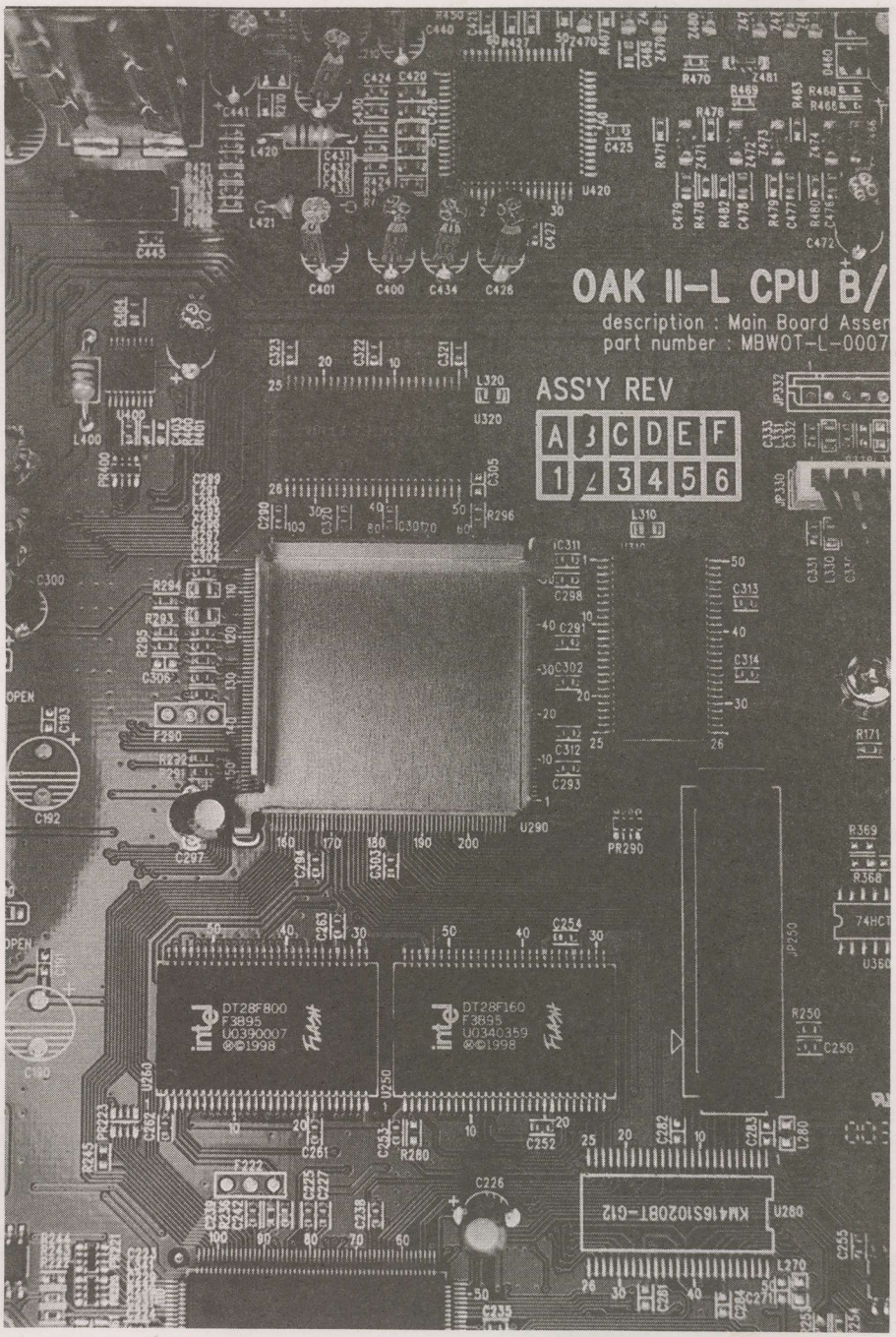

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OBSERVER REPORTING FORM - **Due** January 8, 2001

• NEW programming sources seen since December 1st: _____

_____

• Changes (signal level, transponder, programming content) in pre-existing programming sources since December 1st: _____

_____

• OTHER (including changes in your receiving system): _____

_____

NOTE: Please use P1 - P5 code when describing signal levels and receiver IF/RF settings.

Your Name _____

Town/City _____ _____ _____

Make/size dish _____ LNB _____ Receiver _____

Your email address _____ **if you have one!**

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CHANGES - in Australia's Pay-TV Optus B3 Loading

How the new Austar/Foxtel/Optus channels load depends upon which receiver you are using. Foxtel, for example, provides two lists - one for PACE DGT400 users, another for UEC model users. If you begin at the lowest frequency transponder and load one at a time (rather than all at once), here is what you will find with a Hyundai 800CI: (**TP3**) BBC, Fox, Fox, UKTV, Hall, Fx, Kids, Fox N, BLM, Cart, TCM, Shw2; (**TP5**) MAIN, MC, SKYR, (___), MOV1, MOVX, MOVG, C7S, C7S2, ODSY, MTV, SKYN; (**TP7**) TWC, CNBC, WMOV, TVSN (FTA), CNNI, ESPN, OVAT, OH!, RAI, Ant; (TP8) TV1, SHOW, ENCR, ARNA, [V], NICK, DISC, FS2, LIFE, CMDY; (**TP12**) aDEMO (FTA), DISN, CNNf, NHK, SKYN, Phnx, C7G; (**TP13**) HIST, 1202, mMAX, FTV, WNI, 1206, 1207, 1208, 1209, 1210, Adlt, Ch2, Ch7, Ch9, Ch10,, Ch13, Ch28, CH29, Ch30. Foxtel has provided PACE DGT400 users with a special set of instructions and revised channel listing. The instructions: (1) Press MENU, (2) Press 5 - Channel Organisation, (3) Press SELECT, (4) Press 3 - Reset TV Channels, (5) Press SELECT, (6) Press EXIT twice. DGT400s should now have a new line up as follows: (1) TV1, (2) Showtime, (3) Encore, (4) Fox Sports, (5) Arena, (6) Channel [V], (7) Nickelodeon, (8) Discovery, (9) Fox Sports 2, (10) Lifestyle, (11) Comedy, (12) National Geographic, (13) Main Event/adults, (14) Music Country, (15) Sky Racing, (16) Sky News, (17) TCM/Cartoon Net, (18) CNBC, (19) World Movies, (20) TVSN, (21) CNN, (22) RAI, (23) Antenna, (24) BBC, (25) Fox 8, (26) UKTV, (27) Hallmark, (28) Fx, (29) FoxKids, (30) Fox New. Under TP13 loading - above - terrestrial channels are NOT scheduled at this time for satellite delivery.

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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 long 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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ERRATA

COOP'S COMMENT

December 15, 2000

Item (advertisement) appearing in a UK email newsletter I receive daily:

"Irdeto Access presents its latest innovative IP product: CypherCast. The first secure IP Multicast solution in the market. CypherCast uses patented encryption methods to enable efficient transmission of data over all IP networks. Our satisfied customers around the world agree CypherCast offers all of the security that a truly profitable streaming media business requires."

Press release dated 14 November from Mindport:

"Undercover probe ends with alleged card pirate facing first prosecution under Copyright Act. David Mainwaring appeared before the Dicot Magistrates Court in Oxfordshire to answer allegations of breaching the Copyright, Designs and Patents Act by selling an unauthorised Irdeto Access smart card. Mr Mainwaring is alleged to have committed an offence of supplying a smart card which was purportedly manufactured and approved by Irdeto Access, when in fact its origin was not known. The Irdeto Access Chief Executive said, 'This is an important business issue - investors will not pay for the creation of content or for the broadcast and IP networks that distribute it unless the content and integrity of these networks is secure.'

"Irdeto Access, a founder member of the European Association Against Piracy, has a long track record of success against smart cards pirates and hackers, and was responsible for the successful lobbying of the EU to issue anti-piracy directives earlier this year. One of the recent success includes tracking and capturing the notorious pirate Mad Max in Thailand last year, demonstrating the global reach of the company's investigative teams."

News item dated December 9:

"High speed access platforms Excite@Home and Chello Broadband have called off their planned merger. The original deal, announced in July, would have created one of Europe's largest Internet-access businesses, with an estimated value of (US)$5 billion."

News item also dated December 9:

"Reeling from a cancelled initial public offering, cash-strapped wireless operator Look Communications (Toronto, Ontario, Canada) said it will cut 300 jobs - a third of its work force - and may exit the residential wireless cable market."

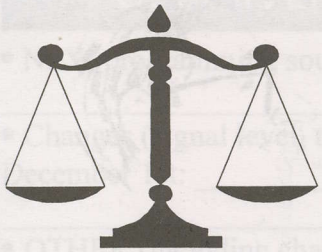
When the stock market was busting at the seams, and every day brought new gains and raised further the expectations that all streets labelled "IP" or "telecommunications" or "satellite" were paved with gold, there was no end to the amount of money business was ready and anxious to throw at new technology. But when the stock market turns, as it has done recently in the USA and from that world-wide, caution replaces billion dollar deals and people who have been living comfortably from their American Express Platinum cards suddenly find VISA quite adequate.

What all of this has to do with you and I is reality. We, unlike those who drift around the stock hype world, have to get up every morning, go to work and put in our 8 - 10 hours. When someone such as Rupert Murdoch decides to close down a pay-TV operation (see *"Star Asia Shutting Down ..."*, pg. 15 here), we all pay for the bad planning that launched a service like this. His VISA card is never full; ours is. But when *Rupert's* American Express Platinum fills up - watch out. Hard times are coming.

In Volume 7 ◆ Number 76

-ON THE COVER-

The magic of the Humax IRCI 5400. It is the hottest selling FTA + CA satellite receiver in the Pacific (read Australia) market at this time. In an unusual approach we have gone to early users for their own first hand reports of what they like and dislike about this new product (page 6, here).



LETTERS

Flat coax

"A piece of flat coax to allow the installer to run 75 ohm connection to satellite dish through a closed window is not new to Australia; see Dick Smith catalogue, p. 94, 1999-2000. The flexi-cord product lists for Au$5.95 which is certainly less than the US$4.95 and includes adhesive tape to affix the flat cable to smooth surfaces. How does it work? A piece of very small diameter coaxial cable (RG-174) which appears to be flat but in fact is simply such a small diameter they can 'hide' its true shape."

IF, Queensland

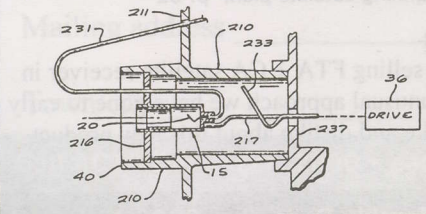
We missed the Dick Smith catalogue listing, certainly a very similar if not identical product. As for 'how they do it' - not quite right (see photo below). Before we reveal the inside of the copper foil sheath, any other guesses?

Confusing claims

"I understand the complexity of microwave circuits could lead to many individual interpretations of how some aspect of it might work, but your two-part series on feed design (October and November) sent me over the edge. Was C-band satellite really that new and innovative when it began in the late 1970s that feeds as we know them today did not exist at that time from other applications?"

BD Donlevy, Sydney

C-band DTH crossed two new frontiers. First, whereas cross polarisation (vertical and horizontal) came from the mid 70s and predated C-band DTH, the only real users of C-band at that time were commercial firms who used fixed polarity feeds based upon their earth-satellite-earth (ESE) requirements. If they needed dual polarity at a receive site, they installed fixed-dual-polarity feeds. Second, home DTH was the first ever widespread use of any microwave band for ESE applications. Home users, consumers, demanded rapid switching between polarities and although the first home system polarisation systems used a TV antenna rotator to mechanically turn the feed from one polarity to another, this was a short lived solution. So instant switching was a challenge to be solved. It remained for Gerry B. Blachley (ADL, Inc.) and Rodney A. Mitchell (both of California) and a series of US patents (5,107,274 et al) to finally nail down the technology. Below, one drawing showing C and Ku together from Blachley's 1992 patent.



PROGRAMMER PROGRAMMING PROMOTION UPDATE

DECEMBER 15, 2000

NOTE: January's SatFACTS will be dated January 19th and go into the mails on that date - because of seasonal holidays at our printer!

TVNZ/Television New Zealand to satellite. Since 1998, state owned broadcaster TVNZ has attempted to negotiate "carriage deal" with News Corp controlled Sky NZ for TVOne and TV2 national services. Privately owned TV3, TV4 and Prime in NZ are already a part of Sky package. Alas, Sky has refused to allow TVNZ to run its own "CA" addressing system, insisting Sky be responsible for turning on and off individual homes for TVNZ. Moreover, TVNZ is FTA and wants no monthly fees for viewers whereas Sky already collects NZ$17.29 to deliver FTA channels TV3, TV4, Prime and TAB via satellite. Now TVNZ has agreed to joint-venture new Optus B1, Tr8 Vt, combo FTA and pay package of up to 16 programme channels with Telstra-Saturn. Also proposed - take ex-Galaxy/Austar Pace DGT400s out of Australian warehouses for use in NZ as "entry level" home DTH packages in (NZ)$200 range. Confused? It gets better (see p. 32, here).

Is this any way to run a transponder? TVNZ + Telstra Saturn decision to use Sr22.500, FEC 3/4 and divide Tr8 into pair of 27 MHz half transponders - like Sky NZ does - carries some penalties. IMD (intermodulation distortion) occurs when a satellite transponder is used by two (or more) separate "carriers" simultaneously. To prevent IMD, each user of the transponder backs down (reduces) power thruput, typically by 3 dB. So what? Well, a transponder capable of 55 dBw footprint to a target area suddenly can only manage 52 dBw - a 3 dB reduction. To compensate, larger antennas at the receive sites. When TVNZ and Sky choose to place two separate digital signals inside a single transponder, they lose 3 dBw on the ground while everyone receiving them is forced to install 3 dB more antenna gain (a larger antenna) than would have been required with a higher symbol rate and using a full transponder. So why did Sky start off this way? Two reasons - Sr 45+ IRDs were too new, too unproved when Sky launched two years ago. And, uplink supplier NDS did not have operational multiplexers for the uplink capable of 45 Msym/s anyhow.

TVNZ + Telstra Saturn decide on equipment (December 10). It will be Mindport Irdeto EN2 encryption with OpenTV, Divicomm + Harmonic uplink and middleware, UEC (720 version) IRDs for the new service with hardware distribution to viewers to be handled by Telstra-Saturn (using EuroDOCSIS for cable). And, all (including) TVOne and TV2 will be encrypted, using an Aurora type card for these "free-to-air" services and a full Mindport card for TVOne, TV2 + pay-TV channels. Details in Coop's Technology Digest, December 20.

Boomerang/TPG rumoured to be readying a new slate of additional programming using PanAmSat PAS-8 Ku TR14Hz where until December 18th ABC Australia has been operating three SCPC feed channels (which have moved to Optus B1; see 'With the Observers,' pg. 29). PNG cable systems depended upon PAS-8 ABC feeds to link ABC service to viewers there - bad news for them unless they find ways to tap into the Boomerang service replacing ABC - assuming that happens!

Postal Rate Hike Equals Subscription Rate Hike

On January 1 New Zealand Post increases airmail rates for "large letters" (the size of SatFACTS) by 39%. At the same time, the world is now broken into two "zones" (five previously). The net effect is our postage cost to airmail you a magazine will actually double to many areas. Effectively immediately, NZ subscription rates have been raised to NZ$70, US dollar rates to US$75; Australia remains Au$96 - for the time being - while we assess what it means to be "the largest first class mail customer" at the Kaitaia, New Zealand post office! And, SPACE Pacific study and reference material costs (pages 33 and 34 here) have also been increased for the same reason.

EP-507 Television Analyser *Plus...*

2-32Ms/s symbol rate range of QPSK option measures SCPC and MCPC Signal Quality
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EP 507 is a professional grade TV Analyser with a broad range of traditional analogue Television measures and options to measure Digital Signal Quality of QPSK Satellite, QAM Cable and OFDM Terrestrial signals. Spectrum mode provides two colour-coded frequency markers to simplify measurements of Digital Channel Power, Frequency and Level differences etc., along with a selection of measurement bandwidths. A high resolution, colour LCD-monitor displays Spectrum, PAL, SECAM, and Teletext.

Internal options include real time QPSK Constellation Diagram, QPSK, QAM and OFDM Signal Quality measures, FTA Digital TV vision & sound via MPEG decoder, Noise Generator, Printer, Data Logging, 2230 MHz frequency extension, NTSC, Nicam, and 50Ω input. Thanks to microprocessor control and PLL synthesis techniques the EP 507 has several automatic measurement modes which include Carrier to Noise ratio, Video-to-Audio ratio and optional Data logging. A 100 memory location function will store any channel in any world standard over the EP507's frequency range of 5 to 2,150 MHz. Measurements of the most complex TV distribution systems are possible. The optional internal printer allows measurements to be hard-copied in the field, or they can be logged for later evaluation on a PC via an RS 232 port. Ancillary functions include DiSEqC switching, 22 kHz tone switching, a selection of LNB /masthead amp voltages, Ku, or inverted C band, Audio Tone with range end indicator for dish or antenna peaking. The optional noise reference signal source generates a functional 75dBµV across almost the entire frequency range. Two SCART sockets provide multiple input / output options. Built in a manner that permits upgrading to include newly developed functions as they become available, Unaohm is first again, with an instrument that measures TV today and tomorrow.

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Shovelling in the money

"It has been my experience that a typical New Zealand home has two or three tellies. With the proposed TVNZ FTA service, each telly will require its own DBS receiver, each TV outlet will need to be rewired back to the dish or dishes using 'approved' 2 GHz cable/splitters/amplifiers. Seems as though we might be mighty busy before I get to retire!"

Rolly Whitehead, Tairua, NZ

"Noted your website mention of Bendigo channel interfering with VCR playback and pay-TV channels. ABA website indicates that the Illawarra region of NSW (Wollongong and south) coming on the air in mid 2001 using UHF channels 36, 37 and 38 for the three commercial networks DVB-T. In as much as some older style VCRs will not tune to a new channel, and are stuck here where interference is inevitable, this could require some creativity to fix!"

Brian Parry, Down to Earth Antenna Service

Plenty of opportunity here for "creative" installers to earn some extra dollars in 2001. *One* solution - The ESV45 series of tuneable signal mixers (Lacey's Australia, tel 03-9783-2388) allowing you to trap out channels 36/37/38 before they enter the IRD/VCR is one of these.

DVB-T set-top box sources?

"I am not certain I can fit in doing digital terrestrial aerials with my heavy satellite work load but would like to learn the DVB-T problems first hand. Where can I early-source a set-top box for DVB-T?"

A. Henry, Melbourne

Several of the satellite (DVB-S) IRD folks have or will have a DVB-T terrestrial version box as well. One of the first will be Skyvision at 03-9888-7491. Jim Cotterill hoped to have stock by 1 January and also hoped they could sell for around Au$500 each.

New dish could cost you dosh

"This item from the local newspaper (The Times). 'Wyndham residents risk being fined up to $1,000 if they put up a satellite dish without planning permission. The council's planning department is warning residents that dishes more than 1.2 metres across that can be seen from outside the premises need a planning permit first. Those who install dishes (for home or business) without a valid planning permit risk on-the-spot fines of $500 to $1,000 as well as the possibility of an order to remove any illegally installed dish'."

P Hadlow

Looking for mobile phones

"I am after quantity 200 Erricson A1018 mobile phones, unlocked, which means they will accept any operator's card. Can anyone help?"

S. Holzt, email steffen.holzt@antenne-cal.com

Less clean video

"By comparing S-VHS tapes made a few months ago with those made today on MusicCountry, I come to the conclusion that sometime recently the compression for what was once Country Music TV has increased resulting in a lower grade of video image. Has anyone else noticed this?"

Jonathan McLean, Pahiatua, NZ

Others report their D9223 IRDs shut down at about the changeover time. Can anyone explain any of this or do we have another CMT/MC enigma?

HARDWARE EQUIPMENT PARTS UPDATE

DECEMBER 15, 2000

Australian Telstra's purchase of four AsiaSat 3S Ku band transponders is not as clear cut as was announced. Actually, Telstra has "reserved" four transponders, but will only turn them on as bandwidth demand dictates. This means they will be paying only for what they use, and may not ever use all four on the spotbeam configuration. Transponders are 5b (12.540), 6b (12.600), 7b (12.660) and 8b (12.720), apparently horizontal. One source claims 53 dBw which Telstra has been using to hype its new facility as "most powerful on ground signal into Australia from any satellite" but our footprint map suggests 50 dBw may be more correct (see p. 20, here).

Australian DVB-T set-top boxes. When 7, 9 and 10 networks combined their skills to create a "shopping list" for potential operating features in DVB-T boxes, there was agreement on what the boxes should do. Shortly, that agreement came apart as 9 and 10 decided they were in favour of a (French firm) Thomson model while 7 said they wanted different features. As it now stands, two separate designs from two separate manufacturers, each with a different set of standard operating parameters, are headed for Australian retail shelves. Net effect? If the set-tops are not to a "standard," can we expect transmissions to be uniform? The Australian DVB-T situation has gotten very messy.

VCR interference. New Australian DVB-T transmitters assigned to operate in UHF band have potential to kill reception for pay-TV and even VCR playback. Here's why. Rooftop aerial is looped through satellite IRD and/or VCR on way to TV set. Any new DVB-T transmitters operating on same channel or adjacent channel from existing satellite IRD output or VCR output will loop into system creating interference to pay-TV or VCR playback display. Solution is to rechannel IRD output / VCR outputs to new UHF channel not clashing with DVB-T assignments. Alas, many older VCRs have fixed output channel (36/37/38) and cannot be retuned. Solution here will involve disconnecting rooftop aerial (permanently or with a switch when wishing to watch IRD or VCR playback), or, installing stop-band filter (trap) in aerial lead to IRD/VCR knocking down any aerial introduced signals in the same frequency region. Bigger question - who *pays* for the VCR work? Foxtel, Austar techs are being paid by Comet to retune IRD outputs, nobody is *volunteering* to pay for VCR retuning (ABA says stations will have to pay the costs) and creative techs in Queensland are already offering to do the "job" for Au$100 proving private enterprise is alive and well. In UK, when similar problem arose with Channel 5 start-up, the TV network hired "gangs" of VCR tuners to go door-to-door to perform the task at no cost to the viewers.

Mystery Foxtel channels. December 2nd shuffling of all Foxtel channels created interesting problems for users of older style Panasat (520 et al) and original version DGT400 IRDs. With five "public bouquets" now software defined, older style IRDs simply won't load - or play. Possible help for Panasats: www.bakkerelectronics.com has revised software (15 minute typical load time) which with null modem cable, it is reported, restarts these older IRDs. Meanwhile, there are other questions concerning new loading sequences (see page AB, here). Ch2, Ch7 et al through Ch30 now load but do not play (they are static text announcements referring viewers to Foxtel Guide) - Foxtel says this allows channel numbers for satellite and cable to be identical simplifying their guide production. *Perhaps.* With DVB-T launching 1 January, also possible Foxtel may be planning to run SDTV (standard definition digital) offerings from terrestrial services via satellite; ABC and SBS will each have "second channel" available in SDTV and even the Aurora platform has "room" for addition of these new channels. Is this a *first step* to providing FTA terrestrial plus pay-TV via single satellite feed? *Stay tuned.*

Why do so many want one?

The Humax IRCI 5400: Accolades versus Reality

"*I have a Humax 5400* (one of the first to get one in Australia; sourced it in the UK before anyone sold them here) and it is great with MPEG-2 PAL. However, it 'sucks' for MPEG-NTSC" (Robert A.)

"*After evaluating the Humax IRCI 5400* Irdeto embedded and FTA receiver, we have decided to permanently stock this item" (Jim Cotterill, Skyvision).

"*How come these units* are being brought into Australia with such a major flaw - the NTSC glitch? Surely it would do to hold these units back until the software can be updated" (Craig Sutton, NZ).

"*I have been using a Humax IRCI 5400* in Australia for various services off the Optus B3 satellite for about three months and generally feel this IRD to be an excellent unit - particularly after loading the latest software which has corrected a channel acquisition issue" (name withheld upon request).

The first Humax digital receivers appeared in August 1999, a Korean firm introducing the F1-CI through a Victoria importer who offered them to viewers for the then-new Turkish TRT service newly available with the also new Mediasat-Sydney bouquet on B3, vertical. Confusion followed (SF#60, p. 6) as the original TRT transmissions were in PowerVu (subsequently changed to MPEG-2 DVB compliant). The initial Australian importer was also claiming the F1-CI "will do Irdeto" through the "common interface" using a separately sourced Irdeto CAM.

By September 1999, SF#61 carried a full page advertisement from Satsystems Pty Ltd ("Sales agent for Humax") claiming "common interface for Viaccess, Conax, CryptoWorks, Nagravision, Irdeto and more." Their F1-CI advertised price was A$699 and an optional Irdeto CAM $115.

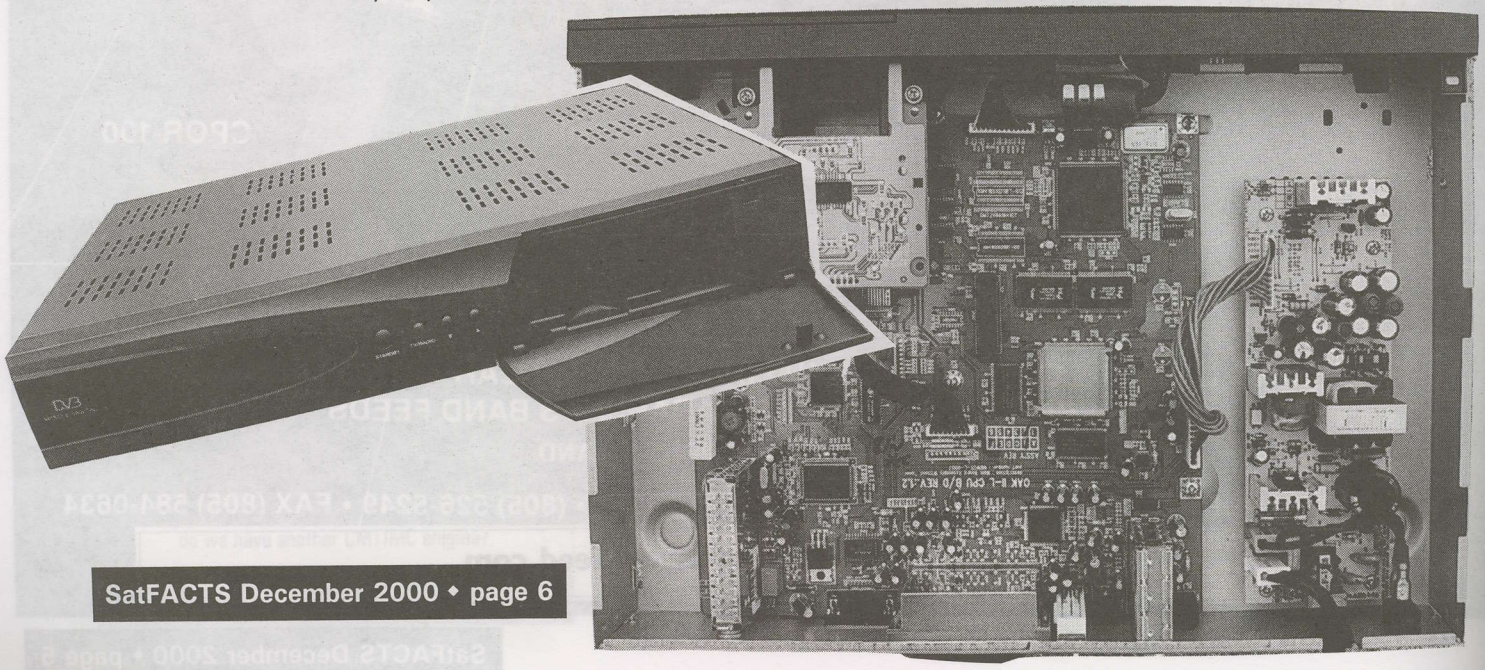
Understand the original TRT, through Mediasat, was indeed using PowerVu. Also understand that the F1-CI as originally imported was PowerVu capable. And this was very strange as the F1-CI was (like all subsequent Humax products) actually designed for the European market and there is no real PowerVu in use there.

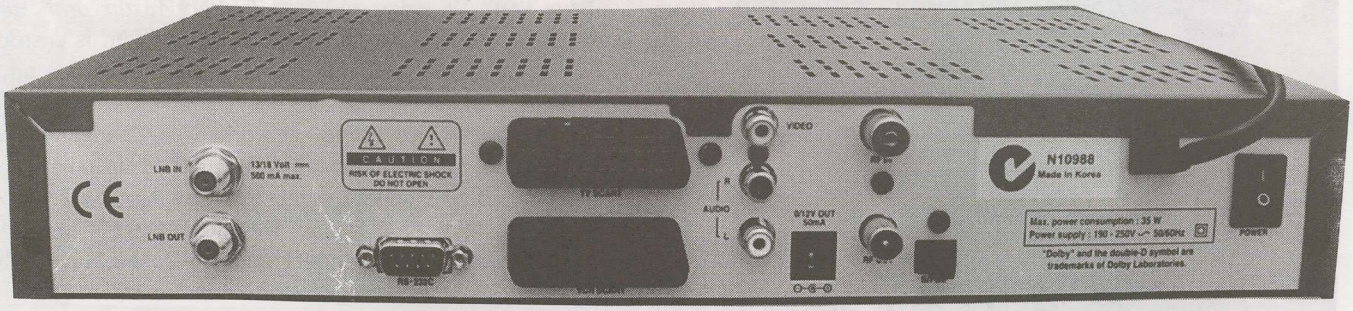
Image quality is adequate if not outstanding, colours are true but even through RCA video output, definition is short of brilliant.

It was about one year ago in the midst of this marketing numbering confusion that a small change crept into Humax promotional material. The F1-CI became the F1-C1. That's a change from letter "I" to the number "1." Perhaps the original Australian importer got it wrong. No matter; the Humax line *now* consists of 5 models, widely promoted in Europe, between A$471 and A$766. The F1-VAC1 "twin common interface / Irdeto embedded" is the most expensive. And already wildly popular in Australia.

Peter Merrett (Sciteq) and Philp Ingegneri (Kristal) were the first to handle the IRD. Now it is also available from Skyvision

Embedded Irdeto CI plus room for two added CAMs make the 5400 a universal machine capable of handling virtually any conditional access system - excepting of course the NDS format.





Most of the right jacks and sockets, lacking an *independent* S-VHS output. Audio through S/PDIF for Dolby digital is a nice touch, "*if anyone ever transmits in AC3 downunder.*"

("*We have decided to permanently stock this item*") and Av-Comm ("*The best IRD we have ever tested!*"). But is it, really?

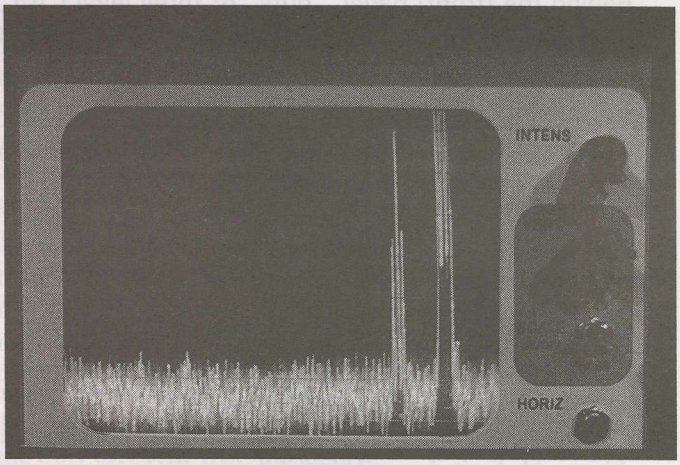
Robert A: "*It is a shame that a review* of this box in TeleSatellite Magazine International did not mention the problem with NTSC MPEG-2. There is also no mention of this on the Humax (web) site, except by omission. I contacted Humax and they told me two things. First, they are testing a software patch to bypass the automatic conversion of MPEG-2 NTSC to MPEG-2 PAL (which they identify as the problem). The existing box is too slow to do the conversion and it is a horrible mess, whereas my newer Strong 4800 does a great job with both NTSC and PAL MPEG-2."

Garry Cratt: "*We are assured* (as a distributor) there will be a software patch of the NTSC glitch. I know that some web sites are reporting a newer model will replace the 5400, with NTSC included'; this is not their solution."

Peter Merrett: "*I was (originally) promised* the NTSC fix by the end of October. Their silence makes me suspicious and it reminds me of the NTSC fix for the Nokia 9500 (long promised) which never happened."

Philip Ingegneri: "*The 5400 was primarily developed* for Europe which is a PAL region and they were not too concerned about the performance on NTSC. Since 99% of their sales are into Europe, I suspect fixing the NTSC glitch is not very high on their list of priorities. There is already some aftermarket software appearing on European sites for the IRCI 5400 and the NTSC solution may first appear here, similar to Dr Overflow software that expanded the Nokia capabilities." NTSC? Do most users *really* care?

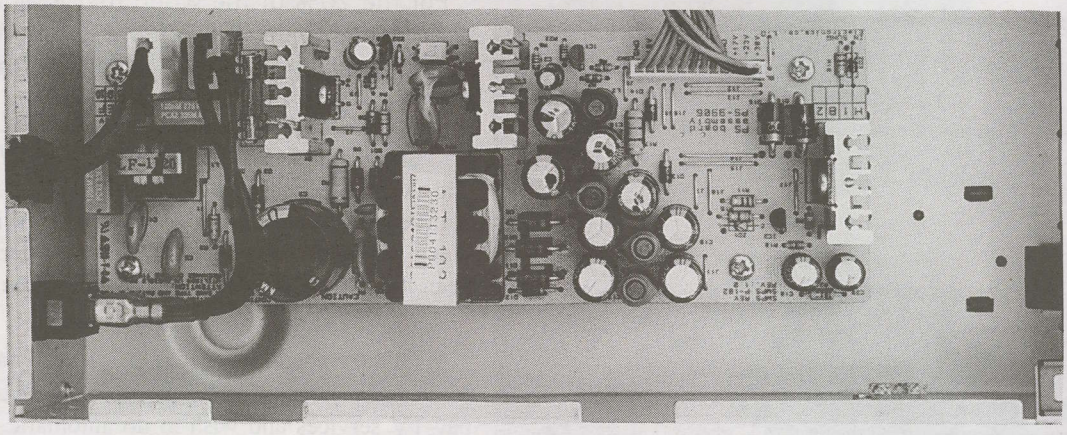
Why is this IRD so popular that it has multiple distributors handling it in Australia and the Pacific? First there are some very nifty routines in the software - great for users who desire access to both FTA and at least Irdeto services. And the hardware is very good as well. For example, SF could measure *no SMPS noise* coming out of the RF out spigot (see below);

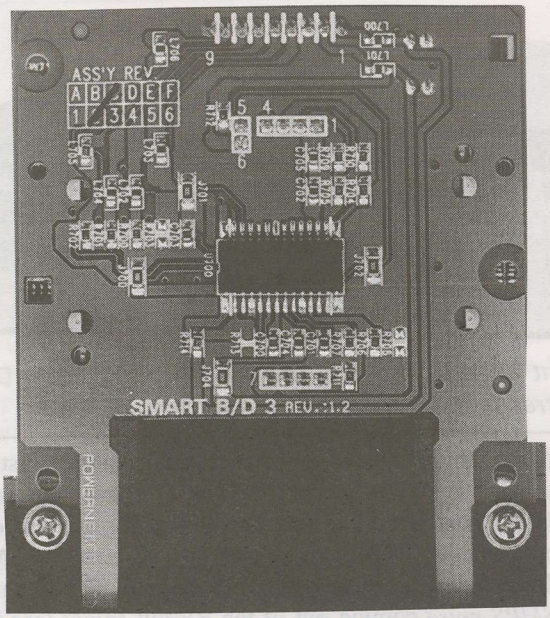


First SMPS power supply we have measured with no detectable RF interference coming out of RF output port (see SF#74, October, p. 32).

the first IRD we have seen that is *totally* quiet! Which proves it is possible to have a SMPS power source and no noise in the same box (in fact, ham or amateur radio SMPS devices found cures for noise radiation several years ago - proving it was always possible.)

Power supply (yes - SMPS) is robust and as we reveal above, has no noise leaking out of the RF Output port!





Behind the (front) panel, "guts" of three level CA/CI system uses "smart IC" to determine which type of conditional access data stream is present and whether card inserted is compatible.

"*I am using the 5400 in a home theatre* environment with a large front projection screen and digital/dts amplifier. The 5400 has fibre optic audio output (rear panel) which makes the sound quality truly outstanding. The EPG has very nice navigation and picture in picture features as well as the ability to reserve programmes in advance. However, it will only retain EPG info in its memory for the transponder you are watching so the EPG is usually incomplete. A quick surf around the channels will repopulate the EPG quite quickly.

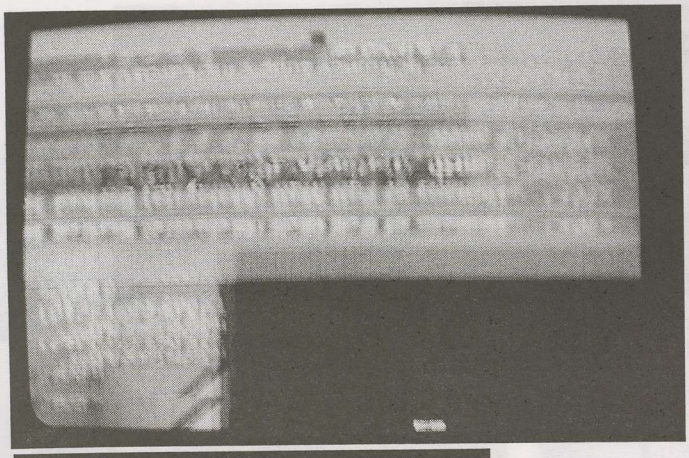
"*I have been running it 24 hours a day* in an enclosed cabinet with limited ventilation. Like all IRDs, it runs pretty hot - but has not caused any real problems. The unit has crashed 2 or 3 times since I bought it (90 days ago) and there have been no crashes with the new software I loaded two weeks back."

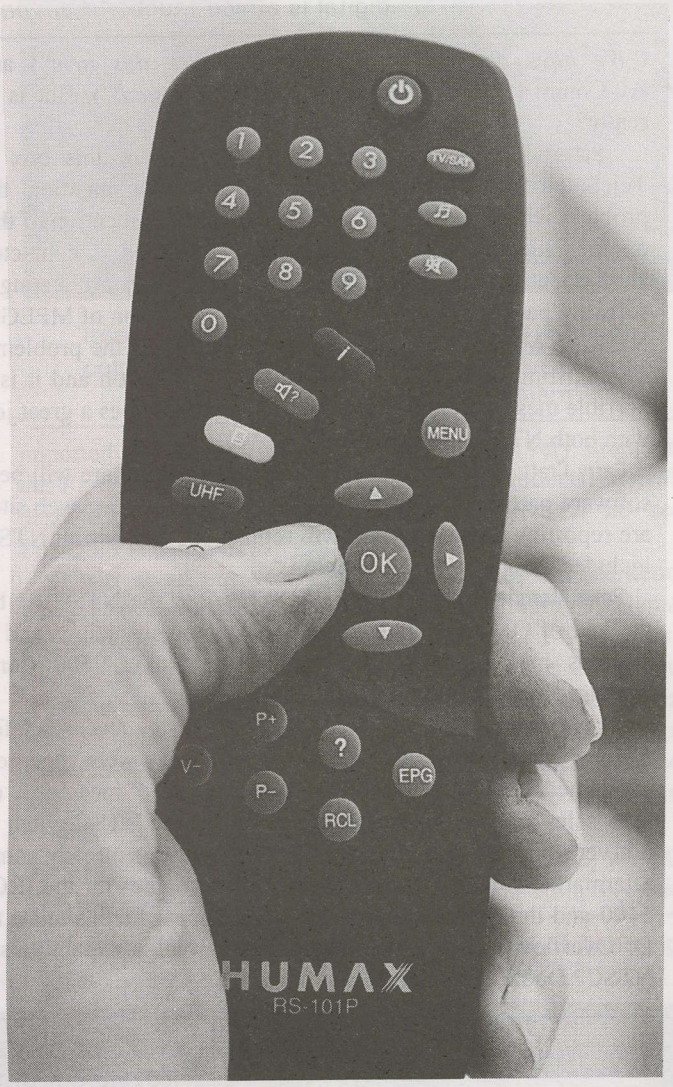
Those user comments from "name withheld upon request." (Version 3 software is available from http://www.humaxdigital.com/.) There is also a Humax notification service as mail to:humax-users-subscribe@egroups.com.

Garry Cratt: "*I have run legit Foxtel, Austar and Aurora cards*, all work OK. The most common problem is customers failing to place the card into the CI slot contact side up; the opposite of UEC!"

Philip Ingegneri: "*Good points* - it works well, changes channels fast, has good video quality, has not locked up on me (yet), updates reliably, excellent menu tree, good software support and user friendly. *Bad points?* I could not get it to load the (NTSC format) CCTV bouquet on PAS-2, the NTSC glitch, and the sensitivity is average."

One obvious "glitch" - NTSC (such as from California bouquet, PAS-2) breaks up sending screen dark and muting audio every few seconds. Software fix? Reported on the way.

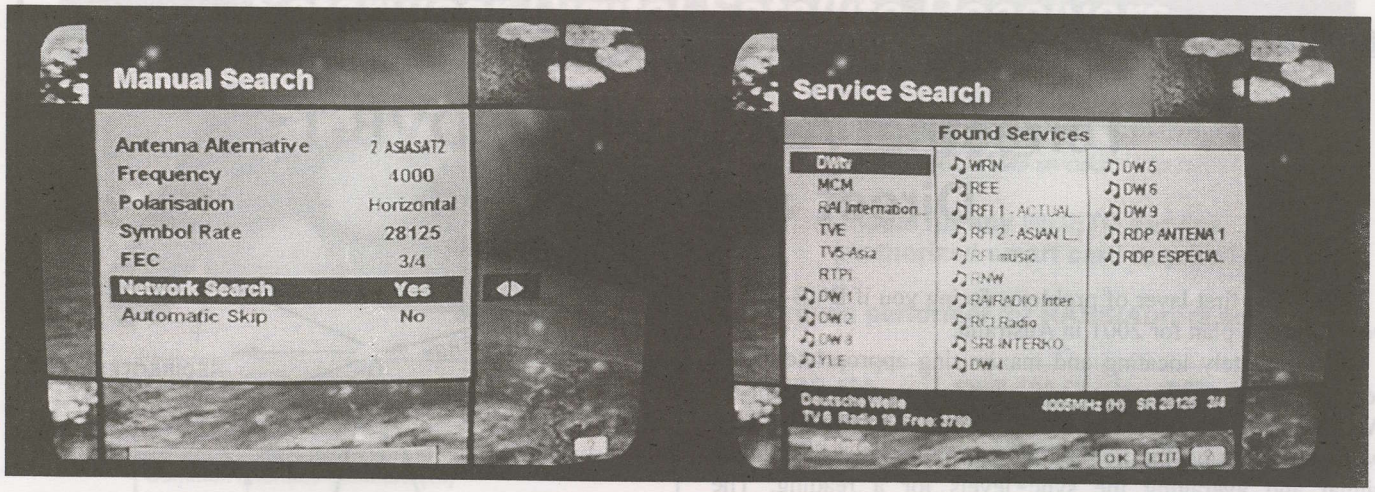




For the 20% of the world that is "left handed" this "ergometric design" remote is tough to use unless you develop the skill of pushing buttons with your thumb.

Garry Cratt: "*All transponders are NIT linked* for both pay and Aurora services so you can use the 'service searching' feature to load the transponders of the services you want, But make sure you push the 'OK' button after all services have been found or otherwise they are not written into memory."

With the embedded Irdeto slot, no external CAM is required for Aurora. Of course if you are adding one of the (Irdeto) pay-TV services and wish to do automatic swapping between



Menus are far more extensive than anything most of us have experienced previously. But there are some shortcomings to the software. "When S-video (out of the SCART) is selected, both the RCA composite and RF output go black and white. Humax gives a bogus excuse that it was a choice between allowing composite and S-Video simultaneously or allowing RGB pass-through on the SCART ports which is apparently needed by some of their customers in Europe and Asia."

Aurora and a pay service, you will need an Irdeto CAM for one of the two receiver CAM slots as well.

Philip Ingegneri: "*The CAMs are very difficult* to locate at this time."

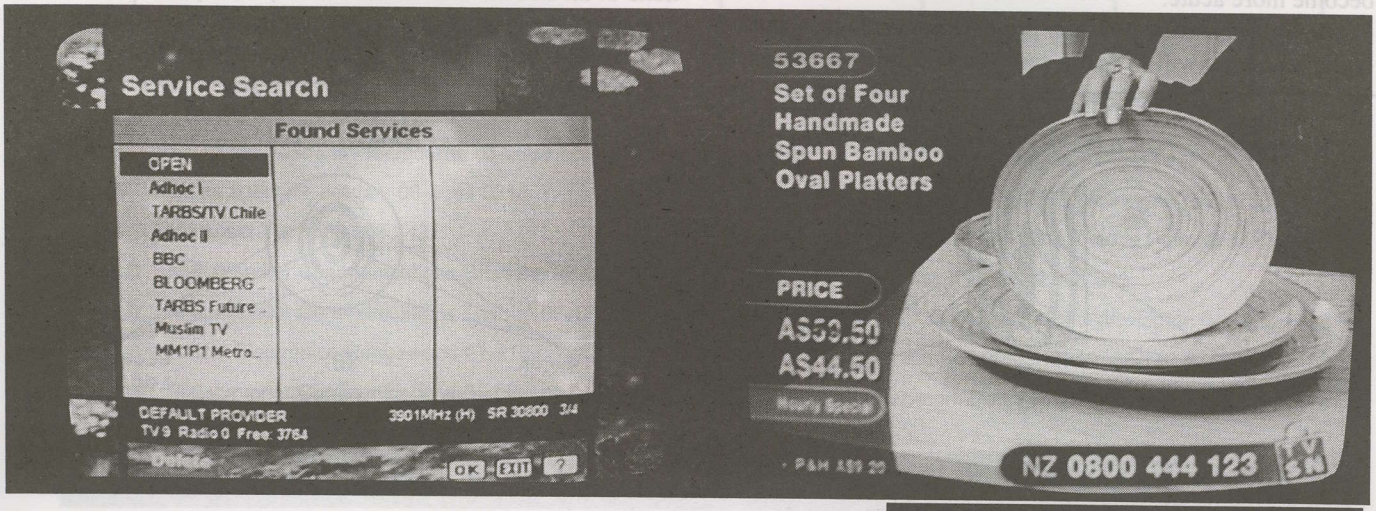
Name withheld upon request: "Uploading software is very easy - you just need a null (modem) cable and the loader program which can be downloaded for free from Humax's website. Speaking of which, Humax support is very good. In particular, they always respond to technical questions submitted at their website and they seem to update the software whenever problems that are software correctable are known.

"*I have one major criticism* of the 5400 which is quite inconvenient for my (large front screen projection) set-up. Video modes for the SCART output include S-Video, RGB or Composite which are individually menu selected. When S-Video is chosen, the S-Video signal comes out of the SCART but now the RCA output (composite) and the RF output go black and white (no colour). This is not optimal for me because I normally have the RF output running to an upstairs TV in the master bedroom while the RCA composite signal is connected to my VCR to tape material off of satellite. Accordingly, if I wish to get the superior picture quality of S-Video (which is quite noticeable on the larger screen), bad luck for anyone who wishes to simultaneously watch TV in bed upstairs and worse luck if I wish to tape what I am watching. It is also a pain to have to go through several menu steps to change back and forth. This limitation causes me to use composite video almost all of the time. Humax gave me a bogus excuse that it was a choice between allowing composite and S-Video simultaneously or allowing RGB pass-through on my SCART ports which is apparently needed by some of their customers in Europe and Asia. Overall? 8.5 out of 10 for this one."

Garry Cratt: "*Humax is but the first of many* new embedded Irdeto IRDs coming; we are working closely with one good manufacturer who is unknown (at this time) in the Pacific. In the end, the number of new options in this area should well and truly break the UEC monopoly."

There you have it. Real reports from real people. Our only P.S. is the manual is far too complex for the typical user - combining installation and user functions in one issue. Sources? Av-Comm (61-2-9939-4377), Kristal (61-7-4788-8902), Lacey's Australia (61-3-9783-2388), Sciteq (61-87-9306-3738) and Skyvision (61-3-9888-7491) - all of whom have contact addresses in this issue of SatFACTS.

Video processing through RCA output jack seems to us to have been "peaked" for bit rates in region of 4 - 5 Mbit/s, but as reported, "*superior picture quality is quite noticeable on S-VHS video output and big screen.*"



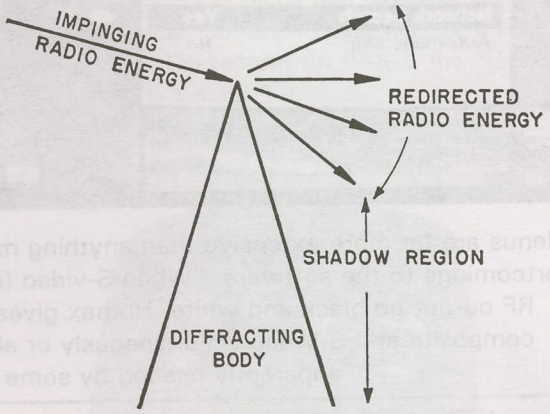
Terrestrial Antennas for DVB-T: Direct and Reflected

Here is the first layer of problems facing you if DVB-T is in your business plan for 2001 in Australia:

1) Accurately locating and maximising appropriate "peak reception" antenna locations without adequate test equipment. An analogue signal level meter (SLM) won't do the job - they work by detecting the horizontal sync pulse of the analogue signal and averaging the sync levels for a reading. The terrestrial digital services have no analogue sync to measure. Moreover, the bandwidth of a terrestrial SLM is too narrow (typically a few hundred kilohertz since it only has to recover the sync pulses) to accurately measure the digital bit stream stretched out over a 7 MHz terrestrial channel bandwidth. Unless you have a digital meter, you will be wasting your time climbing around roofs with a terrestrial antenna trying to find a suitable signal for error free DVB-T reception. Suggestion: Take your "end of year bonus" and order a digital capable meter now. When the rest of the installers figure out they can't compete without one, there will be long waits for delivery of these already short-of-supply instruments.

2) Handling co-channel and adjacent channel DVB-T to analogue and analogue to DVB-T interference. In most areas, digital terrestrial is operating one VHF or UHF channel removed from pre-existing analogue services. The digital services typically are 6 to 15 dB lower in level than the analogues and you would expect the major adjacent channel interference would be from the analogues affecting the digital. Surprise. If UK terrestrial DVB-T is any indicator, digital transmitters have a tough time keeping their bit streams inside of the assigned channels - they spill outside into the adjacent analogue channels. And if you have a masthead amplifier for TV reception, those new digital transmissions will often be enough to overload the amplifiers creating cross-modulation onto the pre-existing analogue services. So it goes both ways. On analogue reception, the overloaded amplifier creates "snow" (black and white speckles) on previously clean or nearly clean analogue services. On digital, the error rate (just like in satellite digital) goes way up creating intermittent reception, signal lockups. In MATV systems, the problems become more acute.

Mileage separation between pre-existing analogues and new digital channels will in many cases be inadequate. This means

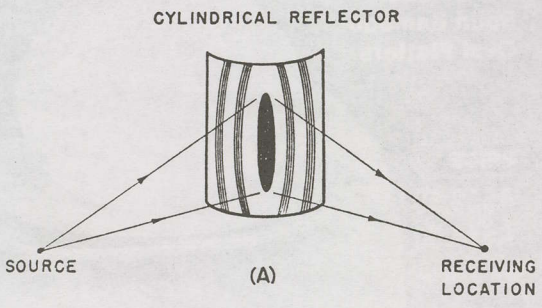


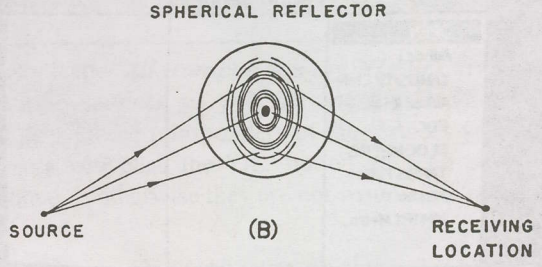
co-channel (same channel) signals in digital will appear in areas where analogue reception has previously been passable. Digital on the same channel as analogue (co-channel) creates flashing black and white dots, not dissimilar to auto ignition interference. The full extent of this problem will only be known when the new digital transmitters are on the air not only in the capital cities but in the rural areas as well.

For as long as both digital and analogue share the same VHF-UHF bands, we will be forced to design around these new reception problems. In the process, we will all learn many new "do's" and "don'ts" about system installation.

Some examples. In the diagram above, we see how "signal refraction" occurs at VHF-UHF. A direct path signal strikes an obstacle (tall building, mountain or hill, row of tenement buildings). We normally visualise VHF and UHF signals as being "line of sight" - the receiving antenna must "see" the transmitting antenna for clean reception. Most hones and offices with TV antennas on the roof receive their signal indirectly; something is usually blocking "line of sight." Even a row of trees can (and will) cause "refraction" or "bent wave fronts" just ahead of the receiving antenna.

DVB-T *can be* more sensitive to "bent waves" than analogue. In analogue, a refracted signal shows up as multiple imaging on the screen - a ghost or blurred right hand edge on a person's face. With DVB-T, you can have perfect reception or none at all and the difference will depend upon how carefully you select the location for the receiving aerial on the roof. And this is why you cannot get by with analogue TV aerial habits.





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IRDETO CAMS available to suit

Ideal for any IRDETO service
(Authorized smart card required)

Proven performer for RABS/Aurora service

12 Month Warranty

General Features	DSR-101 Digital FTA Only	DSR-101 CI Digital FTA and CI	DSR-201P Digital / Analog with Dish Positioner
Common Interface Standard (CI)	NA	•	NA
Dual CAM Sockets (PCMIA)	NA	•	NA
Dual input Analog Receiver (low Threshold)	NA	NA	•
On board Dish Positioner (Medium Duty)	NA	NA	•
Motorized Feed horn Support (Polorotor)	NA	NA	•
32 Step Threshold Extention-Analog	NA	NA	•
Auto Audio Carrier Search-Analog	NA	NA	•
Auto Channel Search-Analog	NA	NA	•
Asia/Pacific Digital / Analog Channels Pre-Programmed	•	•	•
FTA Power Vu Reception	•	•	•
TP/Sat table can be copied to another - via serial port	•	•	•
MCPC / SCPC Operation	•	•	•
C / Ku / S Band Reception	•	•	•
Auto PID Detection and manual PID entry	•	•	•
Universal LNB Support	•	•	•
DiSeqC / 22KHz / 0-12 volt LNB switching modes	•	•	•
Multiple Language Support, Italian, Spanish, Arabic etc	•	•	•
TP/Channel/Satellite Name Edit and delete Mode	•	•	•
C Tick approved	•	•	•
Low Threshold Digital Tuner with IF loop output	•	•	•
On board TELETEXT Decoder	•	•	•
Real time on-screen Signal Level Meter	•	•	•
Auto FEC/SR/Polarity Detection -when enabled	•	•	•
NTSC to PAL 50Hz Converter On board	•	•	•

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SA	Sales agent: R. Jordan 08-8644 0318	**NSW**	Fairy Meadow HIFI - Wollongong 02-4285 5123
NT	Homesat TV 1800 064 343	**WA**	Home Satellite-East Victoria Park 08-9472 7977
QLD	Matchmaster Communications-Brisbane 07-3254 0077	**WA**	Homesat TV 1800 064 343
QLD	Matchmaster Communications-Garbutt 07-4775 3966	**NZ**	Rock Communications-Wellington 04 939 1052
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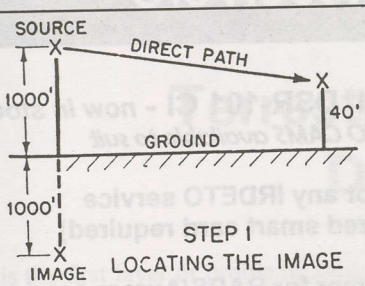
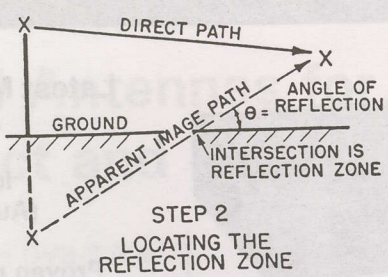
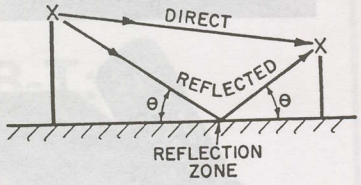


STEP 1
LOCATING THE IMAGE



STEP 2
LOCATING THE REFLECTION ZONE



STEP 3
THE TRUE PATHS

With analogue, it has been possible to select the aerial location on the roof based upon aesthetic considerations - where it does not show, where it is hidden behind a roof line, where the lady of the house will allow it to be installed. Or where you - the installer - can do it the quickest, easiest way. The difference between the "best spot" and the "selected" spot has at most been a *modest* change in the reception quality. Not so with DVB-T.

Even locations with a clean "line of sight" to the DVB-T transmitter will have reflections, because either side of the straight path between the transmitting antenna and the receiving antenna are objects which will create signal reflections. Those reflections will arrive at the receiving antenna slightly later (in time) than the direct path, because they have travelled further (from transmitter to off-to-the-side reflective surface and then back sideways to the receiving antenna). Travel further - take longer to get there.

Tall buildings off to the side of the direct path creating a cylindrical reflective surface (bottom of page 10, left) while short, squat buildings (or an elevated round water tower) produce a parabolic family reflective surface (right). Neither is good, but the tall building's cylinder form creates tall and thin reflections which you can escape only by moving the receiving antenna horizontally (not up and down - vertically).

M WAVELENGTHS

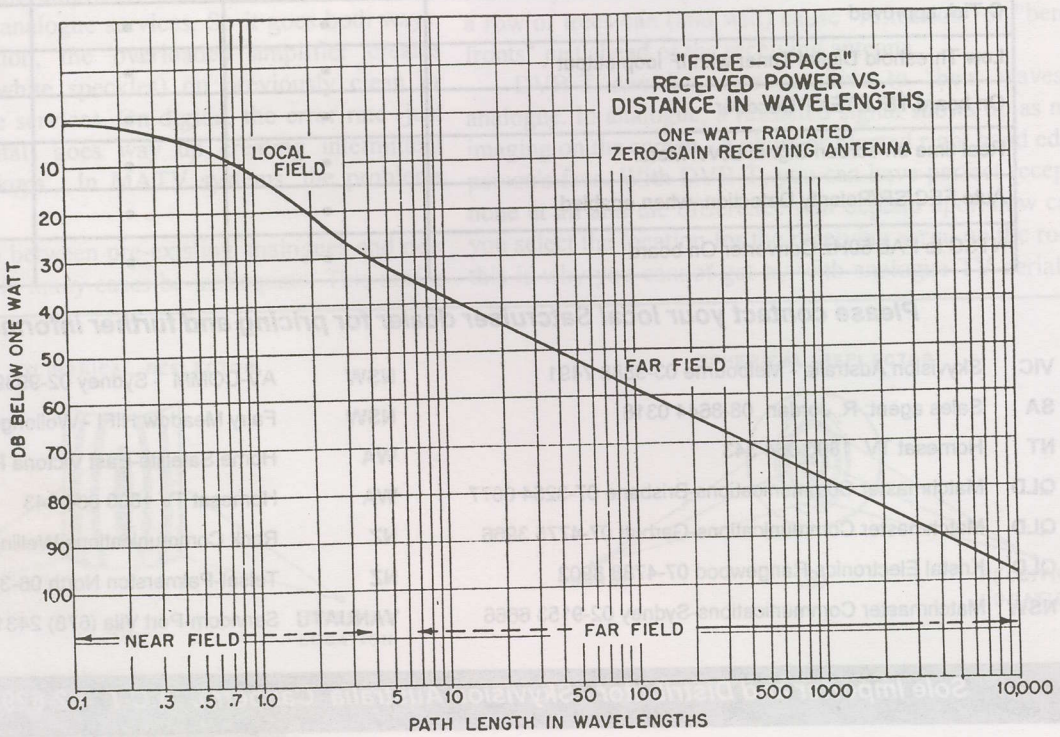
STANDARD ONE-WATT SOURCE ZERO-GAIN RADIATOR

STANDARD ZERO-GAIN COLLECTOR

PATH LENGTH M (IN WAVELENGTHS)	MAXIMUM POWER IN ZERO-GAIN COLLECTOR
130	ONE MICROWATT (10^{-6} WATTS)
1,300	(10^{-8} WATTS)
13,000	(10^{-10} WATTS)
130,000	ONE MICROMICROWATT. (10^{-12} WATTS)

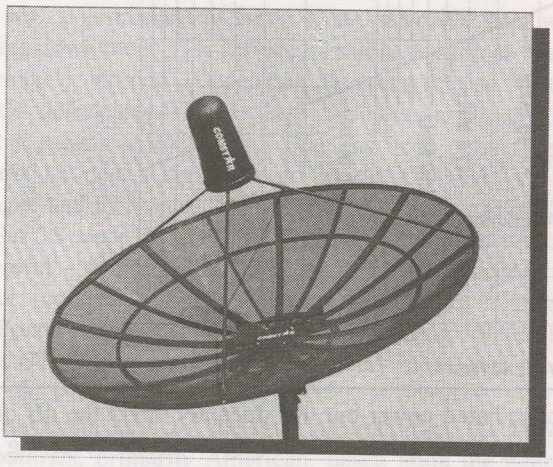
Moreover, even with no buildings or other reflective objects left and right of the direct path, we *always* have ground reflections from a line of sight transmitter. A ground reflection (above) means the signal from the transmitter arrives at the receiving antenna twice - once through the air (direct) and simultaneously after striking the ground along the way and then "bouncing back up" to arrive at the antenna from the underside. Line of sight (unobstructed) reception paths cannot totally escape the ground reflected path signal but with appropriate bit error rate (BER) portable equipment, on the roof with you as you probe around for the best location and height for the rooftop aerial, it can be minimised. How? Simply probe for the lowest BER at the best signal level. There will be a compromise here - go for the *lowest BER* even if it amounts to a lower signal level, as long as the signal level is adequate for reception purposes. This is typically 20-25 dB of signal (signal above noise) as a minimum. In the end, it will be BER and not signal level that will determine where the antenna should go - even if the lady of the house does not want it there!

Signal levels? Always important but less so with DVB-T than analogue simply because it takes 15 to 20 dB less signal with DVB-T to produce quality reception than it has taken for

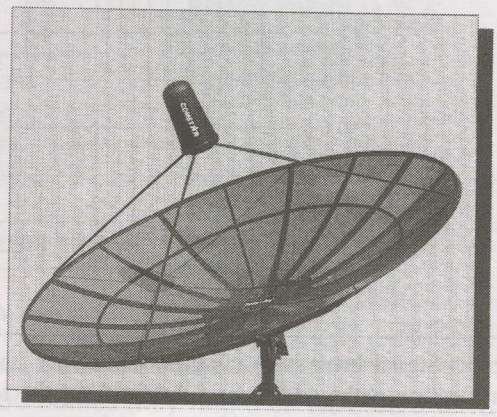


ANY WAY YOU LOOK AT IT ...

ST-7



ST-10



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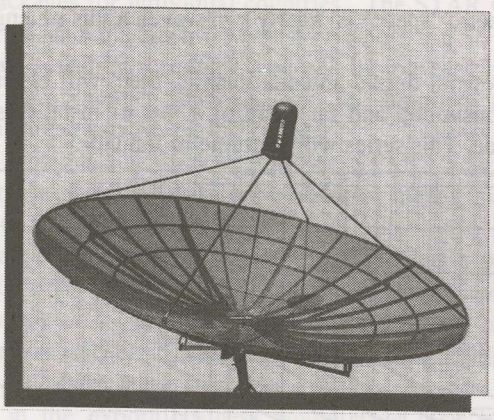
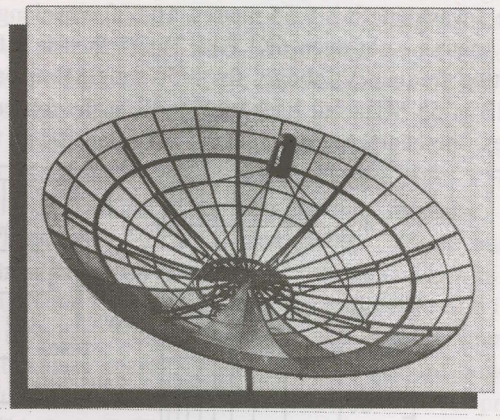
ST-12



ST-16



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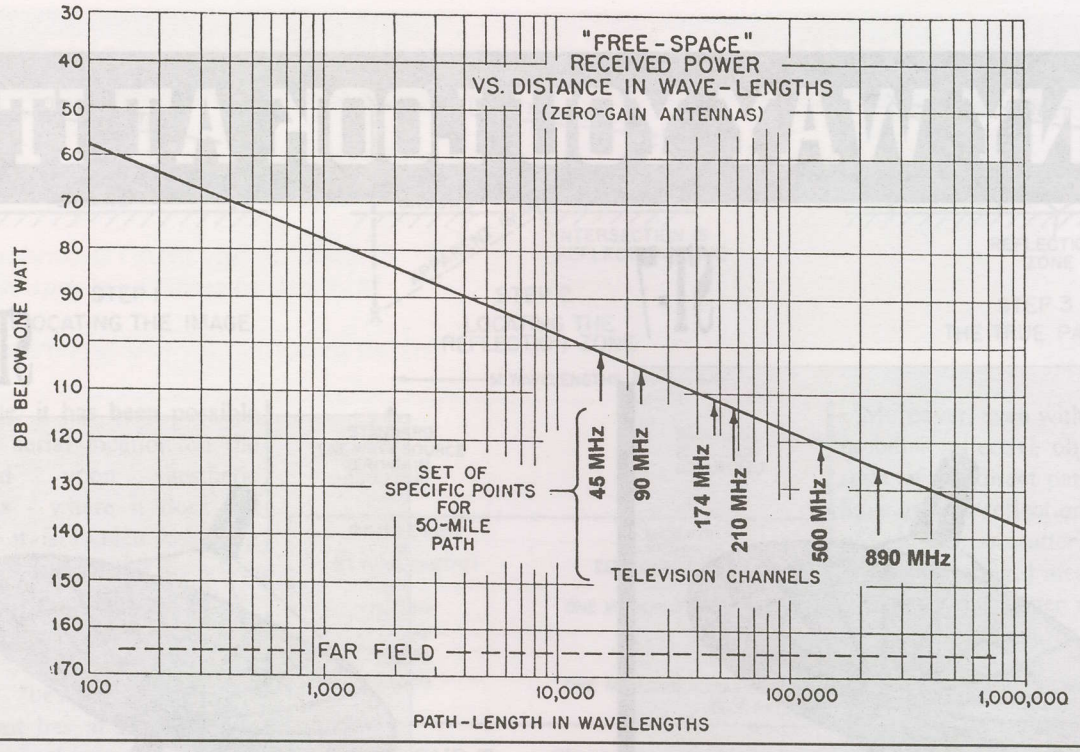
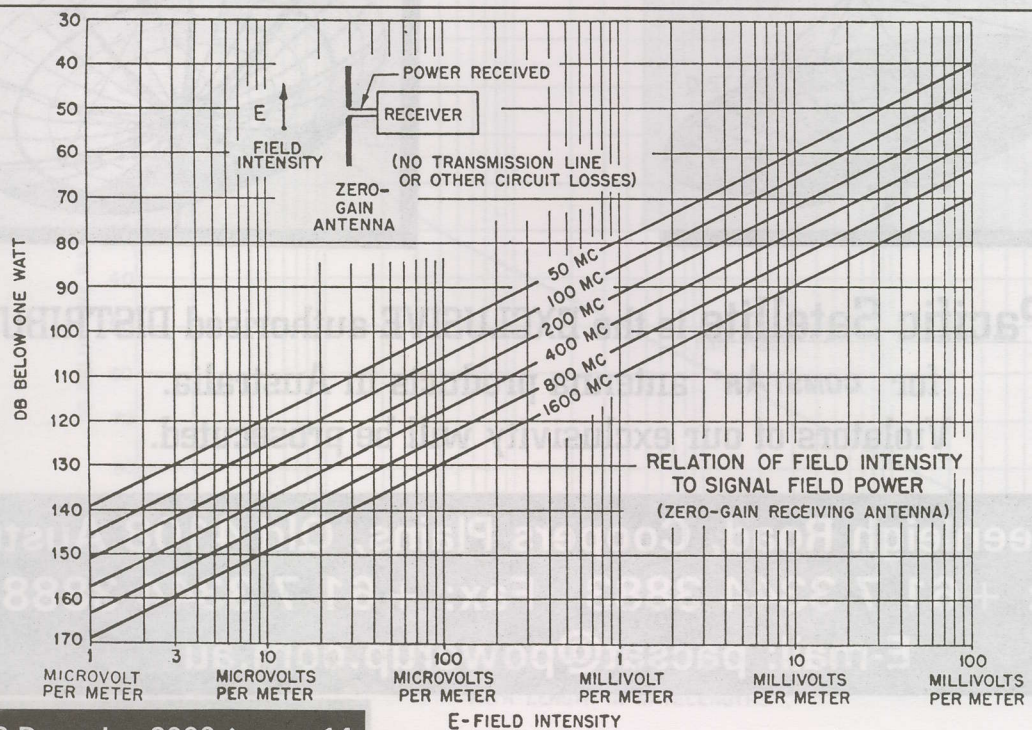


analogue. Signal level is a function of distance and whether those reflection paths add to or subtract from the total levels present. In the table on page 12, we see electromagnetic (TV) waves decrease as a function of distance. If we start out with 1 watt of transmission power, and measure the amount of received signal present with a cut to frequency dipole antenna at various distances from the transmitting antenna, we see how quickly the signal level present goes down. This table is shown in a slightly different format at the bottom of page 12; at a distance of 10,000 wavelengths the received signal level will be 98 dB lower in level than the transmitted power. 10,000 wavelengths? Well, at TV channel 0 in Australia, that is 10,000 times approximately 7 metres or 70,000 metres; 70K. But at TV channel 30 (541.25MHz in Australia, 543.25 NZ) where a wavelength is 0.55 metres, 10,000 wavelengths is only 5,531 metres - not even 6K! Path "loss" then is a function of operating frequency; above, for a 50 mile/81km path, loss is 102 dB at 55 MHz but rises to 126 dB at the top end of band V. Yes, the charts were originally prepared for an assumed 1 watt of radiated power but this does not effect the dB of path loss - only the *total amount* of signal at the receiving point (transmitting with more than 1 watt raises the total power at the end but does not change the number of dB of loss between the two points).

Another way to graph this is shown below; again, reference 1 watt but now converted to millivolts (1,000 microvolts) or microvolts. Note that at 50 MC (MHz) a 100 dB drop in level creates 100 microvolts (per meter) at the receive site. "Per meter?" This means for each metre of receiving antenna surface area, a certain number of microvolts will be present. At 50 MHz, which is 6 metres long, this is obviously a smaller surface area than one needs to build even a 1/2 wave dipole antenna. But at 540 MHz, where a wavelength is 0.55 metres, the 1 metre "space" is nearly two wavelengths in length.

Terrestrial digital antenna installs, then, will be much more time consuming and far more of a test of installer skills than analogue. This series will continue in January.



Money crunch?

STAR TV ASIA
shutting down Hong Kong DTH service

It was a bombshell in Hong Kong. Star TV Asia will be shutting down their DTH service, possibly as soon as March 1. A strangely worded (December 5) press release headlines, "STAR defers pay-TV platform business in Hong Kong.." What it means is unclear but Star has been delivering (the) Phoenix Chinese Channel, Star Sports, Channel [V] - all analogue and FTA, plus Star World (NDS format digital) from AsiaSat 3S since May of 1999. And it has been reasonably successful - claiming 449,000 HK homes with access to the service (comparison? Bigger than Austar, Sky NZ, smaller than Foxtel's cable + satellite total, now nearing 700,000).

The STAR concept has changed many times over the years since the 1990 birth of Asia's first DTH platform. First there was "universal service," the same programming for viewers in 53 countries, primarily American, based upon the belief that *Baywatch* had international appeal. Through April 1999, the delivery vehicle was AsiaSat 1, an older satellite originally reclaimed in a dramatic example of the technology that took Americans to the moon in 1969. But As1 was scheduled for replacement, and As3S (the *first* As3 never made Clarke Orbit) brought an entirely new world to Star. This would be a good opportunity to convert from analogue to digital, turning single programme channel analogue transponders into 6, 8 or even 12 digital channels. With this new abundance of possible service channels came new marketing challenges and a new direction. STAR's one-size-fits-all would be retailored to create specific service packages for individual countries. The STAR website was the first announcement (www.startv.com) and if you go there today, selecting a country, you will be told which of the now 30+ programme channels can be supplied to that geographic area (SatFACTS #57, p. 6).

Hong Kong is one such region. As STAR's new "tailor made" service packages were being readied, management put out a call to local installers.

Officially, the Sky (digital) IRD required has a price of HK$3,500 (US$449). Installers are warned, "*Do not under any circumstances allow an IRD to be shipped to any location outside of the territory.*" That means China, the Philippines, Brunei - anyplace other than Hong Kong. Anyone caught engaging in the export business would have their business relationship with Star terminated, and under a June 2000 adopted Broadcast Ordinance, penalties include fines up to HK$1,000,000 and/or 5 years in jail for involvement in the "mobile IRD" business.

From May 1999 to the present, there has been a slow but measurable improvement in the Hong Kong available "FTA" digital television channel line up. Phoenix, Star Sport, [V], initially only available on analogue, are now part of the platform. So too Star Movies, Star News, National Geographic - a total of up to 10 for (some) Hong Kong residents.

But not all Hong Kong residents are created equal. The majority there live in high rise apartments, served with SMATV systems. When Star World shut down on analogue (May 1999), Star installers scrambled to add Pace digital IRDs to headends so residents could continue watching their favourite English language programming. But residents have a second option - *buying* their own As3S DTH system (with IRD). The advantage to being a "subscriber" rather than a "FTA viewer" (through an SMATV system) is access to all 10 of the Hong Kong "legal" channels. Sky, embroiled in ongoing disputes with Hong Kong authorities about its pay-TV status there, would never allow installers to add digital IRDs for Star Movies (et al) through SMATV systems. Alas, Hong Kong viewers are creative and it is not uncommon today to find 3 or 4 Pace DVS200 receivers stacked up in a single residence. Each feeds a modulator, which in turn feeds RG6/U that snakes around to neighbours.

449,000 homes may find their NDS card for STAR World and others off of AsiaSat 3S won't work after March 1.

Star TV has been a disappointment to Hong Kong viewers. And many have taken steps to correct the situation. Creating miniature SMATV/CATV systems is one response. More recently, Thaicom UBC has been doing major business because Star - the master company - onsells services to UBC which Hong Kong residents cannot obtain directly. And UBC's coverage includes Hong Kong, if not legally (that old copyright business again). UBC offset dishes are now very common (thousands have been installed), the street price is HK$17,000 plus HK$3,000 a year for the 30+ channel subscription package. Clever installers have been affixing "Star TV" logos on the dishes in a half hearted attempt to camouflage that the unusual (in Hong Kong) offset dishes are receiving something clandestine. Adding insult to injury, a house directly opposite the Star TV uplink station sprouts a UBC dish within just "wavelengths" of the Star facility!

Looking back, Star TV Asia's problems began when management changed (a chap named David Haslingden had unusually good perception of the digital pathways coming) leaving Star drifting without a firm rudder. What began as a one-size-fits-all service lost the helmsmen (Haslingden, Ward Platt, David Dennis and Steve Smith) just as a major course change was underway. During the critical period of 2000, Star lost focus, became entranced with a possible big dollar

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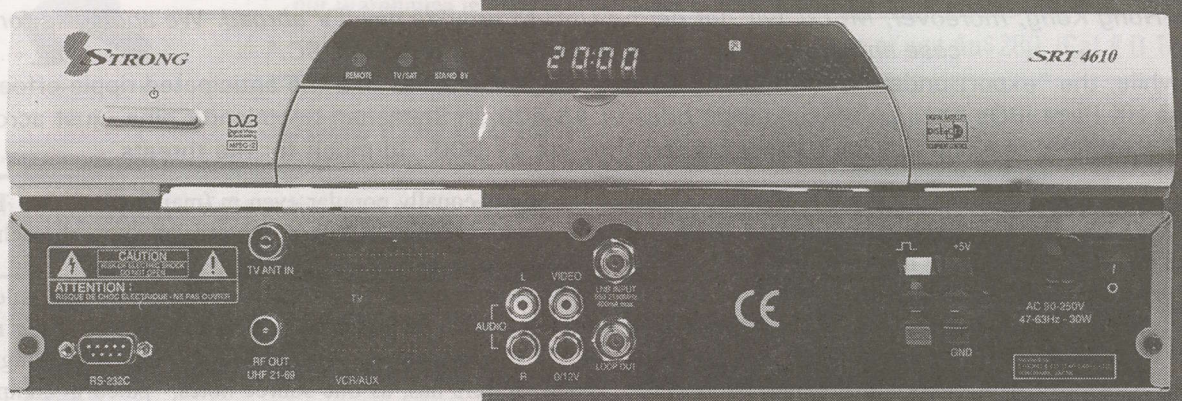


SRT 4610

- 2000 Programmable Channels
- DVB, MPEG-2 Compliant
- C/KU Band
- SCPC/MCPC Reception
- 2-45 Ms/s Symbol Rate
- Loop Through Tuner
- Autoscan, Autoprogram
- PID Insertion
- On Screen Graphics
- 4 Digit LED
- DiSEqC 1.2
- 8 Universal LNB Control
- Mechanical Polarizer Control
- 0/12 V External Switching
- RS-232C Service Port
- Upgradable Software
- Data Transfer Between Units
- Teletext Insertion
- Electronic Programme Guide (EPG)
- Parental Lock
- Auto Power Back On
- PAL/NTSC Modulator
- 21-69 UHF PLL Modulator
- VCR Loop-Through on Stand-By
- Auto Voltage (AC 80-260V) SMPS

STRONG Technologies

Of course it is "illegal" to have UBC reception in Hong Kong

"*Dear Sir,*

Thank you for your interest in UBC and for your inquiry. We would like to inform you that there are no UBC agents in Hong Kong; moreover, MCOT will not permit UBC to provide pay-TV abroad. We apologise for this case and are very appreciative for your interest in UBC."

Meanwhile, the "export-under-threat-of-death" dictum by Star TV has had the anticipated ripple effect. Whereas HK Pace IRDs have an official street price of $3,500, in Shenzhen (mainland China - just across the Hong Kong Special District border) they are $7,000. So much for the threats.

relationship with something called Pacific Century Cyber Works (PCCW). This is the hosting parent for the NOW-TV service (also on As3S) and PCCW has been on a stock market roller coaster as the "darling of the new media" of the HK stock market. During a period when Star TV should have been concentrating on fine tuning of a viable DTH plan for Hong Kong and the balance of Asia, energy was drained off to chase stock market deals.

Into the vacuum Chinese merchants flocked, seeing that Star TV was heading down the tubes and people's appetites for western style TV programming could best and easiest be served through UBC's bouquets imported (against copyright laws) from Thailand. One Hong Kong installer shares with us a response he received after showing the ultimate naiveté by contacting UBC directly and asking them straight out, "*Can you advise me who is the Hong Kong agent for the supply of your IRDs?*" UBC's answer appears above.

Which way for Star?

Since June 1st, James Murdoch (sibling of Rupert) has been Chairman and CEO of Star TV. Under his tutelage, Star has acquired significant new Chinese (Mandarin) film product rights, launched a 24 hour Hindi (classic) movie channel for India, and secured Pakistan's first satellite pay-TV license.

In Hong Kong, the Pace and Zenith IRDs are not modem equipped - which makes them antiques already. There is more here than corporate oversight - almost identical Pace (and Zenith) IRDs actually began in distribution at the same time as the Sky NZ distribution on satellite launched. *Almost* - except the NZ versions *do* include a modem. At some point, Star Asia management had made a conscious decision not to include feedback capabilities (through a modem to a programming centre) in the Hong Kong (read Asian) version. There has never been an official "release" explaining this action, but most believe the relatively antiquated state of Asian telephone systems dictated this decision.

Alas, it may have been the wrong decision, especially in Hong Kong where the telecom system approaches state-of-the-art. Competition to Star Asia there is building in return path, two-way capability to allow viewers to interact with television programming. Star took the SMATV approach and having a single IRD delivering Star World to 200 apartments is a giant step away from allowing each viewing location to "communicate" with the programmer through their TV set remote control.

Star is not saying how the 449,000 viewing "homes" will be treated after the proposed cut-off date (variously reported but believed now to be March 1, 2001). In the worst scenario for the viewers, the screens go dark - on at least digital delivery of Star World. What does this suggest for the continued availability of the three FTA analogue channels; Phoenix, [V] and Star Sports? If Hong Kong were the only major centre where these channels are watched, "going dark" would seem logical. But this is not the case - Star World is widely carried by Indian and other Asian cable TV systems, Phoenix, [V] and Star Sports equally popular even in (mainland) China, Taiwan and the Philippines. All carry advertising support, each has a revenue stream that Star should wish to continue.

The truth is that Star's Hong Kong effort has failed, for various reasons including dropping the project in the middle before it was mature. As a result, the lure of serving Hong Kong viewers has, as one source notes, "paled in comparison to everything else on Star's plate." Local competition is stiff, primarily in the form of the master Chinese programmer TVB which boasts, "*We own Hong Kong.*"

One line in the December 5th "official release" from Star TV Asia stands out:

"The immediate company focus will be in providing content services in the liberalised Hong Kong market, leveraging the significant programming assets Star has amassed over the last year."

What this suggests is Star's programming will not simply "disappear" from the Hong Kong scene, but rather will be made available on a "wholesale basis" through other service providers. That means selling the existing programme streams (already available on and for satellite) to other retailers such as TVB's Galaxy Satellite Broadcasting taking Star out of the retail business but not out of programming.

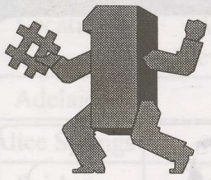
Star TV spokesman Jannie Poon Lai-king explained:

"Profitability of the Hong Kong market depends on how many players will be in the market. After assessing the Asia Pacific market, we concluded that what was best for us at this point was to concentrate on being a content provider."

What concerns installers who have been dependent upon the Star Asia service for a living in Hong Kong is the possibility that with the demise of HK DTH, what little English language TV service they have will terminate. "There are 6 million people here, and the primary language of commerce is English. A high percentage of our clients speak only English even today years after the return of Hong Kong to (mainland) China. At best, we have 4 to 10 English speaking service channels through Star. With the termination of HK DTH, we may have none. *That will hurt.*"

And the Indians too

"Following fast on the heels of the Chinese who are increasingly importing UBC dish systems from Thailand are the Indians who have found ways to acquire both Star India and Zee TV IRDs in their homeland and bring them back to Hong Kong. It all began when Indian recreation clubs began to import systems but has now rapidly spread to the Indian home market as well, yuppie bars and Indian restaurants. So, on the one hand we have Star TV telling its installers not to export IRDs whilst on the other hand Star has done little or nothing in eighteen months to provide Hong Kong residents with good television, as they originally promised. By their failure, this has led to an invasion of out-of-market hardware. Talk about frustration - Hong Kong enthusiasts of UK football have actually been flying to Thailand on weekends *to watch TV!*"



ENTHUSIASTS!

We goofed!!! And ordered too many of these 1.8m USA manufactured mesh dishes. Now our warehouse is filled and we have to trim down the stock on this hot, 4 panel dish item. Polar mount. You reap the benefit of our mistake at just Au$280. (Cat # D 1475)

SURGE PROTECTOR!

Don't risk lightening damage to your valuable satellite TV equipment or PC. Install this high voltage arrestor right at the input socket to minimise the danger! Great device (sorry, will not protect against small arms fire). Au$22 (Cat # X1480)

12 way MOTHER of all power boards!

Avoid the embarrassment of burning your house down with unsafe double adapters. An even dozen power outlets for today, tomorrow and your future needs. Compare at Au$42. (Cat # P 2000)

PUT IT ALL TOGETHER with a DUAL BAND COMBINER!

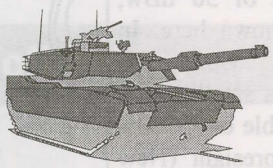
Mix the outputs of 2 LNBs at the dish and feed just a single cable to the receiver. Saves the time and expense of an additional cable run, drilling holes through walls, running into plumbing pipes and electrical wires! Great for high rise buildings. Use a standard IF splitter like our X1550 to feed several receivers. Au$35. (Cat #1750)

CUT OUT all of those extra REMOTES!

Hey - you reach for the remote and the pile is huge. The kids grab the wrong one and switch off your toilet water when trying to change channels. End it all. Cut to the core of the problem with our 4-way "Intelligent" A/V switcher. Use with Sat TV, DVD, cable and more. Detects and switches the active input to 2 parallel outputs. Perfect with a Video Sender! Au$89. (cat #T1951)

ANALOGUE RECEIVERS!

We scoured the junkyards of Asia to bring you this one! Another landfill special, these famous name receivers are remote control, 250 channel, stereo audio, UHF output, on screen display, 2 inputs. These are not new but near new and guaranteed for 12 months. Au$25 each - less if you purchase more than 1! (Cat # R4000)



"OUTBACK" Flux Gate Compass. This hand held digital compass reads azimuth bearing directly and has a unique self calibrating feature that compensates for residual magnetic fields. This means you can use it around steel dish structures without losing accuracy. Au$180. Cat# 1080.

The best IRD we have ever tested! Humax ICRI 5400 embedded Irdeto. Pre-loaded with all Aurora transponders, will receive all C-band (*) FTA channels. Excellent EPG, exclusive "preview" feature. AND - 2 CI slots supporting both Irdeto and Mediaguard CA platforms. 4000 channel capability, 0/12v and DiSEqC, RS232 software upgrades. Special introductory price for SatFACTS readers - Au$895 while they last. A strong US$ means the price on this must go up on next shipment! (Cat #R3200) * - call for latest list.

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* Prices do not include shipping but do include Australian GST if applicable.

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A trade association for users, designers, installers, sellers of private satellite-direct systems in the Pacific Ocean & Asia Regions

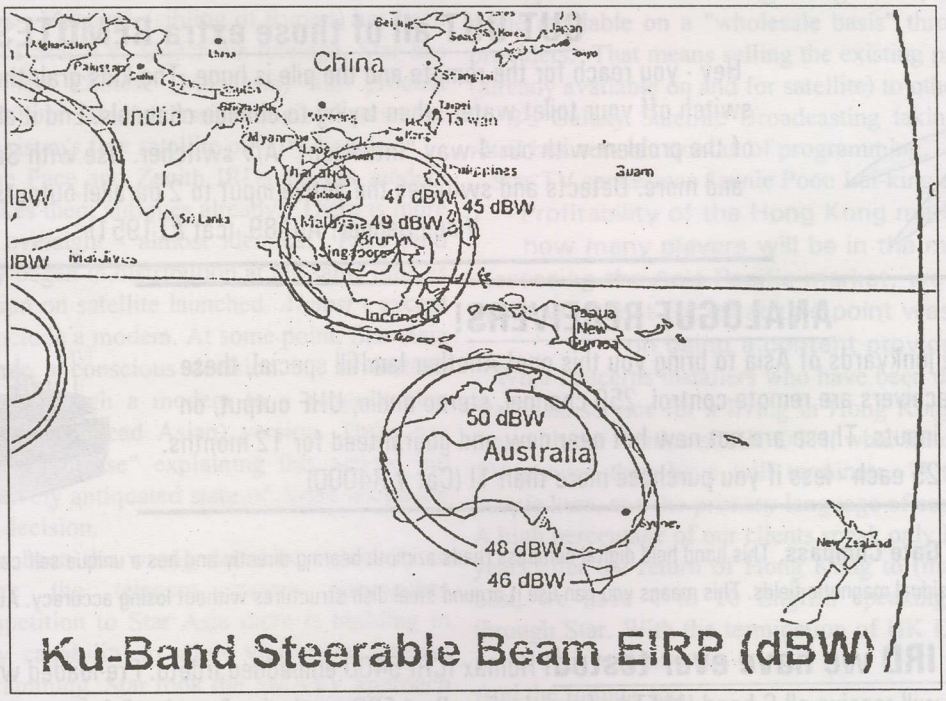
Telstra's AsiaSat 3S Ku-band move

Australia's national telephone carrier, Telstra, will be leasing four Ku band transponders on AsiaSat 3S for delivery of "broadband communications, data and Internet" sometime during 2001. There is no indication as to the actual content but there are suggestions pay television may play a role in the rollout.

AsiaSat 3S Ku band transponders are spotbeam steerable - this means by command, the transponder output can be focused to a specific area of the earth. The dBw coverage map appearing here is illustrative of this principal. Telstra and AsiaSat sources claim, "these spotbeams will be the most powerful Ku band services into Australia," a direct slap at the present signal levels available through Optus B1 and B3 transponders.

AsiaSat sources claim a peak (centre) spotbeam level of 50 dBw; as shown here. In fact, Optus B series satellites are capable of 55 dBw at boresight (New Zealand beam) and numbers like 51 dBw are common. A closer inspection of the As3S Ku footprint here suggests that where they do reach 50 dBw there will not be many users; areas like the populated eastern and south-eastern coasts are more typically 46 to 48 dBw. It is not that these are "weak" (1.0m offset dishes for 3 dB fade margin protection), but that both Telstra and AsiaSat would be careless in making claims which the facts cannot substantiate.

So what is Telstra up to? They already control transponders on PAS-2 and PAS-8, have an interest in Optus B3 (Foxtel shared) transponders. Although it had nothing directly to do with the leasing of AsiaSat 3S Ku transponders, the press release goes to some length to mention a "relationship" between PCCW (Pacific Century Cyber Works) and Telstra. PCCW is the "host" for NOW-TV (AsiaSat 3S, C-band (3760 Hz). NOW-TV is supposed to be the pioneer in combining computer tasking with television delivery, walking that thin and difficult to define line between the two "merging" technologies. Telstra has invested big money in PCCW and somehow would like us to believe that out of that



MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer." All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS industry trade show, scheduled September 27 - 29 (2001), Melbourne. Members also participate in policy creation forums, have correspondence training courses available and their support makes possible the TV show SPACE Pacific Report. To find out more, contact (fax) 64-9-406-1083 or use information request card, page AB, this issue of SatFACTS. Page space within SatFACTS is donated each month to the trade association without cost.

Location	As3S Elevation	dBw forecast	Size dish required (*)
Adelaide	34	49	0.75m
Alice Springs	47	50	0.68m
Brisbane	30	48	0.82m
Darwin	55	48	0.82m
Hobart	24	46	1.03m
Melbourne	25	48	0.82m
Perth	54	47	0.9m
Sydney	27	48	0.82m

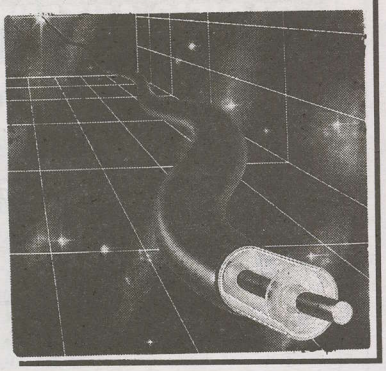
* - Assuming dBw as forecast on map here and allowing 3 dB fade margin.

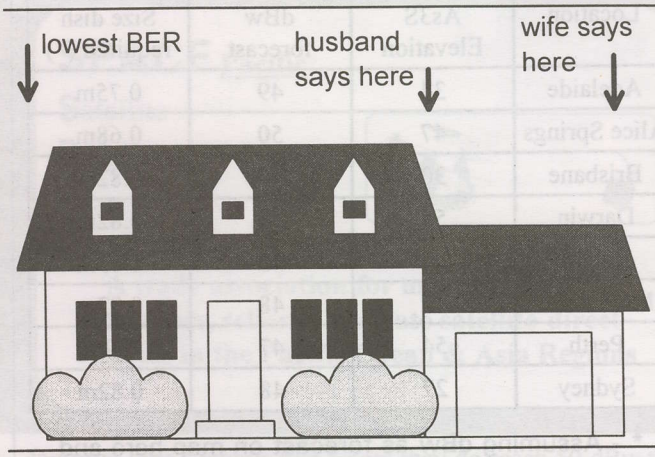
investment will come some new and innovative uses of satellite delivery of whatever the format may eventually be for the merged delivery systems.

Telstra's track record with offering Internet via satellite (through the BigPond project) is less than encouraging. In fact, no place in the world today has satellite delivered Internet caught on with the masses of Internet users. Telstra would like us to believe the AsiaSat 3S transponders will somehow be used for the next plateau of Internet via satellite. In fact, it is more likely the transponders have been leased for something totally different than Internet. And that is? Pay television.

Rain fades, especially along the east coast, will be significant because of much lower look angles to As3S than to either the PanAmSat or Optus satellites. Coincidentally, finding a spot on a roof where the 105.5E location is not blocked could be tough. This may not be Telstra's finest hour.

The CABLE Connection





Fine tuning DVB-T

Installing DVB-T (digital video broadcasting - terrestrial) set-top boxes and ultimately full HDTV receivers will be a new challenge for many (Australian) readers, shortly. If you have previously installed satellite digital IRDs (DVB-S), the basics are in place. But there are fundamental differences between the "S" and "T" versions which are well worth studying before you end up spending five hours on someone's roof doing a job that could have been done in 30 minutes.

In DVB-S, if you peak a satellite dish (antenna) for maximum signal, you will simultaneously also have the lowest (best) BER (bit error rate). As often as not, this will not be the case with DVB-T.

A DVB-S signal arrives at your antenna from a single "point" (in the sky). The "point" is the signal source and the relatively narrow peak reception zone (adjustment of the dish) determines when you have best signal level which translates to lowest BER.

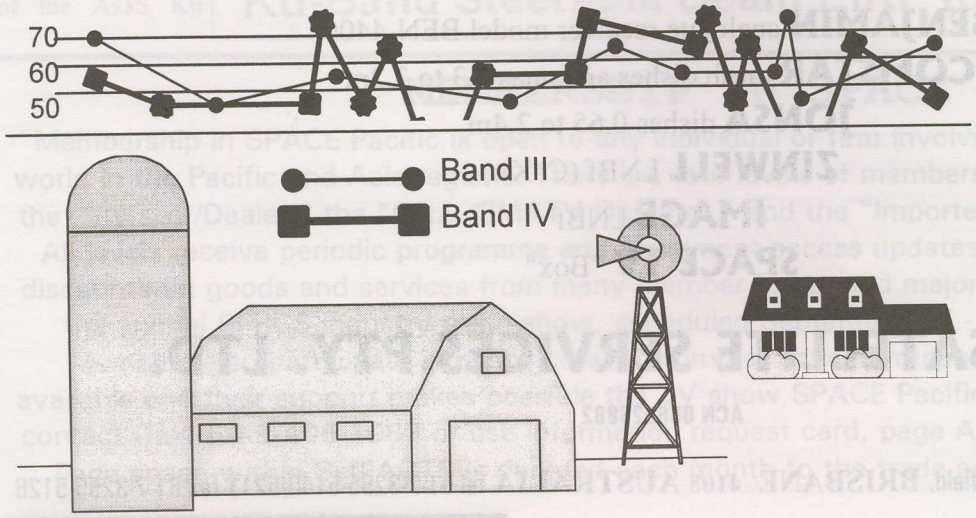
A DVB-T signal arrives at the receiving antenna via several paths (see pg. 10, here). Each of those paths is totally independent of all other paths, and each will have its own distinct "peak" point when rotating the receiving antenna around. Moreover, the band I/III/IV/V terrestrial receiving antenna is very "broad" in its receiving pattern, unlike the pin point narrow beam with the satellite dish. So if two or more of the terrestrial paths are similar in direction, the broad beam of the terrestrial antenna simply sees two or more paths (points of apparent origin for the signal) simultaneously.

This happens with DVB-T for several reasons: (1) VHF (band I, III) and UHF (band IV, V) signals are transmitted at considerable power and easily "bounce" from solid objects, even lines of trees. Each time a signal strikes a solid or near solid object, it reflects (bounces) away in a new direction; (2) the ground between your receiving antenna and the transmitter is another "solid object" and ground reflections are unavoidable (even when the "ground" is "water"). You can illustrate this to yourself with an FM radio in your car/truck. Tune-in a station that is far enough away to be fringe quality. Now start driving while listening. The reception will "pop" in and "out" as you drive along, the "in" being a location where the signal is strong, the "out" be a weaker signal location. Those "pop in" spots would be where you might install an antenna permanently to receive that particular station. And you'd avoid the "pops out" spots.

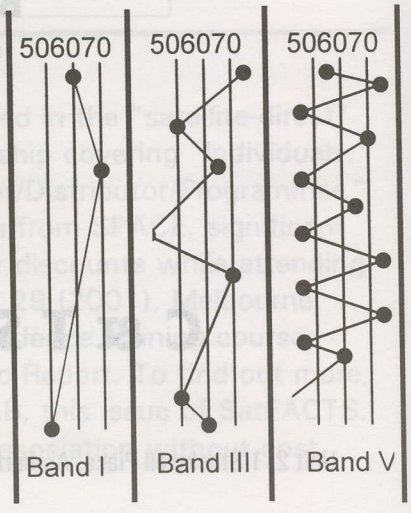
The identical thing happens when you are on a roof installing a DVB-T antenna. There are spots where the signal is good ("pops in") and the opposite. These "spots" vary as you move the antenna horizontally (along a roof line balancing as you walk the peak; diagrammed below, left), and, when you move the antenna up and down to be higher or lower reference the ground. *Higher is not always better;* in fact, with bands III, IV and V, there are not insignificant peaks approximately one wavelength apart as you raise (or lower) the antenna. We diagram that for you directly below. The signals are entering from the left traversing the farm to the right through the obstacles shown.

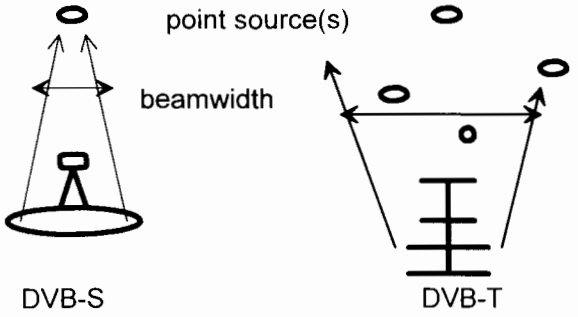
Finding the "best" location for a DVB-T antenna involves two factors: (1) Lowest BER, and, (2) an "acceptable" signal level. In most cases, unlike DVB-S, the "most signal" and "lowest BER" will not occur *simultaneously*. Unless you can measure the BER as you move the antenna along and up and

Variation in measured signal across property vs. frequency



Variation in signal level as height of antenna changes





down, you are counting on "good luck" to locate that spot where low BER and *acceptable* signal level coincide. If you can only measure signal *level*, and mistakenly believe "highest signal level will automatically be lowest BER," you are in for some rude surprises.

The wide angle of reception of a VHF/UHF antenna is partly to blame for this, responding to several separate signal "sources" simultaneously. If you can move the antenna a few *inches* and find *sudden* dramatic changes in BER or signal level, you are experiencing "phasing" ripples; areas where a signal from one source briefly reinforces the signal (adds in phase) to that from a second (or third) source. If you find a small change in antenna location equals a big change in BER or signal level - *be wary*! You are in a dangerous location which could easily change on you before the antenna is tacked into position and you are down the ladder to the ground. Slow changes, gradual peaks (indicating where the antenna could be fastened) are far safer as permanent locations for any DVB-T antenna. Rule of thumb? Look for highest BER first, then look for a signal "hot spot" within the best BER region.

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 December 2000

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym	Receivers and Errata
I704/66E	Sky News +	3805/1345R	4	3/4	22(.520)	Sky News 24 hr, sport, feeds; **some FTA**
Ap2/76E	Hallmark	3720/1430H	4	5/6	29(.270)	PowVu, typ. CA; Kermit now gone
	Channel "I"	382301330V	1	3/4	3(.570)	Tests, FTA
	TVB8 +	3849/1301H	4	3/4	13(.238)	PowVu, CA
	AXN	3920/1230H	up to 8	7/8	28(.340)	Tests, promos, **up to 5 chs FTA**
Thcm3/78.5	**MRTV-Mynr**	3666/1484H	1	3/4	6(.786)	new here Nov 00
	Mega +	3640/1510H	12	3/4	28(.056)	Mega Cosmos here; new Sr
	Mahar/DD1	3600/1550H	up to 8	3/4	26(.661)	USA religion chs FTA
	Sky Ch Aust	3565/1585H	up to 3	3/4	5(.000)	New here from As2; **occ FTA**
	TRT +	3551/1600H	4+ TV, radio	3/4	13(.330)	3 Angels USA, Ch of Hope, + 9 radio
	PTV2	3420/1730V	1	3/4	3(.366)	FTA, not seen Australia
	TV Maldives	3412/1738V	1	1/2	6(.312)	FTA (reaches SE Australia)
	Thai Global+	3425/1725V	up to 7?	2/3	27(.500)	FTA
Insat 2E/83E	**DD2**	3910/1240V	1	3/4	5(.000)	SCPC, testing MPEG-2; OK E. Aust.
	DD tests	3929/1221V	1	3/4	5(.000)	SCPC, weaker than 3910 above
ST1/88E	Taiwan Bqt	3509/1641H	13	3/4	23(.450)	MCPC, **sometimes FTA**, 2 adult chs
Yaml102/90	**Tumen TV**	3578/1572L	1+radio	3/4	4(.355)	unlikely south of eqtor
	TV6 Bqt	3645/1510L	3(+)	3/4	28(.000)	new Sr; unlikely south of eqtor
MeS 1/91.5E	**Malay. TV3**	4147/1004H	1	3/4	7(.030)	CA but occ. FTA
As2/100.5E	**Euro Bouqt**	4000/1150H	6TV, 21r	3/4	28(.125)	FTA (TV5 teletext); now includes RTPi
	Reuters	3909/1241H	1	3/4	5(.632)	occasional feeds, **some FTA** MPEG2
	Hubei/HBTV	3854/1296H	1	3/4	4(.418)	FTA SCPC, teletext
	Hunan/SRT	3847/1303H	1	3/4	4(.418)	FTA SCPC, teletext
	Guan./GDTV	3840/1310H	1	3/4	4(.418)	FTA SCPC, radio APID 81
	In. Mongolia	3828/1322H	2	3/4	8(.397)	FTA: #1 Mongolian, #2 Mandarin
	APTN A-O	3799/1351H	1	3/4	5(.631)	mostly 4:2:2 SCPC (news feeds)
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)	Mostly CA; **some FTA**
	Reuters/Sing.	3775/1375H	1	3/4	5(.631)	**FTA** & CA
	WorldNt/US	3764/1386H	1 + 20 radio	3/4	6(.100)	FTA; up to 20 radio channels
	Liaonin/Svc2	3734/1416H	1	3/4	4(.418)	FTA SCPC, radio APID 256
	Jiangx/JXTV	3727/1423H	1	3/4	4(.418)	FTA SCPC, teletext, radio APID 81
	Fujian/SETV	3720/1430H	1	3/4	4(.418)	FTA SCPC, + radio APID 80
	Hubei TV	3713/1437H	1	3/4	4(.418)	FTA SCPC, radio APID 80
	Henan/Main	3706/1444H	1	3/4	4(.418)	FTA SCPC, + radio
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27(.850)	Thru TARBS Aust, subs now OK
As2/100.5E	**Feeds**	4086/1064V	1	3/4	5(.632)	FTA SCPC feeds
	TVSN	4033/1117V	1	3/4	4(.298)	Occ. **FTA**, not same as Aust. version
	EMTV	4006/1144V	1TV, 2 radio	3/4	5(.632)	PowVu CA; poor signal level
	Jilin Sat TV	3875/1275V	1	3/4	4(.418)	FTA SCPC, + radio
	HeiLongJian	3834/1316V	1	3/4	4(.418)	FTA SCPC
	JSTV	3827/1323V	1	3/4	4(.418)	FTA SCPC, + radio
	Anhui TV	3820/1330V	1	3/4	4(.418)	FTA SCPC
	ShaanxiQQQ	3813/1337V	1	3/4	4(.418)	FTA SCPC, radio APID 81
	Guan/GXTV	3806/1344V	1	3/4	4(.418)	FTA SCPC, radio APID 257
	Fashion TV	3795/1355V	1	3/4	2(.533)	FTA SCPC, reload VPID 308, APID 256
	MSTV	3791/1359V	1	3/4	4(.340)	FTA SCPC
	Myawady	3766/1384V	1	7/8	5(.080)	FTA SCPC - difficult to load
	Saudi TV1	3660/1490V	1 (?)	3/4	27(.500)	FTA MCPC
As3S/105.5E	Zee bouquet	3700/1450V	9TV	3/4	27(.500)	Mediaguard CA, **ch 8 FTA**
	ETV Bangla.	3749/1401V	1TV	3/4	4(.340)	PowVu but FTA at this time
	Arirang TV	3755/1395V	1	7/8	4(.418)	FTA SCPC; reported audio problems
	Now TV	3760/1390Hz	2	7/8	26(.000)	also check 3900/1250Vt, same #s
	Star TV	3780/1370V	17(+)TV	3/4	28(.100)	NDS CA (Pace DVS211, Zenith)
	Star TV	3860/1290V	14(+)TV	3/4	27(500)	NDS CA (Pace DVS211, Zenith)
	Star TV	3880/1270H	12(+)TV	7/8	26(.850)	NDS CA (Pace DVS211, Zenith)
	CNNI	3960/1190H	4(+)TV	3/4	26(.000)	PowVu CA; some **FTA** feed channels
	Star TV	4000/1150H	7(+)TV	7/8	26(.850)	NDS CA + **info card FTA**
	Sun TV	4095/1055H	1	3/4	5(.554)	"History Channel" testing SCPC
	CCTV bqt	4115/1035H	4(+) TV	3/4	19(.850)	' was analogue; now FTA MCPC
	Zee Bqt #2	4135/1015V	4(+) TV	2/3	15(.000)	New bqt, Zee news + here
Cak1/107.5E	Indovision (S-band)	2.536, 2.566, 2.596, 2.626	33(+) TV	7/8	20(.000)	NDS CA using RCA/Thomson, Pace IRDs
C2M/113E	**TPI**	4185/965V	1	3/4	6(.700)	FTA SCPA; NT only
	Anteve	4055/1095V	1	3/4	6(.510)	FTA SCPC; NT only
	Space TV	4000/1150H	11TV, radio	3/4	26(.666)	CA, sometimes **FTA**
	C Net Taiwan	3760/1390H	11TV, radio	3/4	26(.666)	CA, subs available **-10 radio** typ. **FTA**

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(C2M/113)	**RCTI**	3475/1675H	1	3/4	8(.000)	FTA SCPC, Australia OK
JcSat3/128	Miracle Net	3990/1160V	3 up to 6	5/6	22(.000)	PowVu, some **FTA** (1,3)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)	CA & **FTA** Ntsc: Japan, Taiwan
MeaSat 2	Astro Mux	11.478H (+)	up to 7TV	7/8	30(.000)	Aust east coast beam; also 11.664Hz
	Mediasat	11.540Hz	occ 1+TV, tests	5/6	30(.800)	primarily data
Op B3/156	Mediasat	12.336V	5TV, 3ra, Inter.t	2/3	30(.000)	CA, **some FTA, Herbalife**
	Aurora	12.407V		2/3	30(.000)	cvrs Aust, NZ 90 cm; CA (*)
	Aurora	12.532V	Inc Zee, ATV	2/3	30(.000)	cvrs Aust, NZ 90 cm; CA (*)
	Aurora	12.595V		3/4	30(.000)	Aust only; * - smart card p. 28
	Aurora	12.657V	6CA testing	2/3	30(.000)	cvrs Aust, NZ 90cm; CA(*)
	Aurora	12.720V		3/4	30(.000)	Aust only;* - smart card p. 28
	Austar/tests	12.376H		3/4	29(.473)	Austar l-TV tests
	Austar/Foxtl	12.438H		3/4	29(.473)	CA, subscription available Australia
	Austar.Fxtl	12.501H		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.564H		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.626H		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.688H	(some FTA ra)	3/4	29(.473)	CA, subscription available Australia
Op B1/160	**ABC NT fd**	12.256V	1TV, 3 radio	3/4	5(.026)	FTA, Sydney -30 minutes time zone
	ABC feeds	12.317H	1	3/4	6(.980)	also 12.326, 12.335; ex PAS8 Ku
	Central 7	12.354H	1TV	3/4	3(.688)	FTA, purpose here unknown
	News feeds	12.367H	1	3/4	5(.424)	FTA; Imparja
	Mediasar#2	12.400Vt	5+?	5/6	30(.800)	Jan 1 start; FT & CA, SE Aust beam
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.644/671V	9TV	3/4	22(.500)	NDS CA, subscription available NZ
PAS8/166	TARBS	12.526H	12+ TV	3/4	28(.067)	TPG /Eurodec CA, occ. FTA
	TARBS2	12.606H	6+TV	3/4	28(.067)	Tests, inc. ESPN, see TARBS above
	JEDI/TVB	12.686H	11+ TV	3/4	28(.124)	Irdeto CA, **some FTA** tests
	Boomerang	12.725H	5 TV	7/8	25(.728)	CA, subscriptions avail Australia
	Disney Pac	4.140/1010H	typ 6 TV	5/6	28(.125)	PowVu CA
	NHK Joho	4065/1085H	6TV, 1 radio	3/4	26(.470)	PowVu CA & **FTA**; subscription avail
	Japan Bqt	4050/1100H	2	3/4	12(.000)	PowVy CA; NTV Int, Fuji TV
	ESPN USA	4020/1130H	7+TV, data	7/8	26(.470)	PowVu CA; ch 11 DCP-CCP bootload
	Discovery	3980/1170H	8 typ.	3/4	27(.690)	PowVu/CA (some audio **FTA**)
	CalBqt/Pas8	3940/1210H	up to 8TV	7/8	27(.690)	PowVu CA & **FTA (EWTN/EB Net)**
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)	FTA at this time
	Filipino Bqt	3880/1270V	up to 9 TV	3/4	28(.700)	Some **FTA**; also 4040V, 27.686,7/8
	Feeds	3854/1296H	1	3/4	6(.110)	occ. feeds, inc. Mediasat Sydney
	Lakbay TV	3813/1337V	1	3/4	5(.044)	(Filipino) sometimes **FTA**; PowVu
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(.000)	PowVu, FTA at this time
	MTV	3740/1410H	8	2/3	27(.500)	CA; #7,8 **FTA feeds**
PAS2/169	Pv Bouquet	12.290V	2+ TV, radio	2/3	27(.500)	PowVu CA, WIN, ABC NT
	WA PowVu	12.637(.5)V	4TV, 8 radio	1/2	18(.500)	PowVu CA, WA only - D9234
	HK PowVu	4148/1002V	up to 8	2/3	24(.430)	PowVu CA; some **FTA**
	Fox Bouquet	3992/1158V	8TV/data	7/8	26(.470)	Pv, CA/FTA (**FTA ch 3 only**)
	Feeds	3934/1216V	1	3/4	10(.850)	PowVu (FTA) occ. feeds
	Feeds	3929/1221V	1	3/4	10(.317)	Mediasat links, 7th Day Adv. feeds
	Feeds	3912/1238V	1	2/3	6(.620)	PowVu(FTA) occ. feeds
	Feeds	3898/1252V	1	2/3	12(.000)	(PowVu) FTA, occ. feeds
	Middle East	3836/1314V	4 typ	3/4	13(.331)	FTA, have tested CA; was 3778V
	Feeds	3812/1338V	1	3/4	6(.620)	PowVu (FTA) occ feeds
	BBC +	3743/1407V	3	3/4	21(.800)	**BBC FTA**, others CA usually
	CCTV Pv	3716/1434V	5 typical	3/4	19(.850)	PowVu FTA; # pgm chs varies
	Feeds	4138/1012H	1	3/4	6(.620)	FTA SCPC/MCPC, news and sports
	occ feeds	4026/1124H	1	3/4	5(.560)	also Sr 5.600, some **FTA**
	7thDyAdv	3872/1278H	1TV, 4+ audio	3/4	6(.620)	Sat, Sun 0930 UTC typ.
	CNNI HK	3996/1154H	1	3/4	9(.998)	reverse link HK/Atlanta, feeds, FTA
	Mbc/Korea	3981/1169H	1	3/4	2(.982)	was FTA, now CA
	Feeds	3868/1182H	1	2/3	6(.620	FTA (occ. sport feeds)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498)	FTA-typ. NTSC-occ. sport, shuttle
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)	(PowVu) CA+**FTA**
	occ feeds	3854/1296H	1	2/3	6(.620)	(PowVu) occ. feeds
	occ feeds	3794/1356H	1	3/4	5(.560)	also SR 5.600, some **FTA**
	occ feeds	3785/1365H	1	3/4	5(.560)	also Sr 5.600, **some FTA**

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(PAS2/169E)	**occ feeds**	3776/1374H	1 typ	3/4	5(.560)	occ feeds, typ FTA; also Sr 5.600
	Satcom 1-6	3743/1407H	up to 5	7/8	19(.465)	use unknown at this time
I702/176E	AFRTS	4177/973LHC	8TV, 12+radio	3/4	26(.694)	PowVu CA
I701/180E	TNTV	11.060V	9	3/4	30(.000)	eastern spotbeam, pay TV tests
	Tele Fenua	11.168V	4 (?)	3/4	10(.100)	eastern spotbeam, pay TV tests
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)	Mediaguard CA, 1 ch FTA
	TVNZ	4195/955RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ	4178/972RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/feeds	4161/989RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	RFO-Canal+	4086/1064L	4TV, radio	5/6	13(.347)	east hemi 20.5 dBw, to be 15.5 soon
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)	DMV/NTL early version,occ feds, typ ca
	TVNZ feeds	4044/1106R	1	3/4	5(.632)	SCPC, mixed CA and **FTA** feeds
	NZ Prime TV	4024/1126L	1	2/3	6(.876)	PowVu CA; Auckland net feeds
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)	CA, Leitch encoded
	Ioarana	3772/1378L	1	3/4	4(.566)	FTA SCPC; East Hemi Beam-Tahiti
	TVNZ	3846/1304R	1	3/4	5(.632)	SCPC, mixed CA & **FTA**, feeds
	10 Australia	3765/1385R	6	7/8	29(.900)	PowVu CA & **FTA; #3 TBN**

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

ADI MediaMate. FTA, NTSC+PAL outputs. (Pacific Digital Sys. Pty Ltd, tel 61-2-8765-0270)
AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM Pty Ltd, 61-2-9939-4377.
Benjamin DB6600-CI. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Grundig DTR1100. Mfg by Panasat (SA), very similar to Panasat 630; out of production, Irdeto capable. See Av-COMM above.
Humax F1-CI. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).
Humax ICRI 5400. Embedded Irdeto + 2 CAM slots; initial units have NTSC glitch. 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. Int. 61-2-9618-5777
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
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. Tricky to use.
Nokia 9200. When equipped with proper CAM, does Aurora, pay-TV services provided software has been "modified" with Dr Overflow or similar program was available from (www.BAKKERELECTRONICS.COM).
Nokia 9500/9600. Numerous versions for different world parts; not distributed in Pacific but assistance from Av-Comm Pty Ltd.
Nokia 9800. Latest single chip version, with CI and Irdeto capable. No software for Pacific, Asia; not recommended.
Pace DVS211. NDS CA (no FTA) for Star Asia, previously used for Indovision. (Solution 42, 61-2-9820-5962)
Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818)
Pace DVR500. Original DGT400 modified for NBC (PAS-2) affiliate use, with CAM equivalent to DGT400 but more reliable.
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.
Pacific Satellite DSR2000. Advises no longer current model; Clone of Mediastar D7 (see above)
Panasat 520/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370.
Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but no longer available in Australia.
Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH(below)- 222 out of production
Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review Nov. 1998. SATECH 61-3-9553-3399.
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
PowerCom. FTA, PowVu, NTSC, excellent sensitivity. NetSat 61-2-9687-9903.
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.
Praxis 9800 ADP. FTA SCPC/MCPC, PowVu, analogue, positioner. SF review Dec '98; withdrawn from Pacific sale.
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-3749)
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above).
Skandia SK888 (aka DigiSkan-SMS). FTA MCPC, Irdeto CAM+software upgrade. Out of production; Skandia 61-3-9819-2466
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. SATECH 61-3-9553-3399.
Sky 21/SJ 3000ci. Claims "clone" Hyundai HSS800ci; if so, poor copy. Runs very hot, reportedly burns up smart cards
UEC642. Designed for Aurora (Irdeto), approved by Optus; limited other uses. Norsat 61-8-9451-8300.
UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers.
Xanadu. DVB compliant special receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)
Yuri HSS-100C. FTA, clone of Hyundai, V2.27 software custom to Australia (Nationwide-above).

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; V1.8 available through Norsat 61-8-9451-8300 at A$107.50.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 7/8; pgm ch 11 and follow instructions (do not leave early!)

SatFACTS Pacific/Asian FTA ANALOGUE Watch: 15 December, 2000

BIRD/ Location	RF/IF & Polarity	Service	Errata
I703/57E	3808/1342R	Udaya TV	
	4052/1098R	WorldNet	VOA subcrs.
	4178/972L	MTA Inter.	
I604/602/60E	4166/984	various feeds	
I704/66E	3765/1385R	tests	
	4015/1135L	Mongolia	(SECAM)
PAS4/68.5E	3743/1407V	RTPi	(+ radio subcr)
	3864/1286V	BBC World	
	3907/1243H	Sony TV	Hindi
	4034/1116V	Doordan	(various)
	4087/1063H	CNNI	
	4110/1040H	TNT/Cartoon	
	4113/1037V	Series Ch.	
	4182/968H	MTV	
PAS7/68.5E	3470/1680V	test signal	
LM1/75E	3980/1170V	various	(Madagascar)
ApStar 2R	3780/1370H	TV Malagasy	(SECAM)
Thaicom3/78E	3871/1279H	TVT	
	3760/1390V	Army TV	
	3685/1465V	MRTV	hot to NSW
	3685/1465H	VTV	6.6, 7.02
	3616/1534V	ATN	
	3576/1574V	ATN Bangalr	Bengali
	3554/1596V	test card	
	3536/1614V	Punjabi TV	(occ service)
	3507/1643V	RAJ-TV	
	3489/1661H	Vasta Music	occ tests
	3465/1685V	RAJ-TV	
Expres 6A/80E	3675/1475R	RTR	(global beam)
InSat 2E/83E	3481/1669V	Sun TV	
	3562/1588V	Vijay/Asianet	aud. 5.5/6.6
	3599/1551V	JayaTV	
	3810/1340V	DD1-Tamil	"
	3850/1300V	DD1-National	"
	3930/1220V	DD2 Metro	"
	3970/1180V	Teluga 1	"
	3998/1152V	sport feeds	"
	4035/1115V	Sun TV	"
	4060/1090V	Surya/Sun TV	"
	4093/1057V	DD7	"
ChnStr1/87.5E	3880/1270H	occ feeds/ card	P4 NSW, Ntsc
ST1/88E	3550/1600V	test card	
	3582/1568V	Nila TV	(vintage TV)
Yamal 102/90E	3675/1475R	RTR1	P3 NSW
	3875/1275R	Orbita 1	
	3916/1234R	RTR II	
	3935/1215R	Orbita II	
MeSat-1/91.5E	3710/1440H	VTV1,2, 4	
	3880/1270H	RTM-1	
Gz 28/96.5	3675/1475R	RTR	inc +/- 3.7
Chinasat22/98	3900/1250H	tests	+ 3940/1210
InSat 2B/93.5E	4165/985H	India Metro	NSW on 3.7m
	4080/1070V	DD7 (Tamil)	
	4070/1080H	DD9	
	3970/1180V	DD9 (Kan.)	
	3882/1268V	DD1	
	3840/1310V	DD?	
	3762/1388V	DD4	
AsSat2/100.5E	3660/1490V	feeds, tests	
	3680/1470H	feeds	
	3860/1290V	feeds	

BIRD/ Location	RF/IF & Polarity	Service	Errata
(As2/100.5E)	3885/1265H	WorldNet	VOA subcrs
	3980/1170V	RTPi	(radio gone)
Exp. 9/103E	3675/1475R	RTR	inc +/- 2.1
	3875/1275R	Vrk Apt	
As3S/105.5E	3640/1510H	Asia Plus	China, 6.6
	3660/1490V	Urdu TV Net	6.6, 7.2 audio
	3680/1470H	CETV	
(temp FTA)	3800/1350H	Star Sport	NTSC
(temp FTA)	3840/1310H	Channel [V]	NTSC
(temp FTA)	3920/1230H	Phoenix Ch	NTSC
	3940/1210V	Zee India	(to shut down)
	3980/1170V	Zee TV	(to shut down)
	4020/1130V	Sahara TV	6.2, 6.8
	4100/1050V	PTV2/World	
T'kom1/108E	4000/1150H	tests	
PalapC2/113E	4160/990H	(France) TV5	
	4140/1010V	Brunei + feeds	
	4120/1030H	MTV Asia	
	4080/1070H	Herbalife	+ tests
	4040/1110H	CNBC	
	3970/1180V	CNNI	
	3920/1230H	CNNI	tests
	3880/1270H	Aust ATN7	
	3840/1310H	TVRI	tests
	3742/1408V	RCTI	English subcr
AsSat1/122E	3677/1473V	Test card	3933/1217H
ChinS 6/125E	4085/1065V	feeds	seldom seen
JcSat3/128E	3768/1382V	feeds	occ., P5 NZ
	4085/1065V	test card	NTSC. 6.8
Ap1A/134E	4160/1050V	CETV	
	3980/1170V	CETV1	
	3900/1250V	CETV2	
Ap1A/138E	4160/990H	CCTV7	
G25/140E	3675/1475R	ORT Moscow	inc. +/- 4.9
	3875/1275R	feeds, tests	
LMAP2/142.5	3675/1475L	occ. tests	+/- 3 deg inc.
Gorizont 33	3675/1475R	tests	+/- 1.2 deg inc
	3875/1275R	RTR	audio 7.5
Ag2/146E	3787/1363H	GMA	P1/2 s. eqtr
Me2/148E	4080/1070H	test card	occ. use
PAS8/166.5E	3880/1270V	test card, feeds	not full time
	3865/1285H	Napa test card	not fulltime
PAS2/169E	3940/1240V	Napa test card	
SpNet4/172E	4199/951H	test carrier	may be beacon
1802/174E	4166/984R	Feeds	
	4177/973R	Feeds	
I702/176E	4166/984R	Feeds	from 177E
	4187/963R	Occ. feeds	
I701/180E	4187/963R	Occ. feeds	
	3841/1309L	RFO	East Beam
	3845/1305R	Occ. feeds	inc. from USA
	3930/1220R	USA net feeds	**FTA** & ca
	3975/1175R	Occ. feeds	

PAS4/68.5E	3785/1365V	Discovery India	BMAC
	3860/1290H	ESPN India	BMAC
Ap2/76E	3960/1190H	HBO Asia	GI Digicipher2
C2/113E	3930/1220H	Filip. Peo. Net	GI 1.5 MPEG
Ap1/138E	4100/1050V	ESPN	BMAC

What do all of these friggin' numbers mean?

And all you wanted to do was watch TV! Somebody even told you that watching digital TV from satellite was the ultimate viewing experience. Nobody told you that dialling up a new service was more complicated than selecting this week's Lotto winning number. Good grief. What has the world come to?

Welcome to the world of satellite TV. Or more precisely, "digital" satellite TV. The magic hidden word here is digit and before you get done, you will decide there are far too many digits in digital TV. Digital TV is like the wayward child that only a mother can love. It is numbers run amuck because digital TV was created by engineers for other engineers. Not one consumer with an average non-engineering education was even asked about what these guys and gals were doing. They just knew it was impressive, and the pinnacle of their professional careers. To the accolades of fellow engineers, they kept on creating new numbers until we, the users, are buried to our armpits by decimal places.

You say you want to change channels? Well, first you have to know what satellite the channel you wish to view is using. Think of it this way. You have a TV aerial on your roof and it points north towards the TV tower. But the new channel you wish is located on a different tower, to your west. So your rooftop aerial is pointing in the wrong direction. To change to the new channel, you need to somehow move the aerial from pointing-north to pointing-west. If you were a rich American living in Cicero, Illinois or Miami, Florida, you'd push a button on your remote control and a fancy motor on the roof would rotate your TV aerial from north to west for the new channel. But you don't live in Cicero, you are not rich and you have no motor on your aerial.

That is a nutshell is your "change channels on satellite" problem. There are several variables involved.

(1) Is the new channel on the same satellite as the channel you are now watching? If no, somebody's got to move the damn dish to point at the "other" satellite.

(2) If yes, is it on the same polarisation? If no, you have to tell the antenna system to switch or change polarisation.

(3) OK, so now you are pointing at the correct satellite and have the appropriate polarisation selected. Elapsed time - a few seconds to several minutes.

(4) Now for the new channel. It has a frequency of its own, something called symbol rate and something called FEC (forward error correction). All of these numbers are represented by digits - such as **3755** for frequency, **4.418** for symbol rate and **7/8** for FEC. Each of these numbers must be entered into the receiver in the proper (as demanded by the menu) place on the screen.

The TV screen is a giant menu, you see, and when the menu is breached there are all sorts of blanks to fill in. The blanks tell the receiver what to do next - because God knows it has no brain of its own and can only do what it has been told.

Some receivers have sub-menus to support the main menu. They too have blanks to fill in and all of the blanks will require numbers to complete. If you get the wrong numbers in the right blanks, trouble. *Big trouble*. Some receivers are just smart enough to know you have made a mistake - but not smart enough to correct the mistake. Others accept your wrong numbers because they don't know any better themselves.

A few minutes more have now elapsed.

(5) When all the blanks are filled in, the menu gives you several options. "Do you wish to do a transponder search?" Or, "a Network search?" Do you want only "free to air" channels or "all?" Nobody has told you that "all" means both the encrypted and viewable channels so when you answer "all" you are going to end up with a long list of channels found but not viewable anyhow. "All" is like buying a magazine because you like the cover only to discover when you get home all of the pages are glued together and you can't read it anyhow.

While the receiver does something called "search" *several more minutes elapse*.

(6) Finally on the screen you see a list of "searched and found" channels. You can select one and view it? Not quite. First you have to get out of the menu which on some receivers requires that you press "exit." Not one time, but perhaps three or five times. You see, you exit the menu through not one but a series of doors - like walking backwards down stairs a step at a time.

(7) Finally, you are there. Just in time to discover the show you planned to watch is now ending but they will give you a preview of next week's programme in a few minutes - *right after some commercial messages*!

TUNING IN THE INDUSTRY'S TV PROGRAMME

SPACE Pacific, the Asia-Pacific industry membership trade association, has produced (and continues to produce) a series of one hour television programmes. These "SPACE Pacific Report" shows, hosted by Bob Cooper, cover a range of topics of interest to installers and enthusiasts. Show numbers and content are as follows: **#9901-** Spectrum Analyser techniques, **#9902-** Feeds and LNBs, **#9903-** Dish antenna designs and problems, **#9904-** The dish marketplace, and, "tiny parts," **#9905-** Dr Overflow (Nokia) software, **#9906-** How the uplink works (tour of RCA's Vernon Valley site), **#9907-** Uplink Two, including uplink transmitters, **#9908-** Digital Basics (Mark Long), **#9909-** Real World Installs (Mark Long), **#9910** - Installing a polar mount dish and signal level test equipment, **#9911** - "SPIN" (the hidden side of satellite). **#0012** - First Report from SPRSCS 2000 (recorded in Melbourne June 28, 29 - "Ideal IRDs," more), **#0013** - Second Report from SPRSCS 2000 (recorded in Melbourne June 29, 30 -"ABA Blackspot session"), **#0014** - Naughty Nokia from SPRSCS 2000; **#0015** - The DVB-T Tangle from SPRSCS 2000 (Eric Fien). "Report" is broadcast by Mediasat on Optus B3, 12.336Vt, ad-hoc channel 3(*) (Sr 30.000, FEC 2/3). The coming-weeks schedule: **Sunday December 17** - Show 0013, 0200-0300 UTC (1500 NZST, 1300 AEST, 1000 Western Australia; repeats 0700 UTC/7PM NZT, 6PM Sydney, 3PM Perth). **Sunday December 24** - Show 0014, repeats same time as December 17; **Sunday December 31** - Show 9901, repeats same time as December 17; **Sunday 07** - Show 9902, same times as December 17; **Sunday January 14** - Show 9903, same times as December 17; **Sunday January 21** - Show 9904, same times as December 17; **Sunday January 31** - Show 9905, same time as December 17. (* - Mediasat may pre-empt showings, check other bouquet channels - such as 5 - if not on 3.) SPACE Pacific Report has also been broadcast by Westlink, Aurora service on Optus B3, vertical (12.595, Sr 30.000, FEC 3/4 - requires Optus Aurora card but is otherwise FTA). Westlink will again carry SPACE Pacific Report when new shows currently in planning are produced and available; details here in future issue (will start after February 1). In the event of schedule changes (*), SPACE Pacific attempts to pre-announce which show(s) will appear through the SatFACTS Web site prior to each weekend (http://www.satfacts.kwikkopy.co.nz). SPRSCS 2000 sessions taping scheduled for play on Mediasat and Westlink are currently in "editing production" for presentation which started in September. Sponsorship of SPACE Pacific Report. In general answer to queries - Av-Comm, Satech and Sciteq have contributed corporate funding to make possible the production of the first set of nine SPACE Pacific Report programmes. If interested in sponsoring future shows, contact Bob Cooper at skyking@clear.net.nz (64-9-406-0651).

WITH THE OBSERVERS

AT PRESS DEADLINE

David Pemberton reports, Mediasat appears now (December 9) to be using 12.407 (Vt) for their Mediasat2 transponder; this happens to be the centre for transponder 3 (see prior report under Optus B1, below). D. Leach reports ATVI digital now has audio on C2M - unfortunately, *not its own.*

ApStar 2R/76E: "AXN Bqt 3920Hz, Sr 28.340, 3/4 with 2 of 8 channels FTA; CNA 3687Hz, Sr 6.111, 3/4 with NTSC and PAL feeds FTA" (**D. Leach**, NSW).

AsiaSat 2/100.5E: Tele Liban briefly FTA on 3640Hz (Sr27.850, 3/4), VPID 520, APID 648. "SABE-TV appears to have shut down on 3742Vt" (D. Leach, NSW). New PIDs for FTV on 3795Vt; VPID 308, APID 256 - if you have lost this, try clearing memory of old numbers and reloading (Sr 2.533, 3/4). Occ feeds 3684Hz, Sr 5.700, 3/4.

AsiaSat 3S/105.5E: Zee News on 4135Vt, SR 15.000, 2/3 PIDs V35, A36; Zee announced shut down of FTA analogue version of this service effective December, says Zee TV (entertainment) channel will follow "within 4-5 months." FTA Phoenix Information test card on Star TV 4000Hz, Sr 26.850, 7/8 - see if you IRD can capture this one - *may be* straight MPEG-2 inside of NDS (CA) bouquet!

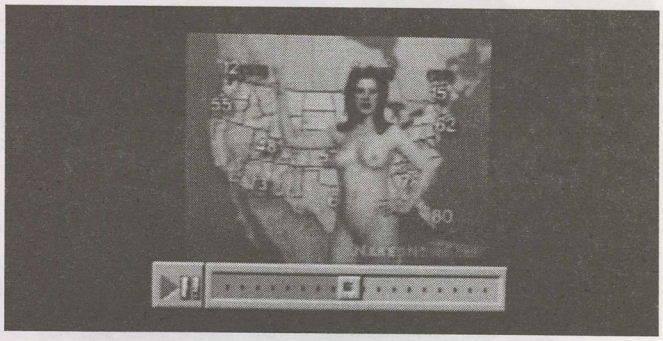
Express 9/103E: RTR on 3675RHC is the +2hour (just east of Moscow) version but painfully difficult to watch with inclined orbit and trash from both sides. TV Center on 3925RHC, Sr 22.910, 3/4 VPID 160, APID 80 has been testing - not full time.

GE 1A/108.2E: Beacon reported 12.250.5Vt, test carriers 12.471Hz, 12.491Vt, 12.611Vt but only north of equator so far.

Optus B1/160E: "ABC feeds here in advance of shifting off of PAS-2 on 12.317Hz (6.980, 3/4), 12.326 and 12.335 (same parameters). 12.335 has unusual VPID 3160, APID 3120; 12.707Vt, Sr 6.670, 3/4 test card - no ident; 12.317, Sr 6.980, 3/4 occ feeds" (**Bill Richards**, Aust.) "12.400Vt, Sr 30.800, 5/6 will be new Mediasat bouquet, now testing, January start on SE Australia beam" (**HEM**, Aust). "Testing on 12.393Vt seen, same channels as Optus B3 Bqt, some variation in frequency noted" (**David Pemberton**, Aust). "Internet data on 12.626 has Sr 39.995, 3/4; 12.428Hz, Sr 12.630, 1/2 carried Bathurst auto race in MPEG 4:2:2" (Bill Richards, Aust).

Optus B3/156E: Contrary to some reports, Aurora channels 12.,595 and 12.720Vt remain FEC 3/4. "12.657Vt, Sr 30.000, 2/3 is newest Aurora transponder, loads with 6 TV channels but either CA or not programming" (**AI**, Qld); "Is on Australia + NZ beam" (**Harvey**, NZ). "Mediasat sub-channel loads 12.369Vt when active, Sr 6.110, 3/4, usually with feeds" (Bill Richards, Aust); "Found PAS-2 TV1, PAS-2 SNG MUX and 'Ch 3 & 4 Audio' loading here - VPIDs 2160, APIDs 2120, 2122 and 2520" (**Peter Eade**, NZ). Mediasat 12.336Vt may be adding French TV5 FTA, a second TRT (CA movie) channel,

http://www.nakednews.com out of Toronto breaks all of the rules with four lady "nudes" casters doing complete 30 minute nightly report without clothing. Below - "*It is snowing around my left nipple, and very hot in central Texas.*" It helps to know your geography.



and VietNam VTM in January. Foxtel/Austar have added 12.501Hz (Sr 29.473, 3/4) for additional expanded service channels (see list, page AB here).

Palapa C2M/113E: "Still no TV audio on strange ATVI 4089Hz, Sr 14.060, 3/4 but VPID513/APID 651 has new Metro TV JKT test card and VPID514/APID652 has TVRI also no audio" (Bill Richards, Aust; **Jacko**, Aust). Meanwhile, FTA analogue service continues on 3880Hz.

PanAmSat PAS2/169E: "Updated numbers for Middle East Bqt are 3836/1314Vt, Sr 13.333, 3/4" (**Stu McLeod**, NZ, David Pemberton, Aust). "More active occ feed channels include 3776Hz, 3785Hz, 3794Hz, 4026Hz, 4035Hz, typically Sr 5.560, 3/4 but try Sr 5.600 as well, and, 3888Vt, Sr 6.620,

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for January 19th issue: January 7 by mail (use form appearing page 34), or 5PM NZST January 8th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

2/3 - this one usually CA" (Bill Richards, Aust). "One Korea (MBC) on 3981Hz, Sr 2.982 (loads as Service 1) is now CA" (Jacko, Aust). "Amongst many APEC conference feeds, 3804Vt, Sr 4.686, 3/4" (Bill Richards, Aust).

PanAmSat PAS-8/166.5E: "Spare 1 channel on TVB/Jedi bouquet 12.686Hz noted with TVB8 in FTA - VPID 1310, APID 1320; 4050Vt, Sr 12.000, 3/4 with two CA Pv channels - NTV International, Fuji TV International" (Bill Richards, Aust.) "ABS-CBN Bqt (3880V, Sr 28.700, 3/4) seen with three test cards + Knowledge Ch + a sports channel all FTA" (D. Leach, NSW). "ABC's 3 Ku feeds here shutting down December 18" (**G. Welsby**, PNG). Disney Channel Bqt moved to 4140Hz, Sr 28.125, 5/6 Pv CA from 3804 on PAS-2. CMT still having unexpected and unexplained loss of service through fibre optic line into Napa (California) uplink - if they are gone, stay around. Will probably come back!

SpaceNet 4/172E: Test carriers noted 3840V, 3880V, 3920V And 3960V but not reported south of the equator.

Thaicom 3/78.5E: MRTV is new to 3666Hz, Sr 6.786, 3/4 and apparently global beam FTA. "Sky Racing seems to have settled on 3565Hz, Sr5.000, 3/4" (Bill Richards, Aust). "TV Cambodia, 3448Hz, Sr 6.312, 3/4 FTA" (D. Leach, NSW)

Yamal 102/90E: Tumen TV (Turkmenistan) on 3578LHC, MPEG-2, Sr 4.355, 3/4 with extra radio channel using APID 256; also reported Sr 12.500, 3/4 when first testing.

Errata: Good-bye old friend. Optus A2 has been shifted to 122E, is heavily inclined (5.5 degrees) and shortly will become but a memory. Palapa C1, defective from day one and moved from 113E to 151E is now at 50E and renamed Anatolia 1 - one guess who will be programming it. ABC-TV contact for updates on status of various feeds and satellite services - Peter Canavan at 61-2-9950-4638. "Those who failed to reload and update their D9223s when CMT bootloader was running chs 200 and 400 PAS-8 California Bouquet are now out of luck. Proper decoder version software is now 2.31.1.XX and 2.XX/2.40; without 2.40 running, there will be glitches!" (**J. McLean**, NZ). "Hills Industries fabricating plate to allow two LNBf on single dish, suggesting two separate satellites on one reflector, at request of Austar" (**RD**, Qld). New (installer) pin number for Austar reset Pace DGT400 IRDs is 2878; as Galaxy IRDs, number was 4252. EastSat, scheduled for launch in 2005 (don't hold your breath) would have 38 Ku, 22 C, 3 L band transponders from 164E. Plenty of glee in the Irdeto hacking world with announcement of Mindport CA service for TVNZ + Telstra Saturn - raising concerns proper consideration about ease of hacking may have been forgotten in decision.

AT Sign-off

Television New Zealand's "Cunning Plan ..."

The only thing missing is Baldrick's *turnip*. Television New Zealand, the state-owned two-channel TV network, and would-be entrant into the national pay-TV scene Telstra-Saturn Ltd, have announced they will be leasing Optus B1 transponder 8 (Vt), 12.720.1 GHz, and plan an April - May start date for a combination bouquet that will include TVOne, TV2 as FTA services. The 54 MHz wide transponder has a capacity for at least 16 compressed digital video services and some tagalong radio channels.

But the transponder will not be operated as a single 54 - rather it will be divided into a pair of 27 MHz half transponders and use a symbol rate of 22.500 and FEC of 3/4 for each half. If those seem like familiar numbers, they are - *the same* as pay-TV competitor Sky NZ has selected for its Optus B1 transponders.

"*By coincidence*," TVNZ will be using the *same* satellite, *same* polarity and *same* digital parameters as Sky NZ. Of course it is *not* a coincidence.

TVNZ and pay-TV provider Telstra-Saturn will share the single transponder, possibly use the same conditional access format, jointly operate the viewer addressable system. As of December 8, no decision yet as to which CA format but two majors are still in the race to win the account. One is Irdeto, something Telstra is familiar with because it owns 50% of Foxtel in Australia and equally, Saturn owner Austar also knows well. The other is NDS, which just happens to be the same format used by Sky NZ. (see update December 10, p. 2)

TVNZ and Telstra-Saturn say they are committed to, "*an open format which is not controlled by a single* (receiver) *supplier*." Irdeto IRDs are of course available from many firms whereas NDS is available at this time only through Pace and Zenith.

TVNZ originally wanted to be a part of the Sky NZ digital bouquet and entered negotiations with Sky towards this end in mid 1998. TVNZ was insisting that it be at least a "partner" in the design and operation of the CA system, have unlimited ability to transmit "free to air" its TVOne and TV2 services. Sky was just as adamant that Sky would have sole operational control of the CA and addressing system, and as for free-to-air services, only after viewers agreed to pay Sky for the installation of their satellite systems and agreed to pay a monthly rental fee for the receiving equipment. TVNZ refused to cave-in on these demands, wanted an "open marketplace" where viewers could select the brand and model of their decoder, shop around between multiple sources for the equipment and installation, and own the gear. Sky refused to give in on these points so TVNZ went shopping for a new partner. Telstra-Saturn are it.

Telstra-Saturn are currently spending NZ$1.2 billion building thousands of kilometres of (mostly overhead but some buried) cable TV plant using coaxial cable plus fibre optics to serve Wellington, Christchurch and Auckland. They are also installing an undersea fibre optic cable interconnecting the three cities. They have two primary business targets - Telecom NZ which has spent the last five years making very bad decisions about their own future and planning equally poorly to serve the burgeoning Internet market, and, Sky NZ which has left no stone unturned in seeking to capture all of the pay-TV programming draws such as Rugby and Cricket.

TVNZ has to go digital or die. A plan to spend NZ$250 million to parallel their existing 900 transmitter analogue terrestrial network with digital transmitters died when a new Government reviewed their proposal late in 1999. That left TVNZ in a bad position; they had reached an impasse in negotiations with Sky, could not start a parallel terrestrial system, and the digital conversion clock was running ever faster. They had one ace up their sleeve - a first call option on Optus B1 Tr 8. Before Optus could "sell it" to another, TVNZ had the first right of purchase.

The plan is for a "digital headend" to be installed at TVNZ in downtown Auckland, linking directly to Optus B1. Into the headend would flow yet-to-be-defined pay-TV channels created by Telstra-Saturn where they will be married to TVOne and TV2. There is the possibility TV3, TV4, Prime and other Auckland based terrestrial services will also join the FTA portion of the bouquet.

By using DVB Simulcrypt technology (which allows two or more different CA systems to share the same uplink data stream), TVNZ + Telstra-Saturn could actually marry MPEG-2 (FTA), NDS and Irdeto onto a single transponder. Telstra-Saturn is hinting that Pace DGT400 IRDs, stacked in Australian warehouses, could become the "low entry level" tier of equipment which TVNZ would promote in the region of NZ$200 plus installation. That would handle the FTA portion, even any Irdeto CA portions. Higher priced options would include more expensive IRDs equipped with telephone modems, pay-per-view ordering capability, EPG.

For Telstra-Saturn, partnering with TVNZ has many benefits because TVNZ reaches 99.98% of all New Zealand homes with analogue TV, a service it will use heavily to promote the switch over of viewers to digital. Sky buys advertising on TVOne and TV2 to do just this - *attract Sky subscribers*. Telstra-Saturn will get the same or better promotion for very little expense.

But out there already are 220,000 Sky digital receiving systems. If TVNZ + Telstra Saturn could "tap" into those, they'd have a great opening day. Which brings us back to Sr 22.500, FEC 3/4.

The existing universe of 220,000 Sky IRDs are factory preloaded with Optus Tr8 making them "TVNZ + Telstra-Saturn capable." Sky can prevent them from tuning in Tr8 with software instructions sent to each IRD. Or, Sky can "offer" their viewers "free access" to TVOne and TV2 by simply telling the IRDs, "*it is OK to tune in Tr8*." As for tuning in Telstra-Saturn's pay-TV channels, that is highly unlikely given their soon to be competitive position with Sky. The "ball" is clearly in Sky's court. They can be stinkers and refuse service for TVOne and TV2, or they can turn a lemon into lemonade with clever marketing phrases designed to confuse the consumers about why TVOne and TV2 are suddenly available on satellite.

Sky may have lost the battle to bring TVNZ on board with their pay-TV bouquet, but TVNZ can't lose on the Sr 22.500/FEC 3/4 fight. No matter how it goes, it's one cunning turnip.

SPACE PACIFIC REFERENCE MATERIALS

(updated December 15, 2000)

to help you do a better job, profitably

Some items in limited quantity (marked LtdQty); many have special SPACE member discounts

SPACE Pacific Report (# 9901, 9902, 9903, 9904)

The television programme, direct to you from digital master on E240 VHS tape, PAL format of course. Show 9901: "It is your signal, too" and "Fun and games with the spectrum analyser." Show 9902: "Feeds and LNBs" - understanding how products differ. And, "Mark Long's Thumbnail History of home satellite TV" featuring the real pioneers of the 70s and 80s! Show 9903: "Dish antenna critique ," why some dishes work better than others, plus Mark Long on installing your own dish, and, Richard Brooks on PVRs. Show 9904: "Who buys DTH systems?" explores the marketplace, plus, "Understanding Tiny Parts" looks at connectors, line-amps and splitters. Four hours as currently running on Mediasat - digital mastered to you for the exceptional price of $60 including shipping and bonus item - "Satellite Television (The Booklet)" featuring material by Sir Arthur C. Clarke. In stock, ypically shipped within 72 hours. (No SPACE discount)

Shows 9905, 9906, 9907, 9908 & 9909

The television programme - series two releases (as broadcast Sundays on Mediasat). As above. Show 9905: Robin Colquhoun and the Dr Overflow software for the Nokia; Show 9906: How the uplink works - possibly the best programme topic ever created. Show 9907: Part two of uplink. Show 9908: Instructor Mark Long's "Digital Basics." Shows 9905, 6, 7 & 8 **now being shipped**. $65, no SPACE discount.

TB 9402 MATV Systems

FTA terrestrial to multiple outlet sets. With DVB-T coming, this excellent step-by-step guide to proper master antenna system design and installation will prepare you for the far more complex world of distributing MPEG terrestrial digital signals around a home, multiple dwelling unit, motel or hotel. Basics of analogue distribution still apply - even with digital! Ltd Qty $15 (SPACE discount)

TB 9404 DTH Systems

Direct to Home: Satellite System Installation Techniques. There are many-many NEW people getting into home satellite system installation. And we receive several calls each day asking us to point them at a "basic tutorial" that will explain how a home dish system works, how you install it for proper performance. This is it. Without question, the very best *quick* tutorial on what a home dish system is, how it works, where the problems develop. If you are new to the DTH field, buy this and commit it to memory. Very slight New Zealand bias, not enough to hurt its value world-wide. And if you are looking into multi-set installations such as motels and hotels and condominiums, also order TB 9405 'SMATV Systems' (below; the pair make it painfully clear where mistakes are commonly made). Also see SatFACTS October, November, December 1999 - for RF Distribution System articles. TB9404 originally prepared by Coop for an Asian DTH technology conference, LtdQty $15 (SPACE discount).

TB 9405 SMATV Systems

Satellite to room - Commercial SMATV (Satellite) Dish Installations. The easy part is the satellite dish or dishes. The difficult challenge is getting all of those signals - including the terrestrials - balanced and into every room and each TV outlet at the proper level. If you plan to do multiple-outlet systems, start here with this Coop written tutorial. LtdQty and only $15 per copy while they last! (SPACE discount)

Nelson Parabolic Manual

The Nelson Parabolic TVRO Manual. If you are the type of person who wants to build your own dish (up to 3.7m in size), or, you simply want to understand why some dishes work better than others, this step-by-step "how to build a dish" manual is the "Bible" of an industry. Nelson Ethier was a perfectionist and brilliant with hand tools. It shows here - the ultimate backyard project! Half original price at $20, LtdQty, SPACE discount applies.

SPACE Pacific Order Form (also see SPECIAL PACKAGES on reverse side)

Please send the following:

☐ SPACE Pacific Report - 9901-9904/ $60 (no discount); ☐ Shows 9905-9908/ $65 (no discount); ☐ Package deal - 9901-9907 (**2 tapes**)/ $115 (no discount); ☐ TB9402 - MATV/$15; ☐TB 9404 - DTH Systems/$15; ☐ TB 9405 - SMATV Systems/$15; ☐ Nelson Parabolic TVRO Manual/$20. Total of order - $_____. If current SPACE member, multiply by 0.7 (70%) and write discounted total here: $_____

I wish to pay this by ☐ cheque (enclosed) ☐ VISA card ☐ Mastercard

Card number __ __ __ __ - __ __ __ __ - __ __ __ __ - __ __ __ __ expires ____/____

Ship to (name as it appears on card):

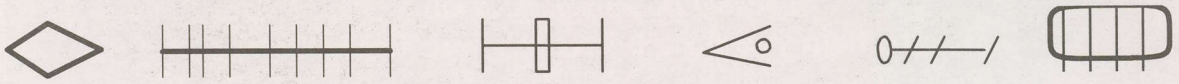
_____ Company _____

Mailing address _____

Town/city _____ _____ _____

Your signature: _____

SPACE Pacific Terrestrial TV Reference Materials



Each of these editions researched, created by "Coop" to help you solve tough aerial problems

TB 9301	**Tech Bulletin 9301**. *Co-Channel & Antenna Phasing*. How to grow a single antenna (Yagi, broadband antenna) into a complex array to greatly increase gain, sharpen receiving pattern to eliminate co (same) channel interference. Totally hands-on, very practical, up-to-date. Go from novice to professional!
TB 9302	**Tech Bulletin 9302**. *Weak Signal Reception Techniques.* If one cut-to-channel (Yagi) antenna won't do the job, will 2, 4 or 8??? How about 16? Stacking antennas, mating with carefully selected masthead amps, is an art. This explains how to do it for professional results up to 300 km from TV stations.
TB 9303	**Tech Bulletin 9303**. *UHF - The Frontier*. Using parabolic style antennas surfaced with low-cost poultry mesh, build UHF dishes up to 40 feet in size to extend UHF off-air reception out to 300 km. And - learn the tricks to "squirt" signals from a hilltop to a valley below using low-cost receiving equipment.
TB 9304	**Tech Bulletin 9304**. *Beating Noise Interference & Combining Cross-Pole Signals*. When TV and FM signals are weak, man-made interference from appliances, power lines can kill reception. Step-by-step instruction for identifying, locating, fixing noise sources + unique method of combining cross-pole TV signals.
TB 9305	**Tech Bulletin 9305**. *Cable Television - Fact & Fiction*. The story of how a cable TV system is designed, built, operated. The perfect "So this is how it works!" report. Who knows - you might even like the concept so well you take out a mortgage on your home and wire your town!
Lost Art	**Lost Art of Rhombic Antennas** *-27 dB of gain VHF & UHF*. Everything you need to know to build the most sensitive VHF-UHF receiving antenna ever created. Rhombics are used for virtually all long haul military circuits. Includes super-Rhombic LaPorte design. 300 km? A piece of cake!
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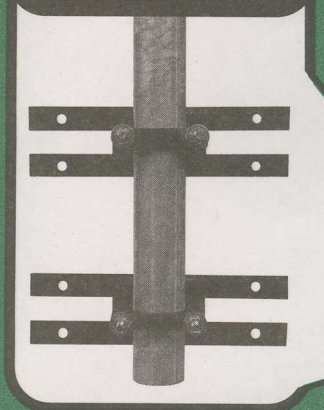

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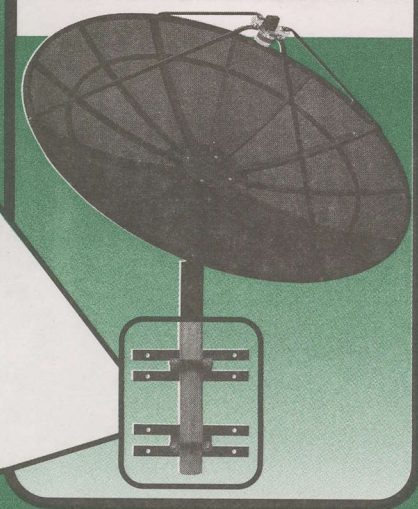

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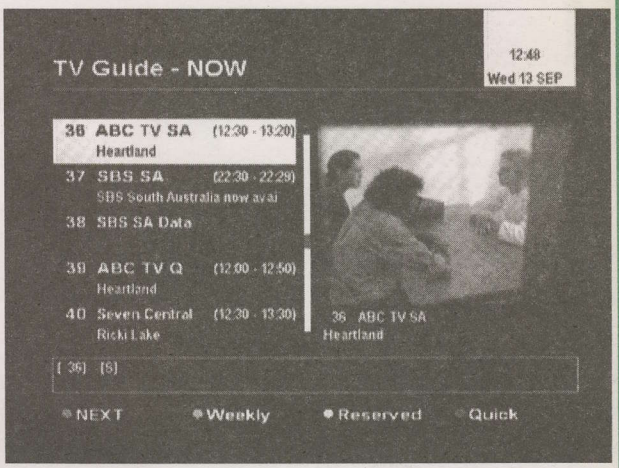

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