

14/02/01 3AM

Bob Cooper's

February 15 2001

# SatFACTS

## MONTHLY



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

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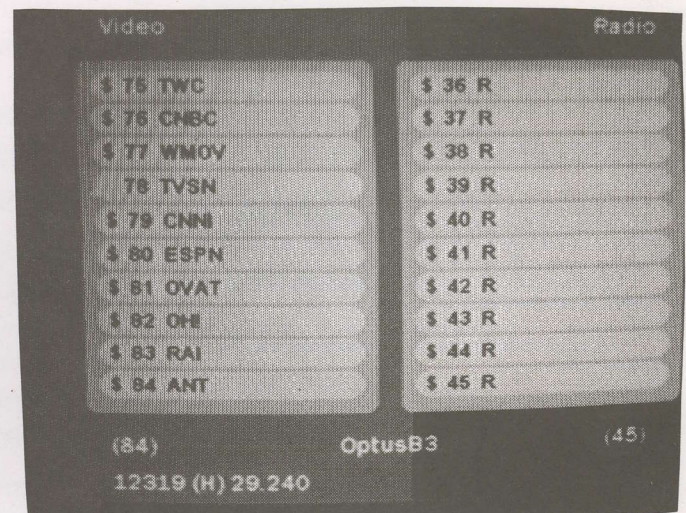
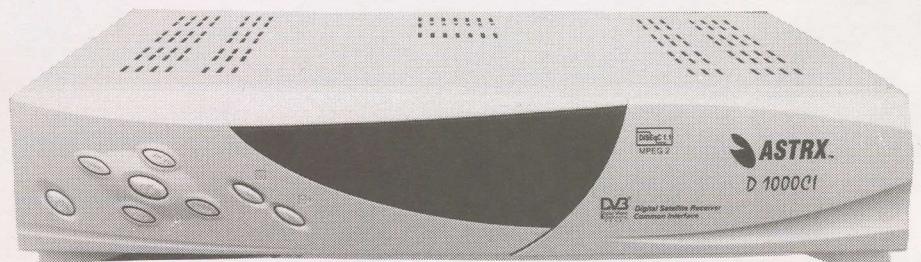
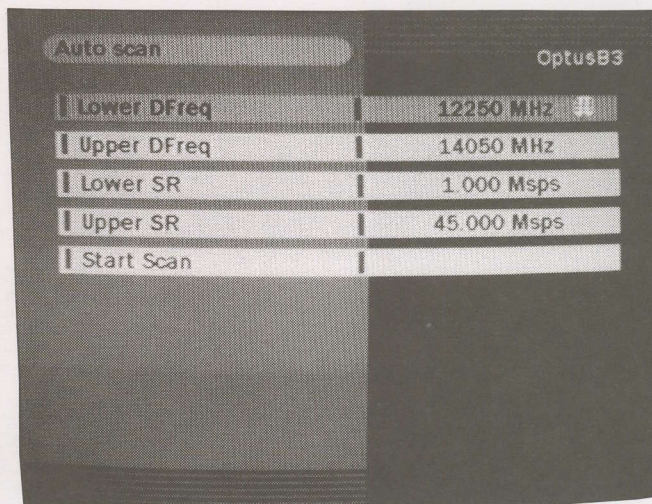
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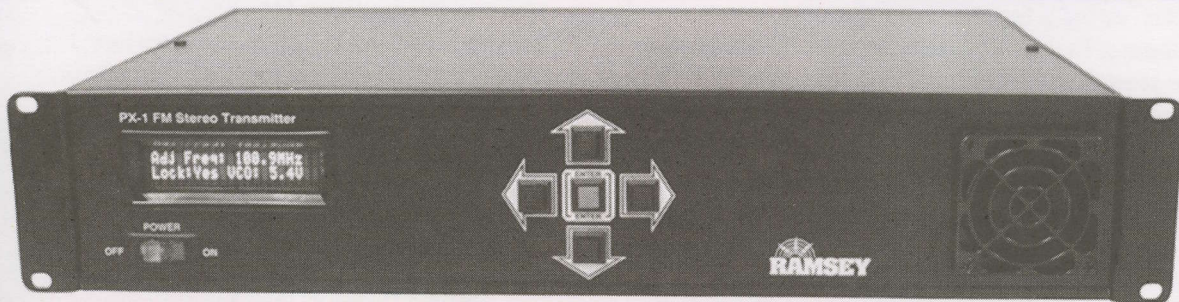
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Want to know more? Please turn page over

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So we built-in 4095 steps of audio input adjustment (you can *really* fine tune this baby!) so even the "weakest" audio input from Granny's cassette player can be amplified to full modulation volume (which, by the way, also has 4095 steps of adjustment) • **Cooling:** High volume CFM fan for those moist, humid climates where you need to get the heat away from the oversized heat sinks quickly to maintain transmitter efficiency - plus, over temperature automatic detection winds back the output power if anything gets "too hot" and is in danger of becoming a problem (we've never been to Kiribati but we can appreciate that an FM transmitter there needs special automatic protection circuits) • **Output stability:** While we expect you to connect the transmitter output to our own line of 50 ohm antennas for maximum coverage, we also know someone will try to broadcast using a 19" clip lead hanging down from the type "N" output connector on the rear panel. So we built in automatic VSWR (standing wave ratio) protection which senses abnormally high reflected power (transmission juice not accepted by the transmitting antenna array and sent backwards to the transmitter) to ensure you never - NEVER - blow up your solid state final amplifier transistors. If the VSWR rises, the output power automatically reduces until you fix whatever is wrong with the antenna system (we field tested the PX1 on a remote island in the Caribbean for years, know what happens if something fails and the manufacturer is thousands of miles away and nobody within a thousand miles has any idea what an RF output transistor is!) • **Clean neighbour policy:** The PX1 has tremendous bandpass filtering built in - hey, we had to beat the very stringent USA specs demanded by the FCC/Federal Communications Commission, to get this transmitter approved for use there - we are better than 90 dB below the selected frequency output at full output on 2X (second harmonic) which means you won't get into anyone's TV reception or screw up the local airport tower when operating this super-clean transmitter! • **More clean neighbour policy:** So the neighbourhood meenie kid comes into the station with his latest rap-CD and wants to "crank it up" to full volume. We've been there and built in "over modulation protection" to make sure that no matter how loud his rap or how much he cranks it up, the only thing that will fault is his own ear drums. • **Comfort zone:** Everything you need to monitor we monitor for you. If it is not automatic (such as automatic over modulation protection), we create a switch selectable (fluorescent character) display which you can check as often as you wish for PX1 operating parameters. Like? The actual temperature of the preamp and the final amplifier, left and right audio levels to PX1, VCO (transmitter oscillator) voltage, modulation levels, and the actual power output plus the reflected power from the antenna - to ensure you know when you have the antenna properly mounted and tuned. It's all there on the front panel display so nothing sneaks up on you and goes "snap." • **Housing:** All of this is in a standard 19" rack (hey - if you are going to be a professional radio station, scrounge up a real world professional rack to stick this baby in - that is 5" high and 15" deep - you don't have to have a rack of course - it will sit nicely on a banana crate or folding card table or even the front passenger seat of your Ford Explorer equipped with the Bridgestone tires) - but it gives your station a "professional" touch. • **More power?** Up to 600 solid-state watts output available!

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# SatFACTS MONTHLY

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

These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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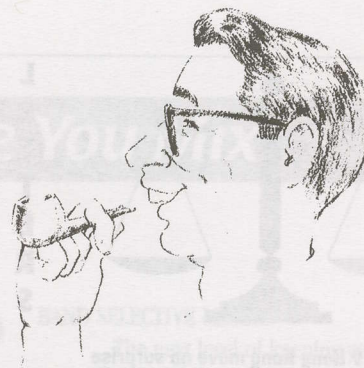
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## COOP'S COMMENT

The latest initiative from the Australian Broadcasting Authority reminds me of the horse drawn carriage and buggy whip manufacturers at the turn of the 20th century. Faced with competition from the new upstart automobile industry, these businessmen pleaded with their respective law makers to ban gasoline powered vehicles from the roadways or limit their use to business days between the hours of 9



and 5. When something competitive comes along that threatens the comfort zone of status quo, there is always a percentage of people who want to slow down or stop progress because they have money invested in the status quo technology.

Businesses who generate electrical power the old fashioned way - using hydro plants - are opposed to nuclear powered plants. Those who operated railway systems were opposed to high speed multiple trailer highway rigs and air freight. One of my favourite historical quotes came in 1900 from the man in charge of the British Post Office. He was opposed to the creation of a British telephone system as Bell had launched in America. He reasoned, "We will never need those contraptions here because we have an adequate system of messenger boys."

The ABA has turned television reception into an Olympic high hurdle event by placing ever increasing mountains in front of consumers who simply want better quality television reception. Someone once described the "art of bureaucracy" as, "the ability to turn a mole hill into a mountain." The ABA has won "Gold" with their latest change in Blackspot licence procedural rules. They should be ashamed of themselves but in the best of outdated bureaucratic traditions, they won't even admit how foolish the new regulations which come into effect March 1 make them appear to the rest of the world.

I can walk into a store that sells paint in Kaitaia (New Zealand), a remote town in this country's outback, and five minutes later leave with a permit to drive an automobile. In 48 hours from having my snapshot taken, a brand new New Zealand passport will arrive in my mailbox. In ten working days my application for three new FM radio stations is processed and I have the permits required to go on the air with transmitters that cover 9% of the New Zealand land mass. In 30 minutes a local bank will approve, print and hand to me a credit card with \$10,000 of available purchasing power.

The ABA, meanwhile, has been routinely taking between 9 and 15 weeks to process what should be a simplistic application requesting a "licence" to receive two television services via satellite (Central 7, Imparja, or, GWN, WIN). Receiving "licenses" went out of fashion in the USSR when Communism collapsed. Nobody, not even China, still licences individuals to "receive" television. But the ABA does. Their reasons for demanding this process are as antiquated as the horse and buggy manufacturers, as selfish as the railways who wished to stop long haul highway rigs and as laughable as the British Post Master's reasoning why the telephone would not be needed in Great Britain.

And now the ABA is making their Blackspot "licence" process even more complex, and worse than complex - their new March 1 system hands the safe keeping of the chicken house over to the foxes. We anticipate that with the new system, fully 50% of all applications will NEVER be approved, and the remainder will average 20 to 30 weeks for approval. If the ABA was in charge of driver's licenses, passports or credit cards I would be reduced to walking to work, never leaving my country and paying cash for everything I purchased. Unhappy? Take your beef to Greg Cupitt; tel (02) 6256 2800.

## In Volume 7 ♦ Number 78

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ABA decides satellite installers are not to be trusted - p. 9

Coping with the dBuV/m formula for the ABA assessment form -p. 18

Recent Bouquet Changes of interest to enthusiasts -p. 31

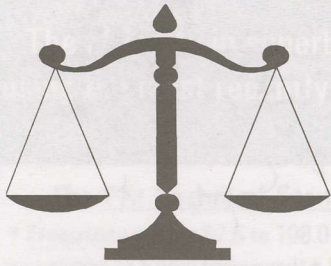
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At Sign-Off (Hell bent on Pace set-tops) -p. 32

## -ON THE COVER-

Scanner receivers are popular with the news media and others who try to stay on top of the latest breaking news. In our business, the latest breaking is often hidden away on an elusive transponder using unknown digital parameters. NOW - if you had a receiver that could scan and find these automatically ... (page 6, here).

**STAR TV Hong Kong move no surprise**

"Your article about STAR TV shutting down their Hong Kong service (SF#76) came as no surprise. Back in 1990 when STAR first began, I purchased a C band dish + receiver and was extremely glad to watch their programmes. Before that time we had only the local Thai channels. When STAR Movies debuted, we asked about a decoder and smart card but they were not interested in talking with a DTH subscriber in Thailand. The same thing happened, again, when they switched to digital. Despite adverts appearing on the air, requests for info about decoders were simply ignored. What a mess STAR TV has become and eventually I signed up with UBC here in Thailand. It amuses me that UBC programming is being pirated by Hong Kong viewers. Good luck to them, I say. On our local cable network here we get STAR World which is pirated from the Measat ASTRO service simply because STAR will not sell the service directly here into Thailand. By their actions, STAR have just opened up a whole new market for pirates in Hong Kong."

Alan Smith, Thailand

STAR TV has not been Rupert Murdoch's finest hour.  
Why terrestrial TV in Australia?

"Austar's weather channel service may have hit upon a huge reason why rural folks should subscribe; the Livestock Market reports. One of the major complaints I hear regarding Central 7 and Imparja is they are big city stations with a small market mentality and totally fail to provide the critical-to-business information that rural farmers require. Now Austar has expanded their Weather Channel coverage and I suspect this will be a major factor in their growth to farm homes. The regional terrestrial stations provide a similar service of course and I believe this market coverage is a primary reason why farm families even have TV."

Ns, NSW

"What will happen when ABC-TV on channel 2 shuts down their terrestrial service and the hundreds of shops and teaching centres lose their atomic clock reference of 4.43361875MHz (the colour subcarrier frequency)? This has been a 'frequency standard' in Australia for generations, very useful for checking frequency counters (for example). Alas, there is no 'colour subcarrier' with digital and there goes that service!"

IF, Queensland

"When I was shopping for the week last Thursday in my usual store, I noticed that the PA system providing the local radio station to shoppers has been changed to a Satellite Music Australia feed. If the majority of shops and offices make a similar change, local AM and FM radio will lose a significant segment of their daily audience."

AI, NSW

**PROGRAMMER  
PROGRAMMING  
PROMOTION****UPDATE****FEBRUARY 15, 2001**

**New ABA rules** change the sequence for Blackspot reception permits, gives terrestrial broadcasters important new veto powers, turns what was already a very lengthy approval process (typically 8 to 15 weeks) into something much (much-much!) longer. ABA says they, "*erred in February 2000 announced procedures,*" and that new rules are designed to "*correct that error.*" ABA refuses to answer SatFACTS queries asking **how many** Blackspot applications have been received to date, how many have been granted. Bottom line - the ABA changes unfortunately are likely to encourage piracy of Aurora services (p. 9).

**Field strength versus signal level.** A cable TV, SMATV, installer "SLM" (signal level meter) measures dBuV or microvolts of signal from a test antenna, cable line. The ABA "Minimum median field strength" chart appearing on p. 14 here uses levels such as 50 dBuV/m. This is not the same as hooking up a test antenna and seeing whether you have 50 dBuV at the test site! It is the "/m" part that is a "gotcha" and requires some formula conversion of the measured signal to determine whether, in fact, your Blackspot test site falls under the criteria required. "Field strength" and "signal level" are not interchangeable in this situation - they do not mean the same thing. Before you fill out another "Assessment of Reception Quality" form for the ABA, we suggest you read and digest p. 18, here.

**ABA is ducking** all interviews and requests for additional information (p. 9). We wondered - does it make any difference which satellite broadcaster the applications are sent to? Should they be sent to both broadcasters or just one? At ABA - total silence.

**Aurora solution for Strong 4800 IRDs** was posted on SatFACTS web site January 19. Strong sent engineer from Korea to Melbourne to work with Strong Aust folks to find suitable modification to handle late December data stream changes at Aurora. Sheng Yee, Queensland reports, "The latest version not only gives stability back but also very quick channel changes and a 'local region' satellite list. Top after sales product support will maintain customer loyalty in a particular brand. Another bouquet should go to the SatFACTS web site in co-ordinating the extensive problems so well and keeping us informed."

**TARBS contacts.** Strangely, no longer listed under "TARBS" or derivatives in latest Sydney telephone book. 1300-782-727 (cost of local call) within Australia; 02-9776-2000; possible contact is Tony Palumbo at 02-9776-2336.

**Sensitive.** Sky NZ offices have advised contract installers, "not to promote competitor-to-be Telstra-Saturn with signage" on their trucks - under penalty of being excused from future Sky work.

**Hell bent on Pace boxes.** Telstra-Saturn has dispatched cartons of Pace DGT400/512 IRDs off to Divicomm for an attempt to make them work with the chosen Irdeto and Aurora-like CA systems. The TVNZ + Telstra-Saturn 1.5 transponder FTA + CA launch date is now pushed back - April 1, May 1, perhaps not before the end of May. Perhaps even later. We update you on p. 32.

**Attention IRD designers.** After playing with the ASTRX D 1000C1 and its auto scan memory function (p. 6), some suggestions. Once you have scanned a satellite, how about a scan-as-memorised routine that tells the receiver to switch from memory position to memory position (within a single satellite) for a user-defined length of time. Being able to tell it to *scan* through a bird, locking onto each in-memory service and holding the video - audio for say something between 1 and 30 seconds each (as set by the user) would be a very handy way of keeping up with what is happening on the entire bird. *Anyone out there listening?*

# We Have Ways to Make You Mix

## SPLITTERS

Mixing Satellite, VCR or any modulator sourced TV signal with off-air TV works sometimes, and not others. Some suggestions may assist.

The first step in designing such a distribution system is to write out a channel plan. A useful rule of thumb is to use every 3rd channel in the Australian 7Mhz per channel environment. It can help to separate off-air channels from modulator sourced channels as far as possible. It can be simplest if off air channels are in band 4, and modulator channels in band 5, or vice versa.

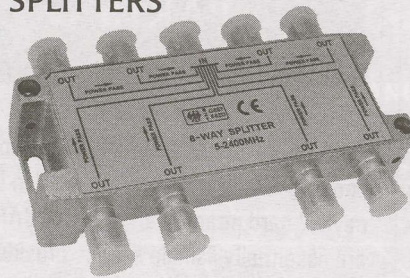
Signal levels need to be considered. Most internal modulators generate signal levels of around 70dBµV, so the off-air signal levels should be within coo-ee of these levels. No Signal Level Meter? You will need one.

## SPLITTERS

Mixing can be done several ways. The most common mix is through a splitter or power divider, using the outputs as inputs. Whilst this keeps the impedance at 75Ω, there are substantial insertion losses, and literally everything good and bad is mixed together. This is how the off-air is mixed inside a Satellite Receiver or VCR. A splitter effectively says come on down to any off air interference and undesirable by-products from the modulator, as well as the required signal.

## NOTCH FILTERS

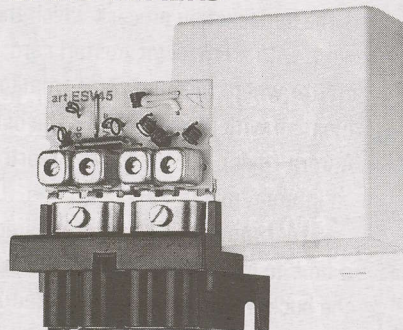
Where a masthead amplifier has been used to lift the off-air signal levels, it is quite common with a splitter mix to spoil otherwise good picture quality. A reason this happens is because the amplifier lifts the Noise Floor across all TV channels by the gain of the amplifier. Tuning a notch filter like the SF4 or band 5 version SF5 to the output frequency of the modulator can eliminate this problem.



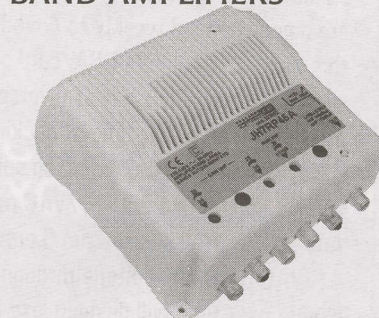
## NOTCH FILTERS



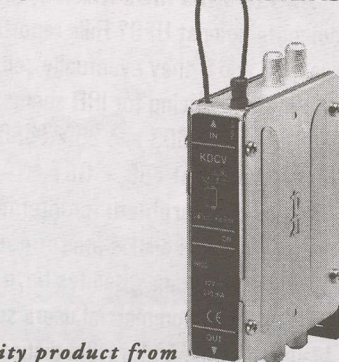
## BAND MIXERS



## BAND AMPLIFIERS



## CHANNEL AMPLIFIERS



## BAND SELECTIVE MIXERS

The next level of keeping your system clean involves band selective mixers. Available from Lacey's Australia with various crossover frqueencies, these devices provide better than 30dB isolation from input to input, with an insertion loss of less than 1dB. With these, any interference from the antenna system on the frequency of the modulator is blocked, as are unwanted modulation by products from the modulator on the off-air TV channels. If a quality splitter is used to combine a large number of off-air modulators that are all fed into say the band 5 input of an ESV45, the possibility of interference between the various inputs is dramatically reduced.

## BAND SELECTIVE AMPLIFIERS

Similar results can be achieved with amplifiers like the JH7RP45A that offer the similar isolation between inputs to the ESV45 (VHF, Band 4 and Band 5) but with proper constant impedance attenuators across each input.

## CHANNEL SELECTIVE AMPLIFIERS

Perhaps the ultimate in input filtering, a single channel head end has a bandpass filter for each channel in the system that prevents any other signal from passing. Put what you want on the channel you like. Lacey's Australia has a number of different types of single channel filter amplifier products available.

One of Europes largest TV antenna and MATV manufacturers, Fracarro makes a wide range of TV antenna and distribution products and benefits from over 60 years of experience. Many thousands of Fracarro products are now in use in Australia and New Zealand.

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## Issue 77 Feedback

"It was a good idea to print the photo of Ed Guz (p. 1). I hope that he is feeling very guilty, for the damage that he has inflicted on innocent Australian families, who are now casualties in the UEC monopoly war."

"How flat coax approximates 75 ohms (p. 2)? In a 1976 copy of the RSGB VHF-UHF Manual, there is a formula for calculating the impedance of a 'wire parallel to two infinite plates'. If 75 ohms and a 1mm wire are placed in that formula, the plates (i.e.. copper foil as shown) should be 2.75mm apart. So the sandwich of the wire, a layer of insulation on each side, should be 2.75mm meaning the wall thickness of the 'glove' material would need to be about 0.88mm."

(Coop's note: Amazingly, that is what it measures!)

"DVB-T tuning tip (p. 2) - if the antenna or cable has a bad SWR (impedance mismatch), the 10 dB pad would greatly improve the match until the tune-up pad was removed. Logically, using the pad in a badly matched system would cause the BER to go up, not down, when the pad was removed."

"Reference signal 'boosters'. Many people refer to masthead-amps as boosters and I did not know where the term came from - now I do. I know that if a person calls a remote control, a 'clicker' they probably are from a wealthy family who could afford remote controlled TVs back when remote controls weren't electronic. A few AWA TVs manufactured in 1978 were fitted with twin rotary tuners, but rather than having a dedicated UHF position on the VHF tuner, or a U/V switch (some Sony TVs), like the (USA) Zenith TVs you mention, it required a technician to change a 'channel strip' (we used to call these strips 'biscuits' at the time) in the VHF tuner. The new channel strip was factory taped to the side of the tuner, when installed (an awkward job) connected the power to the UHF tuner and converted the IF output of the UHF tuner to the standard IF (frequency) using the VHF tuner. Alternately, there were as in America UHF set-top down converters (I still have some in stock!) but as most people used VCRs that outputted on VHF as down-converters, I sold very few of the UHF set-tops."

"Also notice in list of requirements for Australian STB there is no S-VHS listed as output option - another oversight as most Australian big screen TVs have S-VHS input available?"

"(reference masthead amplifier overload) the Australian standard calls for a minimum IMR of 46 dB when 2 channels are amplified to the maximum rated output whereas German standards are 60 dB IMR. Logic says having ten carriers through the masthead (5 analogue, 5 digital) would reduce IMR to under 40 dB (not acceptable), or, output would have to be derated by around 8 dB to handle ten carriers with a 46 dB IMR rating (still not an acceptable number)."

"There was more than a decade between introducing colour in states and here in Australia - we should have done the same thing with DVB-T!"

"Easily best issue SF - ever, and I have them all."

# HARDWARE EQUIPMENT PARTS

# UPDATE

FEBRUARY 15, 2001

**V2.06 versus 2.09.** As if Optus and Irdeto had not done enough to mess up people's television reception back in December, comes now Irdeto's answer to pay-TV card piracy. Version 2.09 CAMs are brand new, replacing version 2.06. They are essentially "single service provider" CAMs and when initialised with an appropriate legit smart card initially confine service to a single bouquet (such as Aurora). At least that is what we are being told. But - when you stick a 2.09 into an appropriate (new) IRD with an appropriate (new) Optus card for ABC + SBS + others as applicable, the damned thing will not work. As of February 1 - you could not get a new card to turn-on if using a 2.09 CAM. Irdeto scratching their heads, Optus scratching their behinds (as appropriate). Neither one knows the answer. Which is - in their enthusiasm to stop piracy with Foxtel and Austar, they screwed up. In the interim, stick a precious 2.06 into an IRD with the new-to-be initialised card and once the card is operating, take out the 2.06, stick in a 2.09 and insert the card therein. It is the initialisation process which the 2.09 will not handle. No, this procedure won't work with a Foxtel (or Austar) card, which simply will not play in a 2.09 CAM no matter where the card came from (one source says 2.09s are pre-programmed to function with provider "00" - the horizontal side, or, provider "10" - the vertical - Aurora - side). V2.06 CAMs? Worth their weight in gold with prices topping Au\$300 on Internet markets.

**Late January ECM attack.** DirecTV in states has been drip feeding a few bytes at a time to NDS format cards used in their encryption system. On Sunday January 28th the bucket was full and a reported 200,000 pirate cards went down. Perhaps related in timing, similar attacks on Foxtel and Austar Irdeto piracy has shut down so-called emulator devices and sent pirates scurrying for cover. Master key and other numbers are being changed weekly to drive home seriousness of Australian pay TV providers to stamp out piracy. In USA, card pirates are switching emphasis back to C-band services which while not as diverse as Ku and more complicated to receive at least offer them an easier time of hacking. The game grinds on.

**Hot running UECs?** Eric Fien suggests, "When I build an SMATV headend, I always budget in a 250-117VAC mains transformer which typically costs around Au\$125. That will easily run 5 or more UEC 600 or 700 series IRDs, and at the 117VAC operating voltage through the transformer, they run much-much cooler and I expect over time will develop less frequent power supply problems."

**SMS by Hills IRDs** which Optus has "approved" for Aurora use - can they really compete against UEC? Hills reportedly spent Au\$120,000 to get Optus approval for receiver and if they eventually sell 12,000, this would add at least \$10 to price of a unit in field. Pricing for IRD seems to fluctuate but recent quotation was 1 x \$670, 5 x \$636, 10 x \$603 and 25 x \$586 - all plus GST. Of interest, Aurora card through Hills is quoted at \$88 + GST.

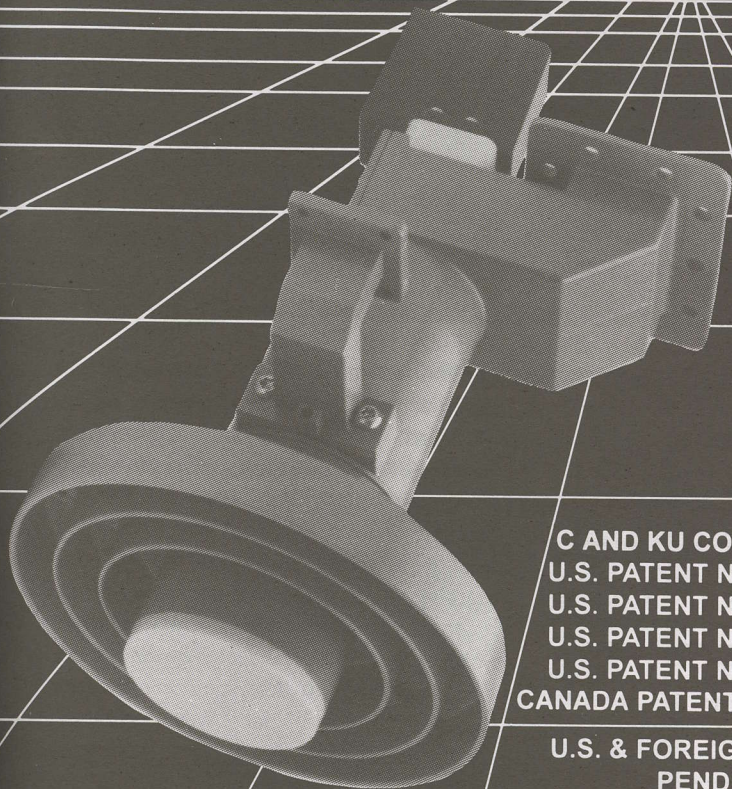
**Major dish problem** for intermediate sizes. European factories turning out offset and prime focus dishes are retreating from 1.2, 1.4, 1.6, 1.7 and even 1.8m sizes. Stronger European satellites have made dishes larger than 1m redundant for home DTH use, and commercial users seldom want anything smaller than 1.8m. End result? Major shortage of 1 - 1.8m dishes world-wide, shortly, with pricing to match.

**Cable TV system "radiation"** subject of new EMTEC study in New Zealand. Cable lines should not "transmit" through the air but can if installation mistakes are made, concerns are aero frequencies from 108 - 135 MHz, used by cable, with potential to interfere with terrestrial users. Contact Thaddy.Bialoruski@telstrasaturn.co.nz.

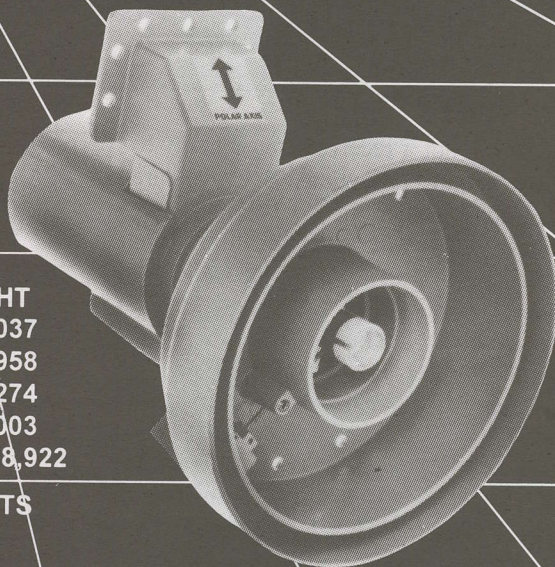


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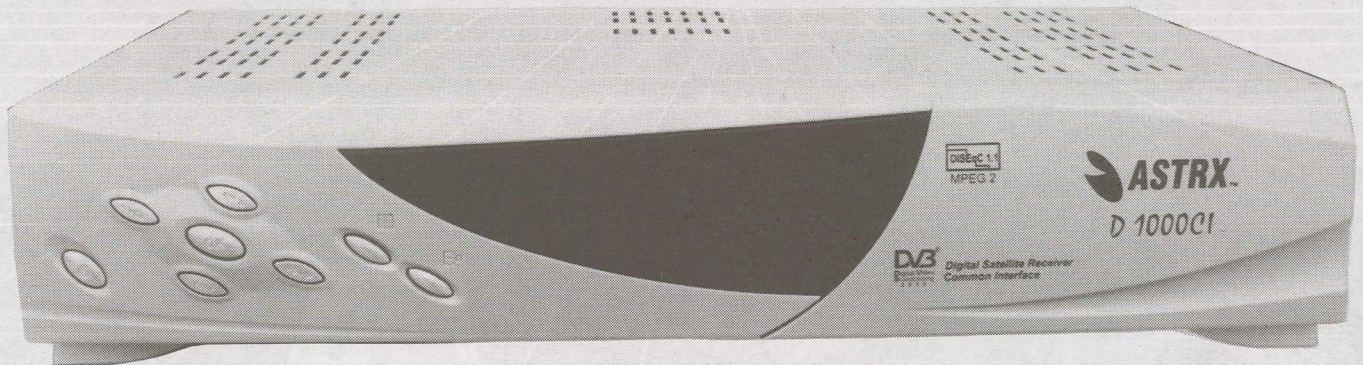
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Remember the tortoise versus the hare?

## The ASTRX D 1000CI IRD does something unusual



This is not a receiver that is likely to appeal to most consumers. But if you are a serious dealer or a hobbyist, we believe you will want one in your collection of gear. Why? Because it will locate every single SCPC or MCPC service on a satellite in a search mode, log the signals found, and then spit out the detail of who they are, where they are.

In SF#63, we reported on the Xanadu IRD available through Av-comm with a special price to members of SPACE. The Xanadu's manual explained how it could be told to "go hunting" for each and every SCPC/MCPC signal on a satellite and in fact a tiny handful with this feature apparently did leave the (Korean) factory. But then the "all searching" feature was eliminated and anyone interested in cruising the satellites to locate all signals with megasymbol rates between 1.0 and 45.0 was forced to go to Internet software available for the Nokia series receivers. Alas, even that went away when the German firm offering it was "busted" for also offering software that allowed card pirates to "emulate" the encryption data stream for their own use. The ASTRX D 1000CI receiver from Pan Asian Systems

Function	Humax 5400	ASTRX D1000
CA interface	2 slot CI	2 slot CI
	Embedded Irdeto	
Msym range	2 - 31	1 - 45
Processor	60 Mbit/s	60 Mbit/s
Main processor	TMIPS 81 MHz (*)	4.7 MIPS (*)
Flash memory	3 Mbyte	1 Mbyte
DRAM	2 Mbyte	2 Mbyte
Graphic DRAM	2 Mbyte	32 Kbyte
FEC range	5 rates 1/2 - 7/8	6 rates 1/2 - 8/9
DiSeqC control	version 1.0/1.2	version 1.0
Audio sampling	32, 44.1, 48 KHz	16, 22.5, 24, 32, 44.1, 48 KHz

\* faster is definitely better and while these are not apple vs. apple numbers for comparison, it would be great to see a 120 MHz processor and this search software in the same box.

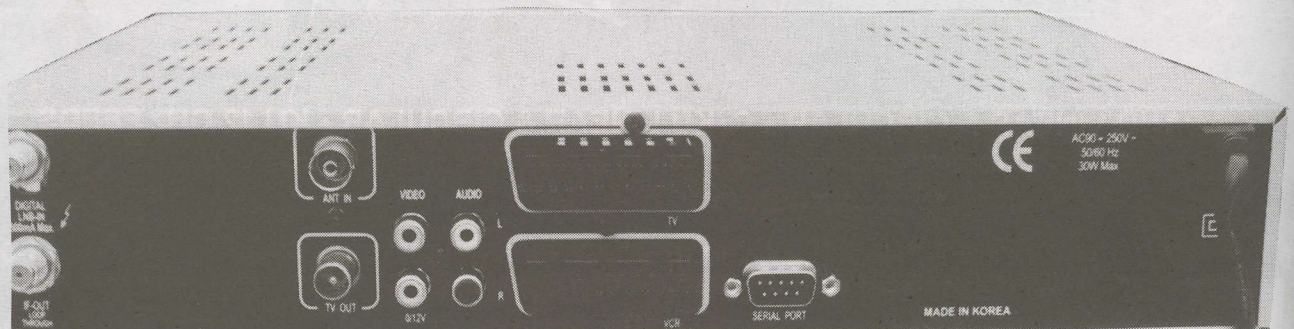
Limited actually does "Auto Scan" as well as offering conditional access functions through an appropriate Viaccess, Nagravision, Cryptoworks, Conax or Irdeto CAM (two CAM slots for Type I or II DVB common interface standard). On the surface, a receiver that searches, does FTA, and encrypted mode reception should be a very popular item. For a number of reasons it has been largely ignored to date, perhaps because so few understood what it was capable of, or, perhaps because it has problems unique to itself. We set out to find out which was true.

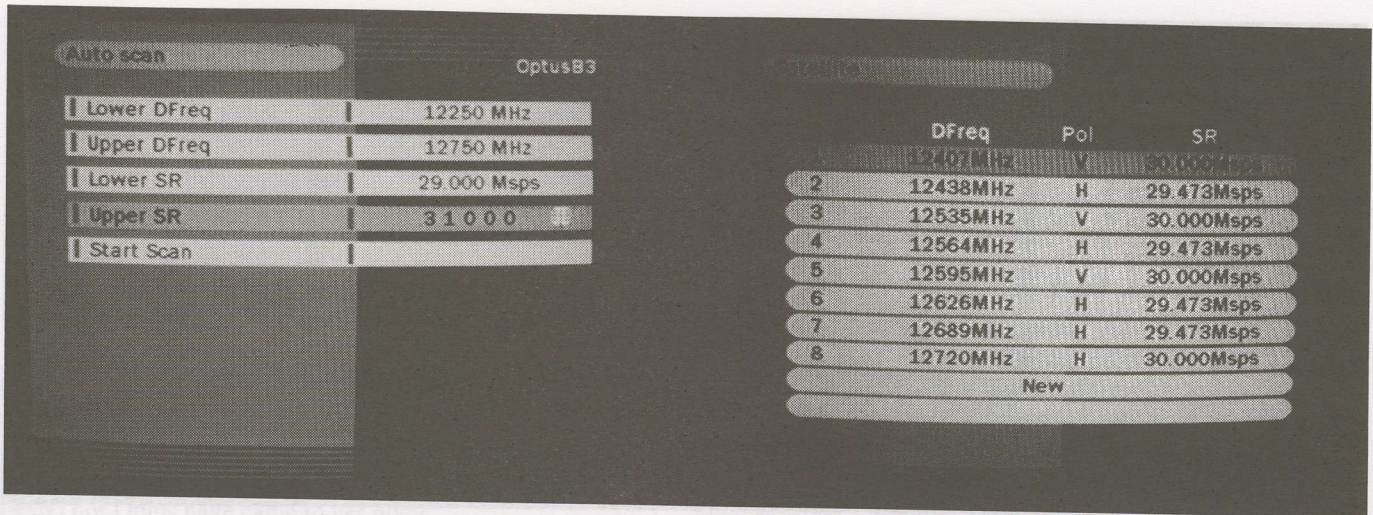
### Set-up

The manual is adequate but not polished with occasional lapses to the wrong "tense" verb as is common with translation from another base language (Korean in this case). It does mix set-up and operation and this could be a problem except we could not make it do a task it was not capable of performing. This may be one of the few

receivers where even entering the wrong numbers or the wrong sequence won't hang up the unit. It simply sits there and does nothing until you enter the right kind of number.

Rear deck is nothing special but all of the essential connections are present.

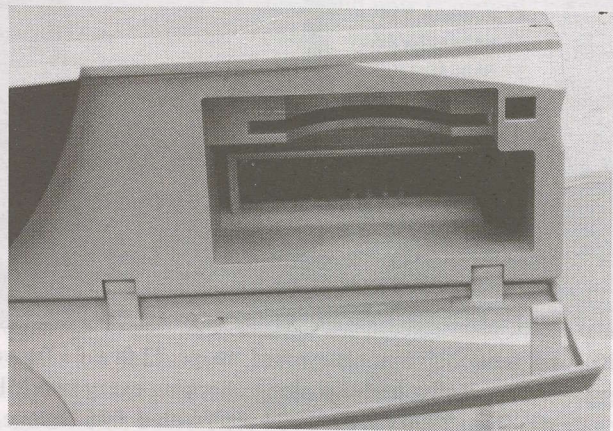
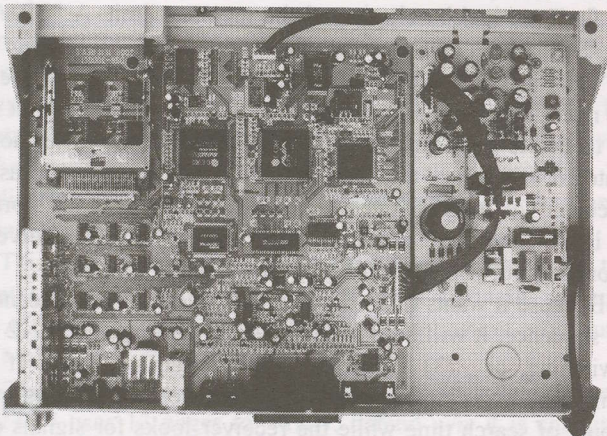




AUTO SCAN requires entering lowest and highest frequencies (establishing limits of scan range), lowest and highest symbol rate (Sr) and pushing "start." At end of sequence, D 1000CI produces list of transponders and Sr (Msps) for each. PID, PCR numbers also available from memory; this scan took 6 hours.

Like most receivers you begin by telling it the LNB configuration and local oscillator (LO) number. That establishes "C" or "Ku" for the software. The factory supplies a list of preloaded satellites in memory and if you select "Satellite Scan" it will look (only) for those in factory loaded

most any other IRD. But with "Auto Scan" you select some parameters: (1) The lowest or "start" frequency of interest (such as 3700), (2) the highest frequency of interest (such as 4200), (3) the lowest Msym rate (such as 2.0) and (4) the highest (such as 31.0) - see parameters on p. 6 here. Then

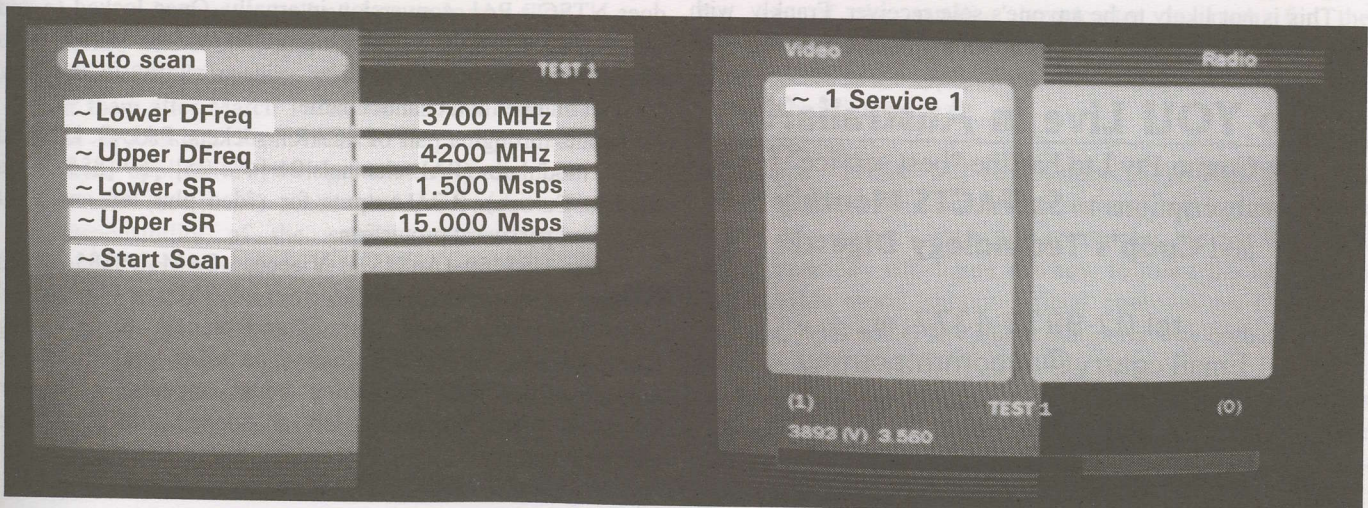


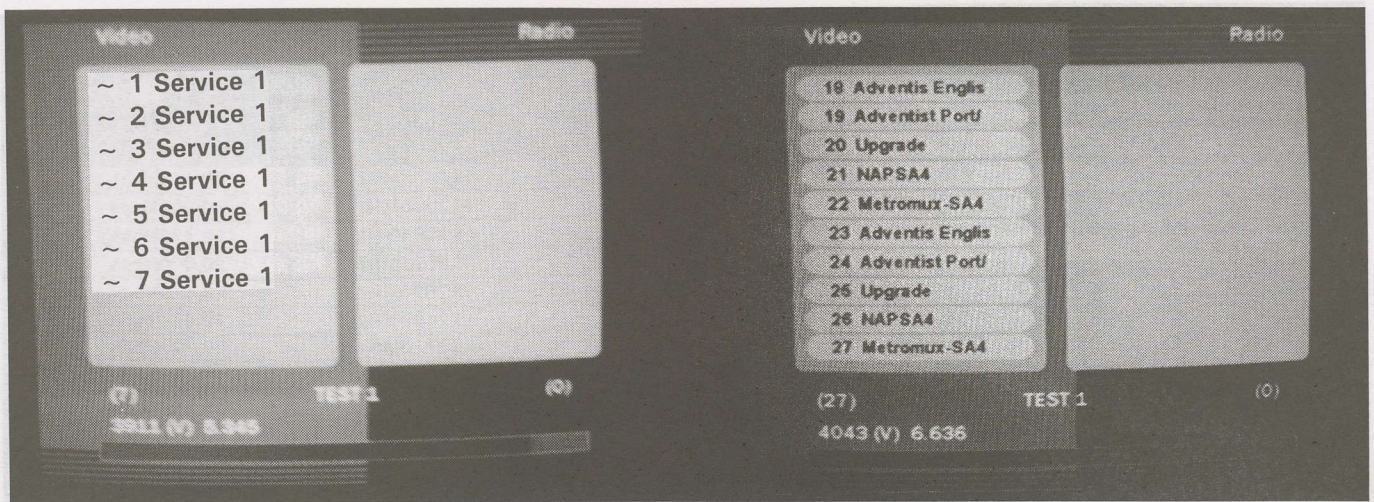
memory. You can also select transponder scan (entering the known parameters for a specific transponder). None of this is unusual nor exciting; it does what you expect, as quickly as

select "Start scan" from the on screen menu and push "OK."

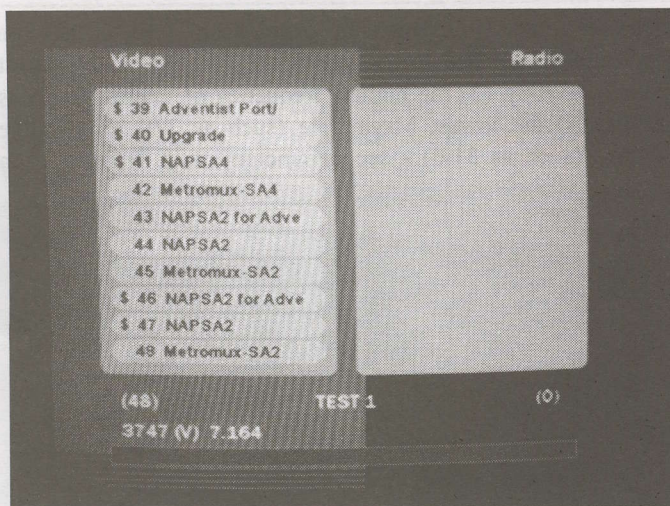
What you do next, while the scan is taking place, will be determined by how big a window (500 MHz wide - 3700 -

A longer term project - scanning all of PAS-2 from 3700 to 4200 over symbol rate range of 1.500 to 15.000. Parameters are established (left) and the scanning begins. Scanning here progresses 2 MHz at a time, and in .006 megasymbol steps (i.e., 3892[V] at 3.560 is followed by 3894[V] at 3.560, then 3896[V] at 3.560). From 1.500 to 3.560 took 24 hours; you learn to take smaller bites!





At the 48 hour mark the Sr had progressed to 5.345 and a handful of additional PAS-2 services had been located (left - above). At 60 hours elapsed time, the D 1000CI had located 27 PAS-2 services and was at 6.636 symbol rate (right - above). At 72 hours, Sr 7.164 has now located 48 services (left - below).



pleasant colour of the Humax 5400, for example), the use we envision for the D 1000CI is with it stuck on a shelf grinding out search routines 24 hours a day. They claim it will hold 3,000 memory locations so even after loading up As2, As3, Optus B1, Optus B3, PAS-8 and PAS-2 "everything there was to find" we had barely dented the memory limit. A "TP edit" function allows you to update the memory base by satellite and a "Satellite edit" selection permits adding new birds. There are so many European birds in memory to begin with, the first step is to delete them just to cut down on confusion. The factory entered in-memory transponders and services are as old as the receiver you hold in your hands has been in transit and storage; it is an "amusing" place to start (and verify the receiver is working) but you'll be doing full scans pretty quickly.

4200) and how big a megasymbol swipe (2.0 - 31.0) you plugged in. Typically, it chugs along checking every two MHz (megahertz) from 3700 (3702, 3704 etc.) with a .006 change in Msym (i.e.. 5.660, 5.666, 5.672) for each new (full) scan. And it does this for vertical and horizontal separately. We found if your windows are large, you can - literally - spend days going through an entire satellite (500 MHz times 29.000 which is 31 - 2). You (we) might do this one time just to build a data base. Once you discover that SCPCs are closely grouped (typically 4.500 to 7.500) you won't waste time searching 2.0 - 4.5 or 7.5 to perhaps 10.0 a second time.

Because it wants to do both vertical and horizontal scanning in sequence, it will help if you have (1) DiSeqC, (2) 0/12 volt switching, or , (3) 13/18 volt LNB probe switching. If you only look at a single polarity at a time, you are wasting many hours of search time while the receiver looks for signals on a polarity for which you have no input from the dish. Perhaps there is a way to tell it to only scan one polarity at a time - we could not sort that out.

This is not likely to be anyone's sole receiver. Frankly, with the limited graphics ability (certainly not the bountiful and

Once you have a bird scanned and in memory, selecting individual services is point and "shoot" from the menu. ASTRX marks encrypted services with the apropos "\$" sign. A "sort" function allows channels to be sorted by title (alphabetical list), FTA or scrambled, and a "favourite" list. It does NTSC - PAL conversion internally. Once locked to and viewing a service (or not viewing if CA), use the "info" key to display the frequency, polarity, video, audio, PCR PIDs, channel number and channel name.

Outputs through a pair of SCART sockets, PAL-G, I, K and NTSC modulator (PAL channels 21 [471.25] - 69 [855.25] as used in Europe), RCA outputs for video plus left and right audio and password protection.

Price: US\$250 (Au\$453), Viaccess CAM US\$85, Irdeoto (version not specified) US\$115 from LTG Mason Pty Ltd. (tel 61-3-9457-1222, Email astrx@ltgmason.com.au) or Hong Kong tel 852-2873 -9777 (astrx@panasian.com). No, it is not perfect but until something better appears, it fills an important niche previously left abandoned and it is dead simple to use.

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## Et tu Satellite People! ABA sticks the knife into rural viewers

Frequently repeated story:

"Two guys installing for Cxmxt were doing a Foxtel install in northern Melbourne where it happens that terrestrial reception can be poor. The lady of the house complains that she is 'stuck with satellite' which 'does not have 7, 9 and 10 included,' her terrestrial aerial reception is poor and neither Foxtel nor Optus have cable to her home.

" 'We can take care of that' says the installer. 'It will cost you an extra \$200 but we can get you 7, 9 and 10 plus ABC and SBS from satellite - the same installation.' The lady says she will think about it. And calls a friend who works for 7 in Melbourne." Or so the story goes.

Those telling this story are broadcasters, ABA 'operatives,' hoping to convince anyone listening that the ABA's Blackspot procedure for approving homes to receive Imparja and Central 7 (in the east) or GWN and WIN (in the west) is somehow flawed.

In fact, if the home in question really exists and is in fact in "northern Melbourne" and does, in fact, have poor terrestrial reception, there is no reason why it should not qualify for Central 7 and Imparja. Those telling the story argue that even before testing, even before preparing and submitting an application for Blackspot approval, the home owner had been "promised" Aurora reception.

This story and others like it have been repeated for ten months or more, apparently enough times to finally pressure the ABA into modifying the Blackspot application procedure. On March 1, the rules change.

The ABA in a letter sent to satellite installers January 22-23-24 uses 13 pages to, firstly, defend *why* it is changing the procedure, and, secondly, to explain *what* the new procedure is, and thirdly, provide reference materials to guide applicants in the new procedure. The bottom line first:

The ABA no longer 'trusts' satellite installers. They no longer believe installers preparing applications have been telling the truth. And under pressure from terrestrial broadcasters, the new procedures make the satellite service provider responsible for the 'honesty' and 'accuracy' of all future forms filed.

Installers who submit applications to the ABA on or before February 28th follow the old (existing) rules; those who deliver them after March 1st to the ABA will get them back, *without* processing. From March 1st receipt date onward, completed applications will go to one of the four satellite broadcasters (see p. 14) - not the ABA - and it will become the responsibility of the satellite service providers to "complete" the applications before they are finally sent to the ABA. This will add weeks, months, perhaps even years to the application approval process and there is no verification SatFACTS can locate which indicates the satellite broadcasters asked for this new task.

"*I think we should have seen this coming*" suggests a prominent distributor. "Installers were bragging how they completed the forms without testing, how - 'after you have

done *one* test, they *all* look the same.' The ABA stops short of accusing satellite sellers of dishonesty in their 13 page explanation but refuses to deny this was their motivation.

### The defence

ABA's Greg Cupitt (Manager, Television Planning) signs the letter where he explains, "*the current procedure is inappropriate.*" Section 7(2A) of the Broadcasting Services Act (of) 1992 is his reference and he says the ABA now believes that it must be the commercial television broadcaster who's signal will be inserted into the coverage area of another broadcaster who must, "*make the case for waiving of the rules, to allow importation of the distant signal.*"

Under the procedure released just a year ago, it was the *affected party* (the would-be viewer) who was charged with the responsibility of proving they had poor TV service and were qualified for satellite service. Cupitt says, "*the ABA erred in this interpretation of the rules*" and now is merely "*correcting that mistake.*" Almost nobody believes Cupitt's statement, convinced that it has been the success of the Blackspot programme which has the terrestrial broadcasters running scared. And the terrestrial broadcasters, anxious that viewer loss will one day translate to revenue loss, are putting pressure on the ABA.

"*The ABA should be ashamed of their mishandling of this procedure*" suggests a dealer who has now submitted more than 100 Blackspot applications. "The Australian Broadcasting Authority might be renamed the Australian Broadcaster Association because all they are doing is adopting procedures that protect the commercial broadcasters. Whatever happened to the public's interest?"

What concerns those who have read and understand the ABA announcement is the new likelihood that between a half-interested satellite broadcaster and an antagonistic terrestrial broadcaster, individual applications will be buried on desks for months or longer. The person who has money invested in a system (the consumer) has no direct line to the approval procedure. The installer is in the same boat. If the terrestrial broadcaster objects to the application, it becomes the job of the satellite broadcaster to push for the authorisation. And this is likely to become an increasingly slow process as the applications "pending approval" pile up on satellite broadcaster desks.

"*Let me tell you what is really going to happen*" suggests a distributor. "People will buy systems, have ABC and SBS turned on (these non-commercial 'national' services are outside of the new system - their turn-on process has not changed). Then somebody will figure out how to make the new Irdeto 2.09 CAMs work without official approval on Central 7, Imparja, WIN and GWN and at that point why bother to make an application at all?"

Australia is the only major country in the world which has rules that in effect "licence" the viewer in addition to the

text continues - page 14

## ASSESSMENT OF INADEQUATE RECEPTION OF BROADCASTING SERVICES

In the application to the ABA, the applicant must attach a statutory declaration and must include the following wording: "I declare the details in the attached form *Assessment of Inadequate Reception of Broadcasting Services* to be true and correct." (See attached form). Giving false or misleading information is a serious offence. **Note:** as part of its consultation with the broadcaster(s) that are licensed to serve a particular area, the ABA intends to disclose the business details of the person making the declaration to the licensed broadcaster(s) of the area. If the person making the declaration has any objections to the disclosure of its business details, it should advise the ABA in this application.

## APPLICANT:

Business name
Postal address
Contact person
Telephone contact / email address

## VIEWER or LISTENER:

Name	
Address/location	Nearest town/centre
Latitude and longitude	
Telephone contact / email address (if available)	

## SATELLITE RECEIVING EQUIPMENT: (Optional)

(As proposed to be installed)

Model
Serial number
Smartcard number

# BROADCAST ENGINEER/ANTENNA TECHNICIAN/ELECTRONICS TECHNICIAN

(to complete)

COMMONWEALTH OF AUSTRALIA

## Statutory Declaration

I,

Name of person making declaration	
Address	
	Postcode
Occupation	Bus. telephone: Bus. facsimile:

do solemnly and sincerely declare

1. that, I am qualified as	a broadcaster engineer <input type="checkbox"/>
	an antenna technician <input type="checkbox"/>
	an electronics technician <input type="checkbox"/>

2. that, I conducted an inspection for	Name of Coordinating Body
--	---------------------------

and I have assessed that the person at the following location:

Address	
	Postcode

receives inadequate television reception

3. that the details in the attached form 'Assessment of Inadequate Reception of Broadcasting Services' to be true and correct.

And I make this solemn declaration by virtue of the *Statutory Declarations Act 1959*, and subject to the penalties provided by that Act for the making of false statements in statutory declarations, conscientiously believing the statements contained in this declaration to be true in every particular.

Signature of person making the declaration	
--	--

Declared at	the	day of
-------------	-----	--------

Before me,

Signature of person before whom the declaration is made	Title of person before who the declaration is made
---	--

(Optional) How long did it take to complete this form? .....

Ph: + 61 7 3344 3883 Fax: + 61 7 3344 3888

E-mail: [pacsat@powerup.com.au](mailto:pacsat@powerup.com.au)

Services proposed for reception Eg Imparja, Seven Central	Service 1:	Service 2:
<b>ASSESSMENT OF RECEPTION QUALITY:</b>	<i>Television and FM radio reception to be measured using a dedicated antenna 10 metres above ground level.</i>	
Broadcasting licence area(s) Eg Sydney area; Newcastle area .....		
Services licensed in the area Eg Prime, WIN, Capital.	Service 1:	Service 2:
Channel and Frequency (TV) or Frequency (radio)		
Transmission site		
Measured terminal voltage in dBuV		
Antenna used for test Brand, model and gain		
Cable used for test Type, length and loss		
Masthead amplifier (if used) Brand, model and gain		
Calculated Field Strength in dBuV/m		
ITU Picture Quality Grade (television only) *		
Short description of reception in words (eg 'No picture,' 'Severe ghosting,' 'inaudible,' 'impulse noise') **		
[For AM Radio: please provide description of day and night time reception]		
Field strength meter used Make and model		

\*Reference: ITU Picture Quality Scale

ITU Grade	Picture Quality	Impairment
5	Excellent	Imperceptible
4	Good	Perceptible
3	Fair	Slightly annoying
2	Poor	Annoying
1	Bad	Very annoying

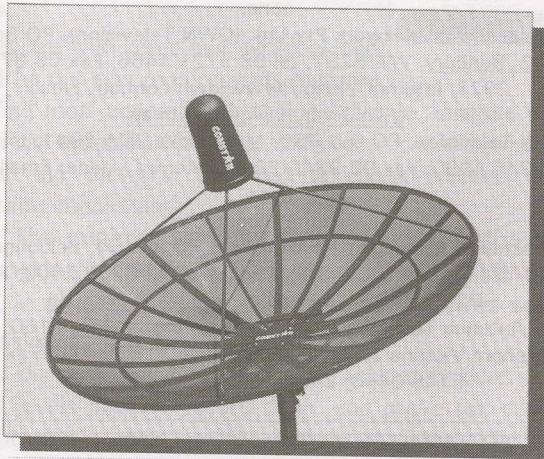
\*\* Please attach additional pages if further space is required.

(Optional) How long did it take to complete this form? .....

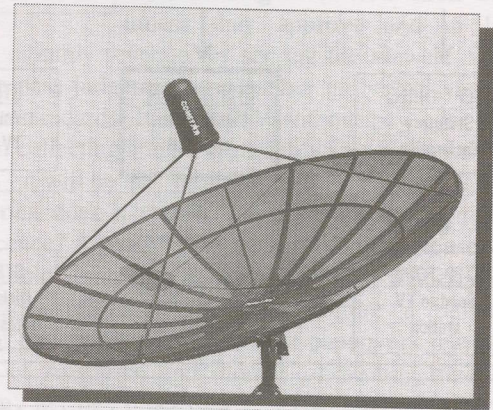


# ANY WAY YOU LOOK AT IT ...

ST-7



ST-10

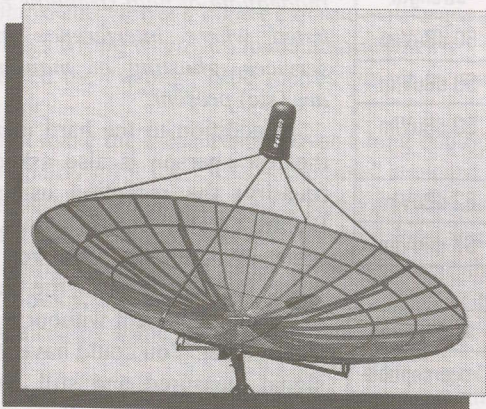


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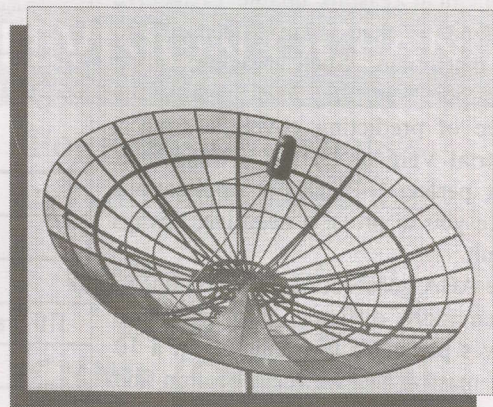
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ST-12

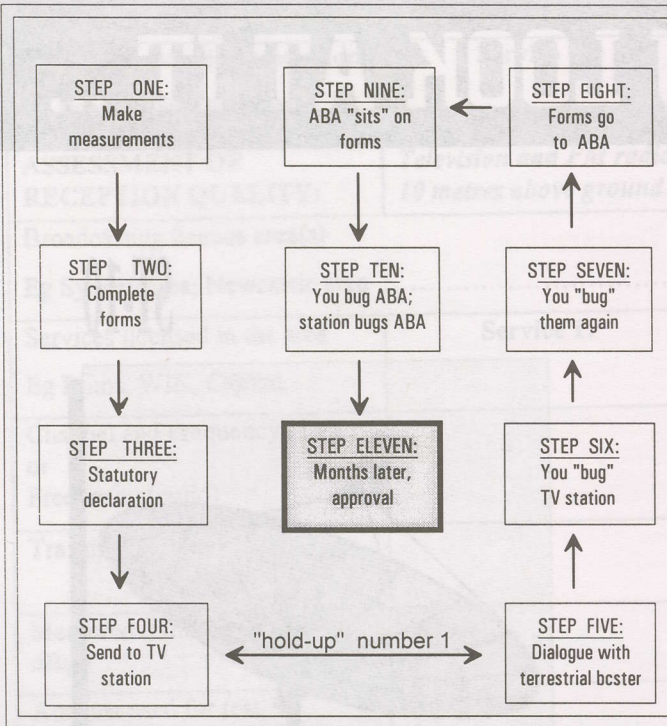


ST-16



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### Where Your Forms Go - after February 28

**Imparja Television Pty Ltd.**, PO Box 52, Alice Springs NT 0871 0870; tel 08 8950 1411; Fax 08 8953 4441; Internet - <http://www.imparja.com.au>; Email: [imparja@imparja.com.au](mailto:imparja@imparja.com.au)

**Regional Television Pty Ltd.** (Seven Central), PO Box 1016, Townsville, Qld 4810; tel 07 4726 2000; Fax 07 4726 2057; Internet - <http://www.telecasters.com.au>; Email - none.

**Golden West Network Pty Ltd.** (GWN Television), PO Box 112, Bunbury, WA 6231; tel 08 9721 4466; Fax 08 8792 2923; Internet - <http://www.gwn.com.au>; Email: [gwn.bunbury@gwn.com.au](mailto:gwn.bunbury@gwn.com.au)

**WIN Television**, PO Box 750, Mirrabooka, WA 6941; tel 08 9345 5990; Fax 08 9345 9990; Internet - none; Email - none.

-Alternate contacts-

**Australian Broadcasting Authority**, PO Box 34, Belconnen ACT 2616; contact is Greg Cupitt; tel 02 6256 2800; Fax 02 6253 3277; Email [planning@aba.gov.au](mailto:planning@aba.gov.au)

**Antenna Technicians Association, Inc.**, PO Box 160, Mitcham Victoria 3132; freecall tel 1800 659 726; Fax 03 5148 0443; Email [ata@netspace.net.au](mailto:ata@netspace.net.au)

The "waiting game" when you play by the ABA's new rules (total elapsed time? 3 - 6 months if you are lucky!)

telecaster. The ABA has created licence areas for broadcasters and these (terrestrial) licence areas are built around predicted terrestrial signal reach. The concept was to "guarantee" each terrestrial broadcaster a geographic area and audience. The whole procedure turns on keeping "licence areas" apart so that transmissions from one broadcaster do not intrude into the "licence area" of another.

To gain approval for satellite service, you must *prove* that a specific location (home) while inside of a licence area is for technical reasons unable to receive the signal(s) that is/are "licensed" to serve that home. Such areas are called "Blackspots" and they exist because the science of predicting coverage from a terrestrial VHF or UHF TV transmitter is not perfect. Blackspot applications require you to prove a negative, always difficult.

The ABA goes out of its way to make it even more difficult. The procedure involves placing a test antenna on a 10 metre mast at the viewer's location and measuring signal level. Ten metres is specified, "because that is an international standard" and, "measurements at this height are statistically repeatable" although the

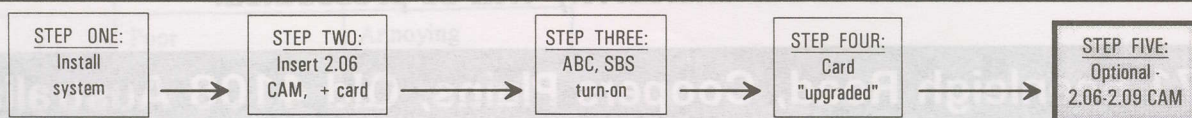
ABA admits, "the majority of viewers get adequate pictures with lower antenna heights."

The chart (below, top) shows the minimum signal level (they call it median field strength) which will "provide an acceptable grade of service when received with a (typical) receiver in the absence of interference, ghosting and man-made noise." Go back and read that again. Because the ABA then deviates from hard measurements by adding, "Reception may be considered inadequate at field strengths higher than listed where interference from other services, ghosting or man-made noise are (sic) present."

In addition to the hard measurement, the test person is also asked to grade (qualify) the reception using the ITU Picture Quality Scale (below, left). This scale involves the observer making a value judgement as to the "amount" of degradation present without regard to the signal level. You could have 90 dBuV of signal measured and still be P1 if an electric fence controller nearby was arcing creating jagged lines of interference in the picture and bursts of noise in the sound. Any field strengths calculated below those in the table above are automatically qualified for Blackspot

Band	TV channels	minimum median field strength
I	0, 1, 2	50 dBuV/m
II	3, 4, 5	50 dBuV/m
III	5A, 6, 7, 8, 9, 9A, 10, 11, 12	50 dBuV/m
IV	28 - 35	62 dBuV/m
V	36 - 69	67 dBuV/m

ITU Grade	Picture Quality	Impairment
5	Excellent	Imperceptible
4	Good	Perceptible
3	Fair	Slight annoying
2	Poor	Annoying
1	Bad	Very annoying



Faced with extraordinary delays in "completing" a system, many will find a "short-cut" to turning on the commercial stations which feature the network programming of 7, 9 and 10.

approval, regardless of the P quality number. So you can gain ABA approval by having *too little signal* (below the minimums specified in the table), *or*, by having adequate signal "strength" but *also having interference* that impairs the reception. But are these not the same criteria as were put into effect February 2000?

They are with some new wrinkles and it will be the new requirements that you will find most uncomfortable. For example, imagine yourself with a van mounted 10m mast that slides up and down and you are at the viewer's site making measurements. Here's something threatening:

"The minimum median field strength is the field strength exceeded at 50% of locations, 50% of the time, in an area of approximately 200 metres square."

Translation? A potential "gotcha!"

As the installer, your job is to accurately determine the signal levels present, record them, and prove (on paper) the qualification of that site for Aurora reception. The satellite signal provider's job (at Imparja, Central 7, WIN and GWN) is to take your measurements and convince both the ABA and the terrestrial broadcaster in who's "licence area" you were located when testing that this particular spot is indeed a blackspot.

The terrestrial broadcaster's job is to prove you are wrong, that the home already has adequate terrestrial TV reception, and they do not qualify for Aurora service. Which brings us back to "...in an area of approximately 200 metres square."

A quarter acre section has 1,210 square yards - and mixing metres and yards, approximately 6 of the mythical "200 metre square" segments. The terrestrial broadcaster, battling to keep satellite out of the viewer's home, can and will argue that you did two things wrong when you made measurements:

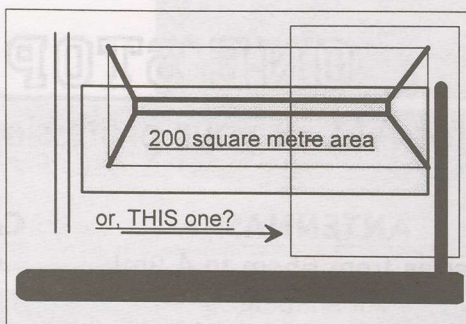
- 1) Selected the "wrong" 200 metres square to make your measurement,
- 2) Did not make the measurement over a long enough period of time to qualify it for the "50% of the time" standard.

So who decides which 200 metres square is the acceptable location for the test, and who decides how long you should make measurements over in order to determine if the signal level is (a) below the measurement standard 50% of the time, or, (b) impaired by some form of interference 50% of the time - or more?

The ABA knows that by defining the measurement tests in this manner an entirely new opportunity for terrestrial broadcasters to challenge the applications has been created. One suspects with justification these new refinements were created by an engineer or engineering team paid or heavily encouraged by the terrestrial broadcasters.

"By the time the terrestrial broadcaster has filed multiple challenges against the application, either the satellite TV broadcaster who has to approve it before filing with the ABA or the individual making the tests or the home owner have given up the fight - that's how I see it coming down" observes a well known equipment distributor.

In effect, Aurora is a victim of its own success. "Too many" applications for Aurora systems have been filed in the first year at the ABA and what we see here is a deliberate attempt to shut down the flow of applications by making the process too difficult and too easily micro-managed by terrestrial



broadcasters. There is more. Although Aurora is classified as a "free to air" (as in, no subscription fee) service to qualified viewers, by making the satellite broadcaster a pivotal junction in the approval procedure, we have elevated Central 7, Imparja, GWN and WIN to a new status that is almost identical to Foxtel and Austar pay-TV operations. You don't get to view their services unless they approve and in lieu of

collecting monthly revenue for serving the viewers, they are allowed to pass judgement on whether individual viewers are up to their standards. It is pay-TV without pay - *for the time being*. Can collecting annual or monthly fees be far behind? In the end - it will be the "time element"

How long does it take to get a permit for a firearm? A driver's licence? A passport? A permit to build a house?

Why should something as common to life as being able to enjoy quality television reception require a bureaucratic blizzard of paperwork, a trail for that paperwork that wanders over half of Australia, and months of waiting time for the application to be processed? The answer: Terrestrial broadcasters don't want the Aurora commercial service platform to grow - anymore, *at all*. The ABA is either an unwitting accomplice or a willing backer of this plan and thus we have a procedure that could have only been created by a bureaucrat doing the bidding of a master.

They hope and expect you will tire of the wait, that your satellite system customer will lose interest in the project, that you will have money invested which you cannot collect on for such a long time that as a business you become bankrupt. In short, you, and your customer, will go away. *Without satellite reception.*

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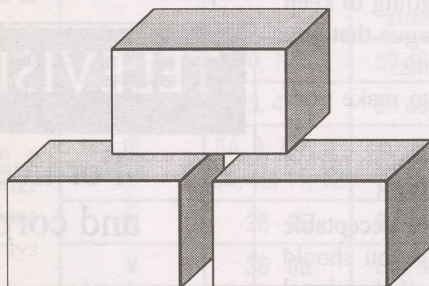
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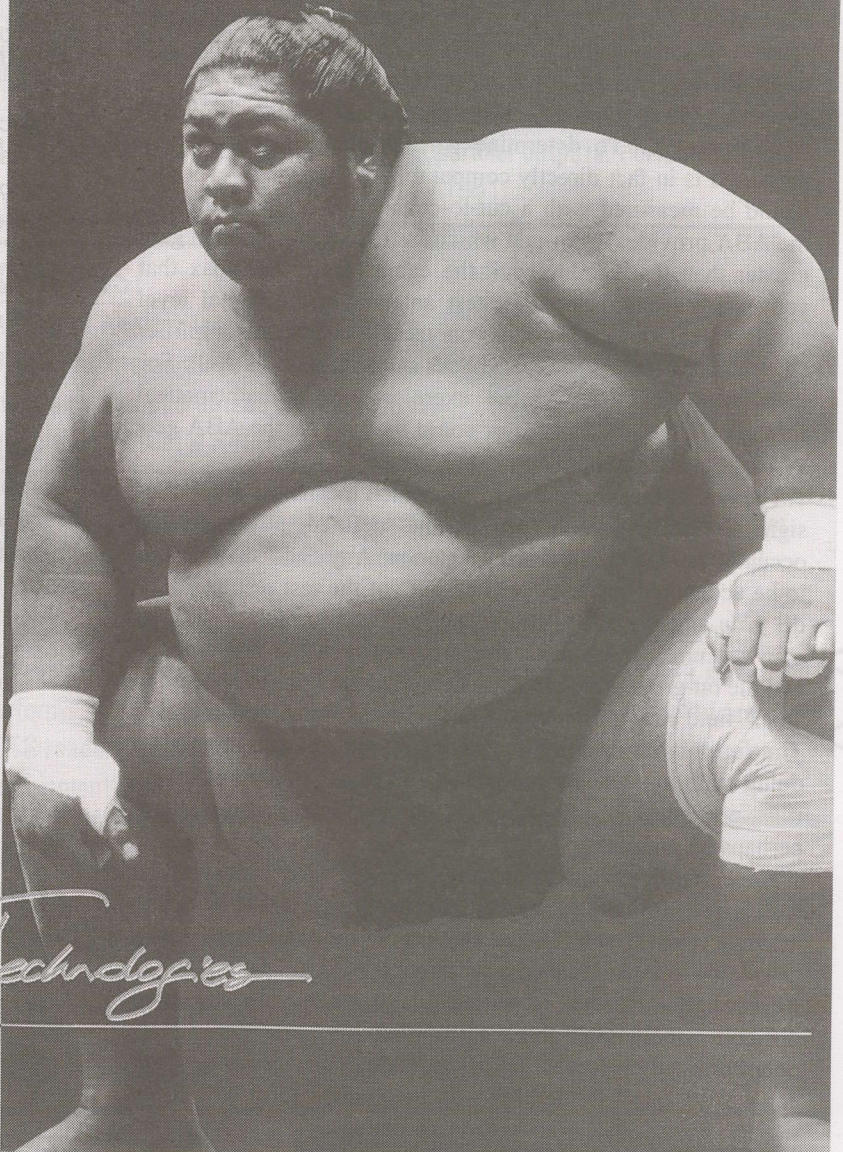
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**STRONG** *Technologies*

# Only a bureaucrat could have created this one

The ABA suggests, "The field strength of a television service is measured using a typical consumer antenna of known gain, suitable for reception of the service being measured. The antenna is raised to a 10 metre height and rotated (oriented) for the best reception."

"The reception assessment, measured results and factors used in the calculation of the received field strength need to be recorded (see form, p. 10 here) and forwarded (first to the satellite broadcasters - see list p. 14, and then ) to the ABA."

"The field strength is either read directly from a field strength meter, into which the antenna gain and system losses have been entered as an antenna calibration factor (often known as the k-factor), or, calculated from the measured terminal voltage and system gains and losses. A spectrum analyser can be used to measure terminal voltage as the peak sync tip of the vision carrier of the television service."

### The k-factor

What they are trying to explain in their convoluted engineeringese is that the table appearing on p. 14 here ("Minimum median field strength") is the signal level that would be measured on a cut-to-channel "dipole antenna" (SatFACTS #71, 72, 73). A dipole antenna has no gain, is "statistically repeatable" for the same results each time, and oh-by-the-way has a directional pattern that is about as wide as a barn door (typically 120 degrees azimuth at the 3 dB "gain" points). To determine whether the signal level you measured is in fact directly comparable to the signal level that would be measured with a cut-to-channel (0 dB gain) dipole, the ABA provides a formula which backs out any antenna gain greater than 0 dB, adds back the cable loss in the coax that connects the ten metre high test antenna to the signal level measurement device, and if you used a masthead amplifier when making measurements, backs out that gain as well. For their turning a very simple exercise into a mathematical formula which only its creator could be fond of, the ABA gets a "10." For ease of application they rate a "1."

The key in their formula is "/m" which means the amount of signal actually present within the defined physical area occupied by the test receiving antenna. Any "added" gain has to be accounted for and "washed out" of the test results - a 10 dB gain antenna has to be reduced in their formula to a 0 dB gain antenna while coax cable loss between the test antenna and the on-ground meter has to be added back in (to reflect the "real" field strength present up there at the antenna terminals). The formula looks complicated if you are not accustomed to doing math in your normal routine - it is not (although the way it is presented by the ABA is cumbersome and tedious - perhaps on purpose).

You can do this (and accurately complete their form) without losing sleep or hiring a mathematician (see our short course to the right) even if you flunked algebra in school and never use a calculator to even balance your cheque book. If the ABA - as we strongly suspect - is setting out to make your life more difficult, including this calculation is an unfortunate opportunity they have taken to make you screw up your application form. Remember - an incomplete form will sit on somebody's desk for months without action.

### The ABA's Formula - Calculating field strength

$$E = V + K$$

Where: **E** is the field strength in dBuV/m;  
**V** is the terminal voltage of the vision carrier in dBuV (using a peak reading - sync tip detector)  
**K** is the antenna factor for the channel measured

The antenna factor, **K**, is frequency dependant and incorporates all of the gains and losses in the system:

$$K = F - Ga - Gd + Lc - Z - C$$

Where: **F** is the measurement frequency in dB relative to a 1 MHz reference ( $F = 20\log[f(\text{MHz})]$ )

**Ga** is amplifier gain in dB (if amplifier is used)

**Gd** is antenna gain in dB relative to a cut to channel dipole (a dipole is 2.1 dB more than the gain of an isotropic source - see SF#68, p. 12)

**Lc** is loss of the cable from antenna to instrument, in dB, at the frequency of the test

**Z** is the system impedance in dB; typically  $Z = 10\log(75)$  which equals 18.8

**C** is a constant, 14.9 dB, applied to correct for the units used and converts the signal voltage to a field strength (the signal measured with a signal level meter is NOT the same as the field strength)

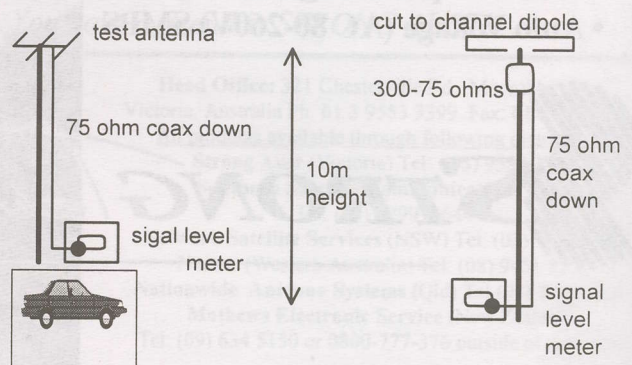
Their example: a channel 9 service with no amplifier, 3 dB of cable loss and 10 dB of antenna gain - the K-factor would be:

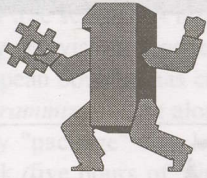
$$K = 20\log(196.25) - 0 - 10 + 3 - 18.8 - 14.9$$

$$K = 5.2 \text{ dB}$$

So what do you do with this calculation? Use it to complete box-line 10 on "Services proposed for reception" form appearing here on page 12.

Intimidated by log function calculations? No need. Go to Dick Smith and spend \$34.95 for the Casio FX82 Scientific Calculator which has memory positions into which you can load the formula for one or two button answers every time!





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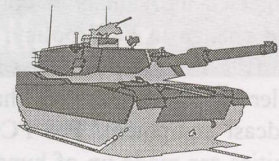


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## memo

to the membership from your  
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## SPACE Pacific

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### FM in your future?

For almost as long as there has been radio broadcasting, it cost big bucks to start-up a radio station and even more bucks to keep it operating until advertising support catches up with operating costs. Some creative people have built their own stations from scratch (in fact - when radio began in the early 1920s, all stations were home built until Bell Telephone began building and selling commercial AM radio transmitters in 1923) but that has become progressively more difficult as technology has gone to solid state and governments have demanded increasingly more stringent operating specifications from transmitters before they can be placed into commercial service. Australia and New Zealand, for example, like most Asian countries, require that an FM transmitter be "approved" which is bureaucracy for "having completed a series of tests to determine the transmitter will not create interference to other users of the radio spectrum." Generally, an FCC (Federal Communications Commission - USA) "type approved" FM or AM transmitter will sail through such approvals in other countries simply because the USA testing system is very demanding.

This has kept transmission equipment prices high, and this in turn has kept the broadcasting family confined to financially well heeled individuals or corporations with big reserves. A recent change in FCC policy, allowing (FM) stations with as little as 1 watt to be licensed to serve "neighbourhoods" or smaller rural communities, has changed all of the rules of broadcast equipment. The FCC's concept is that in America, big cities are made up of hundreds or thousands of individual neighbourhoods, and as often as not a neighbourhood is ethnic (Italian, Spanish, Greek or some other group). Big-time radio stations operating with thousands or tens of thousands of watts of power cover the full city and because of their expensive

equipment and high profile operations must cater not to an Italian neighbourhood but rather to the city as a whole. "Neighbourhood" or "community" radio is an attempt to put broadcasting back in the hands of common folks who have messages of importance not for an entire city but rather for a segment of a city or metropolitan region.

This new "LPFM" (low power FM) world offers some innovative, new, financially possible opportunities for islands in the Pacific, rural towns in larger countries as well as the ethnic or religious neighbourhoods that make up metropolitan areas. It is now possible, practical, to create an entire LPFM station complete down to the last microphone, antenna, connector and piece of cable for under US\$2,500. Moreover, because an entirely new family of LPFM equipment has been designed specifically for this level of broadcaster, the technology is not only very current (as current as the most recent discoveries) but also extremely non-technical to put into practice. You no longer have to be rich, or be a technical guru, to build and operate a "community FM station."

So how might you programme your own FM station? It happens that with your satellite (DTH) experience, you are probably over qualified to begin with. English language programming is plentiful in a radio format, and most of it is available to you through a satellite dish and receiver, to be "plugged into" your LPFM station at absolutely no cost to you for the programming! World Radio Network (WRN), transmitting within the European Bouquet (AsiaSat 2), is one prime example. This 24 hour per day all-English service features the very best of international radio broadcasters from North America (USA, Canada), Europe (Switzerland, France, Germany, Holland, Sweden and others). A piece of shielded wire running from the audio output on a satellite receiver to the input of an LPFM transmitter and you are on the air with

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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) each year (September 27 - 29 in Melbourne - 2001 - where you will be able to actually build a low power FM station during the trade conference to take home and put on the air!). 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. Page space within SatFACTS is donated each month to the trade association without cost by the publisher.



static free service 24 hours a day! In the ethnic world, virtually every television broadcaster within and separate from the European bouquet has companion same-language (ethnic) *radio programming* riding along on the same transponder. One could easily "package" five hours per day of Italian, four hours of Greek, five hours of Vietnamese and so on into a service that was tailored to meet the needs of the community being served.

This gets you on the air with no real cost except for the initial equipment and a small amount of money per month for electricity. Once on the air, you can then learn how to become a professional "local" broadcaster as well, first by adding commercial messages from local businesses, later by expanding into a few local shows each day. Commercial messages (advertising) produces revenue and your "community station" just turned into a business. In fact with the transmitting antenna on a mast above your roof and the transmission equipment on a shelf in your shop or even bedroom, you could actually make money the first month simply because your overhead is virtually zero.

Moreover, by lashing together an FM radio receiver and a second transmitter at a new location some distance from the first transmitter, you would be able to create a "chain" of stations to cover an ever expanding geographic region. The receiver picks up (off the air) the first transmitter, plugs the received programming into the second transmitter and you are off and running in a new direction.

One of the primary motivations behind the development of LPFM stations in the USA was the rapid growth of unlicensed, "pirate" stations there; several thousand plus. The FCC finally decided it could not beat this popular revolution and created a new radio service to serve their needs. And now this technology is being exported to the rest of the world.

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**ZINWELL** LNBf (C. Ku)

**IMAGE** LNBf

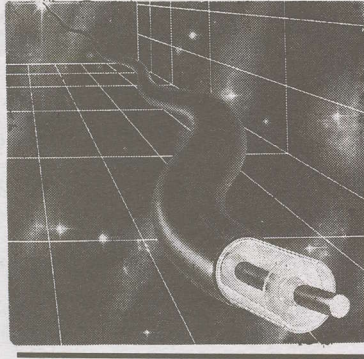
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# The CABLE Connection



## Solar outage - noise again

Planet earth has a natural "tilt" with reference to our sun and this tilt creates seasons in the earth's lower atmosphere. On or about June 22 the sun is most directly over the northern hemisphere creating the longest daylight-day of the year for Asia, America and Europe. On that same day, the southern hemisphere has the shortest daylight-day of the year. Six months later, on or about December 22nd, the roles are reversed.

In between those two dates (called respectively summer and winter solstice in the north, winter and summer solstice in the south) the position of the sun in your sky each day is constantly moving, swinging like a pendulum between the two solstice limits. If you lived on the earth's equator, the sun would be directly overhead (straight up with no apparent "north" or "south" bias) twice each year because of this pendulum motion: On or about March 21, and again on September 22. These two dates are called the equinox periods.

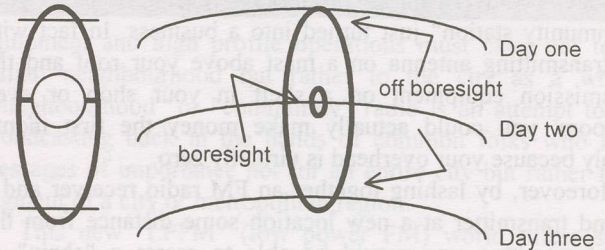
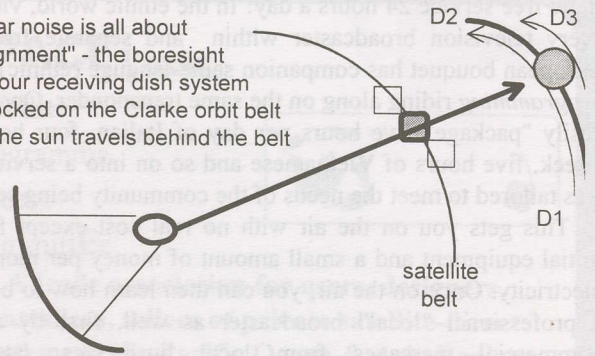
Your satellite dish, whether fixed on a single bird or tracking through the Clarke belt, has its "boresight" (the cone of maximum reception sensitivity - dish gain) aligned with a spot some 36,000 kilometres directly above the earth's equator because this is where the satellites reside. So we have three elements here - two of which do not move (your satellite's boresight relative to the Clark belt, and the Clarke belt itself) and one of which does move (the day to day position of the sun relative to the equator). It follows that at some point over a full year, the sun's position will be not only directly above the equator but also directly above (beyond) the satellite.

When this happens, the boresight of the dish "sees" the satellite and it also "sees" the sun as well, with the sun sitting behind the satellite and approximately 93 million miles further "out."

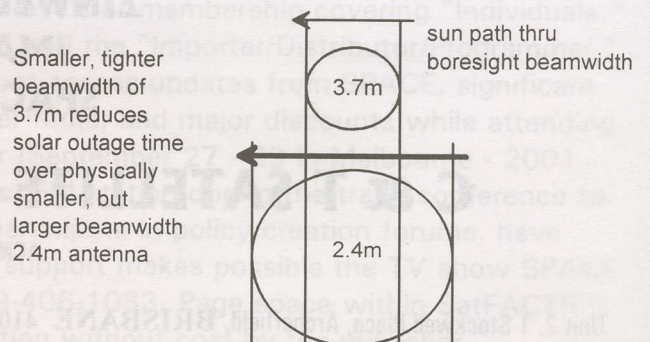
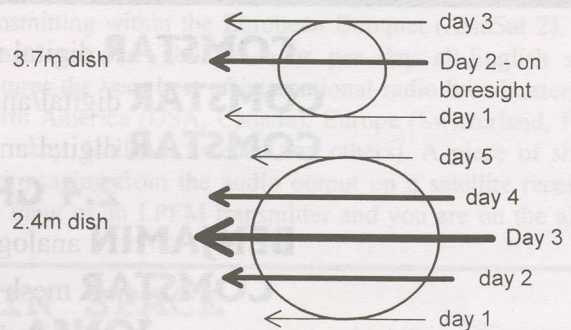
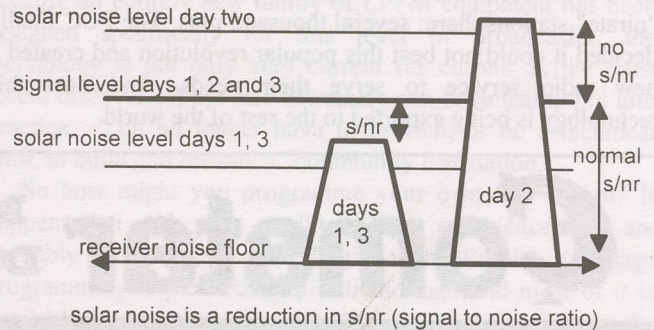
The sun's normal activity is the burning of gases and the slow decay of gaseous elements. When gases burn they become very "excited" (as well you would too if subjected to the same heat). Gases that ignite and burn, or change composition, give off (radiate) radio frequency noise. Think of the sun as a giant (humungus) static noise generator. This noise is extremely powerful and very broadband in frequency coverage. This particular type of noise is called "white noise" because it has no centre frequency, no apparent "modulation" and it is quite even in signal strength over a very large spectrum (essentially from AM radio through the upper microwave ranges).

When a satellite dish "sees" the sun the solar noise mixes with the satellite signal. The noise level is more or less constant, but the sun's position relative to the boresight of the dish is not. A larger dish (3.7m) has a tighter boresight and

Solar noise is all about "alignment" - the boresight of your receiving dish system is locked on the Clarke orbit belt as the sun travels behind the belt



The geostationary belt is "fixed" and your dish's boresight is also fixed. The only moving element is the sun's track across the sky during equinox periods.



"sees" the sun for a shorter period of time than a 2.4m dish with a larger boresight pattern.

The boresight pattern is a "circle" telescoped into space. The further from the dish the pattern "rests" the larger the area it includes (like water spilling on the sidewalk and slowly spreading out to cover a larger area).

If you reside on the equator, the satellites are dead overhead and your satellite dish points "straight up." If you live south of the equator, your satellite dish points up *and north* while living north of the equator means your dish points *south and up*. These are important elements determining *when* you experience solar noise. Generally speaking, on the equator the dish aligns with the satellite and the sun on or around March 21 and September 22. The further south you live from the equator, or the further north, the greater the "date offset" from being on the equator. In March, "solar alignment" occurs for those north of the equator prior to the 21st but for those south, after the 21st. In September, a reversal; living south gets you the alignment before September 22, living north produces it after the 22nd. Remember the sun's position is moving from south to north in March and north to south in September (thus explaining the offset in dates).

There will be one day out of 3 or 5 or more when the sun's pathway (moving from east to west across your sky) is squarely in the middle of your boresight pattern. This will be the day of maximum solar outage - the strength of the sun's noise will be highest (because your dish is pointed squarely at the sun), the period of time during which the solar outage occurs will be longer than for days either side of the peak day. You can see why this is so with the diagrams on the preceding page. When the sun's path moves through the centre of your boresight, it is passing through a "circle" pattern in space

which is widest in the middle. The wider the circle, the longer the noise lasts and the stronger the noise is at its peak.

Solar noise at C-band is slightly stronger than at Ku band. But our Ku antennas tend to be smaller which means the boresight pattern as seen from space is much larger. The effect is you have a shorter outage period on C-band but a stronger dose of interference there.

Solar noise, white noise, is randomly excited molecules. It begins to be seen on an analogue picture as a modest increase in sparklies (noise bits). If it is the first day, the noise bits are very modest and because the "boresight circle" is not very wide across, it lasts perhaps a few minutes at most. But on day 2, the sun's pathway is through a wider portion of the circle which means a longer outage with greater strength. On the peak day, the longest outage and the strongest signals - then descending over the next few days just as it began.

Digital signals see white noise as interference and when the noise bits override enough of the signal bits, the image locks up just as if you had yanked the downline cable out of the IRD input. Leave it alone - as the sun passes through the boresight circle the digital image will begin to reform then lock and return to its pre-outage quality.

If you have access to a spectrum analyser, it can be educational and amusing to "watch" the sun cross the boresight of the dish. The noise floor at the bottom of the display begins to rise, you can see the signal to noise ratio (s/nr) erode as the analogue or digital signal struggles to function.

The smaller the dish - the longer the outage over more days. On peak outage day, it may last anywhere from 3 to 15 minutes depending upon the "size" of the boresight pattern in space. Coming up late March and early April for dishes to the south, and early to mid March for dishes in the north!



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# SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 February 2001

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	
Ap2/76E	TVB8 +	3849/1301H	4	3/4	13(.238)	
	AXN	3920/1230H	up to 8	7/8	28(.340)	
Them3/78.5	SkyChAust	3695/1455V	up to 3	3/4	5(.000)	
	MRTV-Mynr	3666/1484H	1	3/4	6(.000)	
	Mega +	3640/1510H	12	3/4	28(.056)	
	Mahar/DD1	3600/1550H	up to 8	3/4	26(.661)	
	TRT +	3551/1600H	4+ TV, radio	3/4	13(.330)	
	Greece TV	3430/1720H	1	3/4	3(.225)	
	PTV2	3420/1730V	1	3/4	3(.366)	
	TV Maldives	3412/1738V	1	1/2	6(.312)	
Insat 2E/83	Thai Global+	3425/1725V	up to 7?	2/3	27(.500)	
	DD2	3910/1240V	1	3/4	5(.000)	
ST1/88E	DD tests	3929/1221V	1	3/4	5(.000)	
	Taiwan Bqt	3509/1641H	13	3/4	23(.450)	
Yam1/02/9	Tumen TV	3578/1572L	1+radio	3/4	4(.355)	
	TV6 Bqt	3645/1510L	3(+)	3/4	28(.000)	
MeS 1/91.5	Malay. TV3	4147/1004H	1	3/4	7(.030)	
As2/100.5E	Euro Bouq	4000/1150H	6TV, 21r	3/4	28(.125)	
	Reuters	3909/1241H	1	3/4	5(.632)	
	Hubei/HBTV	3854/1296H	1	3/4	4(.418)	
	Hunan/SRT	3847/1303H	1	3/4	4(.418)	
	Guan./GDTV	3840/1310H	1	3/4	4(.418)	
	In. Mongolia	3828/1322H	2	3/4	8(.397)	
	APTIN A-O	3799/1351H	1	3/4	5(.631)	
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)	
	Reuters/Sing.	3775/1375H	1	3/4	5(.631)	
	WorldNt/US	3764/1386H	1 + 20 radio	3/4	6(.100)	
	Liaonin/Svc2	3734/1416H	1	3/4	4(.418)	
	Jiangx/JXTV	3727/1423H	1	3/4	4(.418)	
	Fujian/SETV	3720/1430H	1	3/4	4(.418)	
	Hubei TV	3713/1437H	1	3/4	4(.418)	
	Henan/Main	3706/1444H	1	3/4	4(.418)	
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27(.850)	
	As2/100.5E	Feeds	4086/1064V	1	3/4	5(.632)
		TVSN	4033/1117V	1	3/4	4(.298)
		Jilin Sat TV	3875/1275V	1	3/4	4(.418)
		Beijing TV	3864/1286V	1	3/4	4(.418)
		HeiLongJian	3834/1316V	1	3/4	4(.418)
		JSTV	3827/1323V	1	3/4	4(.418)
Anhui TV		3820/1330V	1	3/4	4(.418)	
ShaanxiQQQ		3813/1337V	1	3/4	4(.418)	
Guan/GXTV		3806/1344V	1	3/4	4(.418)	
Fashion TV		3795/1355V	1	3/4	2(.533)	
MSTV		3791/1359V	1	3/4	4(.340)	
Myawady		3766/1384V	1	7/8	5(.080)	
Saudi TV1		3660/1490V	1 (?)	3/4	27(.500)	
As3S/105.5		Zee bouquet	3700/1450V	9TV	3/4	27(.500)
		ETV Bangla.	3749/1401V	1TV	3/4	4(.340)
		Arirang TV	3755/1395V	1	7/8	4(.418)
	Now TV	3760/1390Hz	2	7/8	26(.000)	
	Star TV	3780/1370V	17(+TV)	3/4	28(.100)	
	Star TV	3860/1290V	14(+TV)	3/4	27(.500)	
	Star TV	3880/1270H	12(+TV)	7/8	26(.850)	
	CNNI	3960/1190H	4(+TV)	3/4	26(.000)	
	Star TV	4000/1150H	7(+TV)	7/8	26(.850)	
	Sun TV	4095/1055H	1	3/4	5(.554)	
	CCTV bqt	4115/1035H	4(+TV)	3/4	19(.850)	
	Zee Bqt #2	4135/1015V	4(+TV)	2/3	15(.000)	
	Indovision (S-band)	2.536, 2.566, 2.596, 2.626	33(+TV)	7/8	20(.000)	
TKom1/108	tests	3580/1570H	1+TV	3/4	20(.000)	
C2M/113E	TPI	4185/965V	1	3/4	6(.700)	
	Ch NewsAsia	4071/1079H	3	3/4	14(.060)	
	Anteve	4055/1095V	1	3/4	6(.510)	
	Space TV	4000/1150H	11TV, radio	3/4	26(.666)	
	ETTV Shop	3790/1360H	1	3/4	3(.050)	
	C Net Taiwan	3760/1390H	11TV, radio	3/4	26(.666)	

Receivers and Errata
PowVu, CA
Tests, promos, <b>up to 5 chs FTA</b>
Finally settled here from As2
erratic service
Mega Cosmos here; new Sr
USA religion chs, CMM music FTA
3 Angels USA, Ch of Hope, + 9 radio
Newly reported SCPC 01/01
FTA, not seen Australia
FTA (reaches SE Australia)
FTA
SCPC, testing MPEG-2; OK E. Aust.
SCPC, weaker than 3910 above
MCPC, <b>sometimes FTA</b> , 2 adult chs
unlikely south of eqtor
new Sr; unlikely south of eqtor
CA but occ. FTA
FTA (TV5 teletext); now includes RTPi
occasional feeds, <b>some FTA MPEG2</b>
FTA SCPC, teletext
FTA SCPC, teletext
FTA SCPC, radio APID 81
FTA: #1 Mongolian, #2 Mandarin
mostly 4:2:2 SCPC (news feeds)
Mostly CA; <b>some FTA</b>
<b>FTA &amp; CA</b>
FTA; up to 20 radio channels
FTA SCPC, radio APID 256
FTA SCPC, teletext, radio APID 81
FTA SCPC, + radio APID 80
FTA SCPC, radio APID 80
FTA SCPC, + radio
Thru TARBS Aust, subs now OK
FTA SCPC feeds
Occ. <b>FTA</b> , not same as Aust. version
FTA SCPC, + radio
CA and <b>FTA</b> SCPC, not full time
FTA SCPC
FTA SCPC, + radio
FTA SCPC
FTA SCPC, radio APID 81
FTA SCPC, radio APID 257
FTA SCPC, reload VPID 308, APID 256
FTA SCPC
FTA SCPC - difficult to load
FTA MCPC
Mediaguard CA, <b>ch 8 FTA</b>
PowVu but FTA at this time
FTA SCPC; reported audio problems
also check 3900/1250Vt, same #s
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DV211, Zenith) + <b>1 FTA</b>
PowVu CA; some <b>FTA</b> feed channels
NDS CA + <b>info card FTA</b>
"History Channel" testing SCPC
was analogue; now FTA MCPC
New bqt, Zee News + here
NDS CA using RCA/Thomson, Pace IRDs
CNBC, others in FTA test
FTA SCPC; NT only
CH News Asia FTA; VPID 33, APID 34
FTA SCPC; NT only
CA, sometimes <b>FTA</b>
FTA SCPC
CA, subs available <b>-10 radio</b> typ. <b>FTA</b>

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(C2M/113	<b>RCTI</b>	3475/1675H	1	3/4	8(.000)
JcSat3/128	Miracle Net	3990/1160V	3 up to 6	5/6	22(.000)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)
MeaSat 2	Astro Mux	11.106H (+)	up to 7TV	7/8	30(.000)
	<b>Mediasat</b>	11.540H	occ 1+TV, tests	5/6	30(.800)
Op B3/156	Mediasat	12.336V	5TV, 3ra, Inter.t	2/3	30(.000)
	Aurora	12.407V		2/3	30(.000)
	Aurora	12.532V	Inc Zee, ATV	2/3	30(.000)
	Aurora	12.595V		3/4	30(.000)
	Aurora	12.657V	6CA testing	2/3	30(.000)
	Aurora	12.720V		3/4	30(.000)
	Austar/tests	12.376H		3/4	29(.473)
	Austar/Foxtl	12.438H		3/4	29(.473)
	Austar.Fxtl	12.501H		3/4	29(.473)
	Austar/Foxtl	12.564H		3/4	29(.473)
	Austar/Foxtl	12.626H		3/4	29(.473)
	Austar/Foxtl	12.688H	(some FTA ra)	3/4	29(.473)
Op B1/160	<b>ABC NT fd</b>	12.260V	1TV, 3 radio	3/4	5(.026)
	<b>ABC feeds</b>	12.317H	1	3/4	6(.980)
	<b>Central 7</b>	12.354H	1TV	3/4	3(.688)
	<b>Imparja mx</b>	12.360H	1	3/4	5(.424)
	<b>Mediasat#2</b>	12.404Vt	5+?	2/3	30(.00)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(.500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)
	Sky NZ	12.644/671V	9TV	3/4	22(.500)
PAS8/166	TARBS	12.526H	12+ TV	3/4	28(.067)
	TARBS2	12.606H	6+TV	3/4	28(.067)
	JEDI/TVB	12.686H	11+ TV	3/4	28(.124)
	Boomerang	12.725H	5 TV	7/8	25(.728)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(.125)
	NHK Joho	4065/1085H	7TV, 1 radio	3/4	26(.470)
	Japan Bqt	4050/1100H	2	3/4	12(.000)
	ESPN USA	4020/1130H	7+TV, data	7/8	26(.470)
	Discovery	3980/1170H	8 typ.	3/4	27(.690)
	CalBqt/Pas8	3940/1210H	up to 8TV	7/8	27(.690)
	<b>CNBC HK</b>	3900/1250H	up to 7TV	3/4	27(.500)
	Filipino Bqt	3880/1270V	up to 9 TV	3/4	28(.700)
	<b>Feeds</b>	3854/1296H	1	3/4	6(.110)
	Lakbay TV	3813/1337V	1	3/4	5(.044)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(.632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(.000)
	MTV	3740/1410H	8	2/3	27(.500)
PAS2/169	Pv Bouquet	12.290V	2+ TV, radio	2/3	27(.500)
	WA PowVu	12.637(.5)V	4TV, 8 radio	1/2	18(.500)
	HK PowVu	4148/1002V	up to 8	2/3	24(.430)
	Fox Bouquet	3992/1158V	8TV/data	7/8	26(.470)
	<b>Feeds</b>	3966/1184V	1	2/3	6(.620)
	<b>Feeds</b>	3957/1193V	1	2/3	6(.620)
	<b>Feeds</b>	3934/1216V	1	3/4	10(.850)
	<b>Feeds</b>	3912/1238V	1	2/3	6(.620)
	<b>Feeds</b>	3898/1252V	1	2/3	12(.000)
	<b>Middle East</b>	3836/1314V	4 typ	3/4	13(.331)
	<b>Feeds</b>	3803/1347V	1	2/3	6(.620)
	BBC +	3743/1407V	3	3/4	21(.800)
	<b>CCTV Pv</b>	3716/1434V	5 typical	3/4	19(.850)
	<b>Feeds</b>	4040/1110H	1	3/4	10(.850)
	Mbc/Korea	3981/1169H	1	3/4	2(.982)
	<b>7th DyAdv</b>	3872/1278H	1	3/4	6(.620)
	<b>Feeds</b>	3868/1182H	1	2/3	6(.620)
	<b>Feeds</b>	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)
	occ feeds	3854/1296H	1	2/3	6(.620)
	occ feeds	3794/1356H	1	3/4	5(.560)
	occ feeds	3785/1365H	1	3/4	5(.560)

V832 A 833  
V  
V1280  
V1024  
A  
A 1281  
A 1025

Receivers and Errata
FTA SCPC, Australia OK
PowVu, some FTA (ch # 1,3)
CA & FTA Ntsc: Japan, Taiwan
Aust east coast beam; also 11.168Hz primarily data
CA, some FTA, Herbalife
cvrs Aust, NZ 90 cm; CA (*)
cvrs Aust, NZ 90 cm; CA (*)
Aust only; * - smart card p. 28
cvrs Aust, NZ 90cm; CA(*)
Aust only; * - smart card p. 28
Austar I-TV tests
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
active again; may move to 12.280
also 12.326, 12.335; ex PAS8 Ku
FTA, purpose here unknown
FTA; recent freq shift
FTA & CA
NDS CA, subscription available NZ
NDS CA, subscription available NZ
NDS CA, subscription available NZ
TPG /Eurodec CA, occ. FTA
Tests, inc. ESPN, see TARBS above
Irdeto CA, some FTA tests
CA, subs avail Aust, CNN FTA
PowVu CA
PowVu CA & FTA; subscription avail
PowVu CA; NTV Int, Fuji TV
PowVu CA; ch 11 DCP-CCP bootload
PowVu/CA (some audio FTA)
PowVu CA & FTA (EWTN/EB Net)
FTA at this time
Some FTA; also 4040V, 27.686, 7/8
occ. feeds, inc. Mediasat Sydney
(Filipino) sometimes FTA; PowVu was As2; PowVu CA
PowVu, CNN now CA
CA; #7,8 FTA feeds
PowVu CA, WIN, ABC NT
PowVu CA, WA only - D9234
PowVu CA; some FTA
Pv, CA/FTA (FTA ch 3 only)
PowVu (FTA) occ feeds
PowVu (FTA) occ. feeds
PowVu (FTA) occ. feeds
PowVu(FTA) occ. feeds
PowVu (FTA) occ. feeds
FTA, have tested CA; was 3778V
PowVu (FTA) occ. feeds
<b>BBC FTA</b> , others CA usually
PowVu FTA; # pgm chs varies
PowVu (FTA) occ. feeds
was FTA, now CA
Sat, Sun 0930UTC typ
FTA (occ. sport feeds)
FTA-typ. NTSC-occ. sport, shuttle
(PowVu) CA+FTA
(PowVu) occ. feeds
also SR 5.600, some FTA
also Sr 5.600, some FTA

## SatFACTS Digital Watch: Supplemental Reference Data / February 2001

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	occ feeds	3776/1374H	1 typ	3/4	5(.560)
	Feeds	3767/1383H	1	2/3	6(.620)
	Satcom 1-6	3743/1407H	up to 5	7/8	19(.465)
<b>I702/176E</b>	AFRTS	4177/973LHC	8TV, 12+radio	3/4	26(.694)
<b>I701/180E</b>	TNTV	11.060V	9	3/4	30(.000)
	Tele Fenua	11.168V	4 (?)	3/4	10(.100)
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)
	TVNZ	4195/955RHC	1	3/4	5(.632)
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)
	TVNZ	4178/972RHC	1	3/4	5(.632)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)
	TVNZ/feeds	4161/989RHC	1	3/4	5(.632)
	RFO-Canal+	4086/1064L	4TV, radio	5/6	13(.347)
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)
	TVNZ feeds	4044/1106R	1	3/4	5(.632)
	NZ Prime TV	4024/1126L	1	2/3	6(.876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(.447)
	Ioarana	3772/1378L	1	3/4	4(.566)
	TVNZ	3846/1304R	1	3/4	5(.632)
	10 Australia	37691381R	4	7/8	20(.000)

Receivers and Errata
occ feeds, typ FTA; also Sr 5.600
PowVu (FTA) occ feeds
use unknown at this time
PowVu CA
eastern spotbeam, pay TV tests
eastern spotbeam, pay TV tests
Mediaguard CA, 1 ch FTA
DMV/NTL early version, occ feds, typ ca
DMV/NTL early version, occ feds, typ ca
DMV/NTL early version, occ feds, typ ca
DMV/NTL early version, occ feds, typ ca
DMV/NTL early version, occ feds, typ ca
east hemi 20.5 dBw, to be 15.5 soon
DMV/NTL early version, occ feds, typ ca
SCPC, mixed CA and FTA feeds
PowVu CA; Auckland net feeds
CA, Leitch encoded
FTA SCPC; East Hemi Beam-Tahiti
SCPC, mixed CA & FTA, feeds
PowVu CA & FTA; #3 TBN

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

**ASTRX D 1000CI.** SCPC, MCPC, two CAM slots, auto search routine. Review SF#78. LTG Mason 61-3-9457 1222.  
**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. Strong Aust 61-3-9553-3399.  
**Strong 4800.** SCPC, MCPC, embedded Irdeto+ CAM slots, functions with Aurora. Strong Aust 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 February, 2001

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BIRD/ Location	RF/IF & Polarity	Service	Errata
I703/57E	3808/1342R	Udaya TV	
	4052/1098R	WorldNet	VOA subers.
	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	off air???
	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 subers
	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
	3980/1170V	Zee TV Asia	(to shut down)
	4020/1130V	Sahara TV	6.2, 6.8
	4060/1090V	IndusVision	6.6, 7.2
	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	
	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	RTR Moscow	+/- 3 deg inc.
Gorizont 33	3675/1475R	tests	+/- 1 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	3920/1230V	unknown video	
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

## MARCH 2001 - The "What is legal" conundrum?

Some say the date is March 1 - others say it is March 14th. What is certain is that sometime in March, all of the rules change relating to piracy satellite equipment in Australia. During January, a number of Austar and Foxtel piracy card creators and sellers were busted by authorities; sections of Queensland, larger areas in NSW were hit by card-cops who closed down hundreds (some say thousands) of illegal cards and in the process nabbed a handful of apparently busy piracy card sources. The

Newcastle Herald (newspaper) reported:

"A black market in pirated Sim cards has operated unchecked in the region. The cards are inserted into a pay-TV subscriber's set-top decoder box and allow access to as many 70 satellite channels for the basic 20-channel package (price). Pirated Sim cards were rendered useless, leaving subscribers who paid as much as \$250 for the pirated service with just the basic channels or no channels at all."

Neither Foxtel nor Austar spokespersons showed any sympathy for the card users. "The simple fact is they were receiving a service they were not entitled to receive - this is no different than any other sort of theft."

Well, almost no different. This theft takes place inside of one's home, using a piece of plastic which somebody has turned from "smart" to "dumb" using a clever software routine. What a card writer can program into a card, either directly to the card or through the satellite data stream, another card writer can reprogram. The card pirates were apprehended under the NSW Crimes Act, and newspaper reports say "thousands of cards, card writing equipment and computers were confiscated" by the co-ordinated raids.

Austar's spokesman told the newspaper, "There are smart people who manage to modify cards and that is why we keep changing the codes. It is a cat and mouse game."

Smart? How about clever or ingenious. A smart person would have (1) never sold modified cards in the first place, or, (2) not have been caught doing so. The NSW prosecutions were done under a state crimes act and all of that changes in March when a federal law comes into effect.

We have written our (SatFACTS) concerns about the legislation previously (SF#72, p. 1) and devoted considerable web space to the topic. We were concerned last August that the broad language of the Act (Copyright Amendment -1999/digital agenda) could be interpreted by a zealous prosecutor to include firms that import and sell any IRD that has a CAM slot or embedded Irdeto capability. This concern hung on the act's use of the word "facilitate" which the Concise Oxford Dictionary defines as, "(to) make easy or less difficult or more easily achieved." IRD importers were concerned, are concerned today, that by having CAM-capability, or Irdeto-embedded, the receiver they sell is "less difficult" to use for piracy applications.

In fact, this question has never been clarified - on purpose. The act came into being to provide law enforcement with the tools to curtail pay-TV piracy. *Spot on.* The Act tried to describe every possible way that pay-TV could be circumvented but as we all know, a new way is created every month or week someplace in the world. So a number of areas were left vague on purpose - to give law enforcement the tools it would need to adapt to the changes in the piracy world. "Facilitate" was included because by definition it leaves open a door for enforcement when other doors are closed.

What bothers people who work in this tiny industry but who have no connection with piracy is that vagueness. "Is it illegal to possess" (as long as you do not share or sell) piracy equipment? "What about people who once did piracy but who are now clean - can the law be applied backwards, retroactively?" Or, "Is it illegal to repair a card writer owned by someone else - is that illegal?" What about, "Is it illegal to operate or contribute to a web site which includes information about the technology of piracy?"

It was this last question that caused a commotion at the Aussat web site. Quite a ruckus followed when a site moderator was one of those named as a participant in the world of piracy card supply in the Newcastle raids. The site's administrator then posted a notice:

"Due to the digital copyright amendment bill approaching in 4 weeks, Aussat has decided to remove ALL forums, topics, references to cards, loggers, emulators etc. No discussion or topic may be opened on these subjects."

To some, it all smacks of legislation adopted to keep locksmiths in line. That act made it an offence to apply or teach locksmith skills if there was an intent to use that information for an illegal act. Will that apply to card sharks?

We'll know the answers to these questions and others only after prosecution begins.

## 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 February 18** - Show 9908, 0200-0300 UTC (1500 NZST, 1300 AEST, 1000 Western Australia; repeats 0700 UTC/7PM NZT, 6PM Sydney, 3PM Perth). **Sunday February 25** - Show 9909, repeats same time as February 18; **Sunday March 4** - Show 9910, repeats same time as February 18; **Sunday March 11** - Show 9911, same times as February 18; **Sunday March 18** - Show 0012, same times as February 18; **Sunday March 25** - Show 0013, same times as February 18; **Sunday April 1** - Show 0014, same time as February 18. (\* - Mediasat may pre-empt showings, check other bouquet channels - 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 April 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.kwikcopy.co.nz>). SPRSCS 2000 sessions taping scheduled for play on Mediasat and Westlink are currently in "editing production." 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](mailto:skyking@clear.net.nz) (64-9-406-0651).

SatFACTS February 2001 - page 28 - page after page of FACTS for your reference!



# WITH THE OBSERVERS

## AT PRESS DEADLINE

Bill Richards reports Optus B1, 12.423Hz, Sr 6.610, 3/4 VPID 308, APID 256 Nine Net Cricket feed. NS Victoria reports new "Test" (label) bouquet within UEC 642 loading of pay-TV services B3 Hz. Select "Test" bouquet to find (CA) 7 TV channels, 6 radio including 3 with - (minus) numbers; i.e. -3, -2, -1, 0, 1, 2.

**AsiaSat 2/100.5E:** DW + European bouquet scheduled shut down February 13th from 2000-2100UTC while performing "routine transponder sweep test." Beijing TV on 3864Vt is not full time and is now often CA when transmitting. European bouquet continued past January 22 revision date without changes in programmers, MCM reportedly has signed 3 month interim agreement pending resolution of contract differences.

**AsiaSat 3S/105.5E:** Zee (TV) News now gone from As3 analogue, moved to 4135Vt, Sr 15.000, 3/4 FTA; still threatening to take Zee Entertainment off of FTA analogue as well, about mid year.

**Gorizont 33/145E:** "3875RHC is P3 here on (linear) 3m, 'Telly Tubbys' dubbed into Russian is amusing around 1045AM NZST" (L. Mathews, Auckland).

**LMA P2/142.5E:** "Crossing Clarke belt from my Auckland perspective progressively about 15 minutes earlier each day - should be around 5AM NZST February 15th" (L. Mathews).

**Optus B1/160E:** "ABC NT's real frequency is 12.260.7 at the present time, but allowing for LNB local oscillator variations, may load best from 12.256 through 12.262. Suggest you use quality indicator on receiver to 'walk it in' for best BER" (L. Mathews, Auckland). "PGA Golf Tour feeds, coverage 12.425Hz, Sr 6.610, 3/4" (Bill Richards, Australia).

**Optus B3/156E:** "Live cricket feed noted 12.369Vt, Sr 6.610, 3/4" (Bill Richards, Australia).

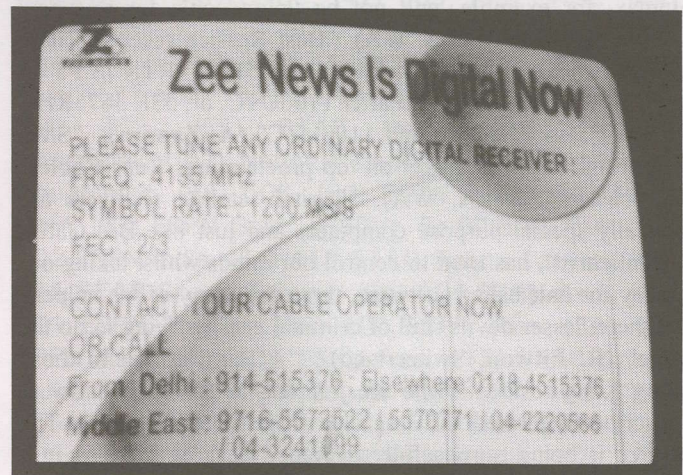
**Palapa C2M/113E:** "CNNI after going CA with PAS-8 digital format has slowly increased in quality here on 3970Vt - now P4.5 (almost sparklie free) on 3m, no sign of noise in audio. Indosiar on 4074Vt is 20-23% while RCTI is 45% on Phoenix 333" (L. Mathews, Auckland). "Indosiar 4074Vt, Sr 6.500, 3/4 and SCTV 4048Vt, Sr 6.618, 3/4 OK on 3.6m dish in New Caledonia" (S. Holzt).

**PanAmSat PAS2/169E:** "Hong Kong racing is fed FTA on ADHOC PAL channel within PowerVu HK bouquet 4148 (Sr 24.430, 2/3) - very little activity on these channels recently" (D. Pemberton, NSW). "Second Boomerang frequency, long rumoured, may turn out to be 12.560Hz as unidentified testing here uses their Sr and FEC" (D. Pemberton, NSW).

**PanAmSat PAS8/166.5E:** CNBC has moved occasional feeds from programme channel 6 to 7 (3900Hz).

**SpaceNet 4 / 172E:** "Analogue service seems to have started on 3920Vt, barely visible on 5m dish, cannot identify source" (D. Pemberton, Muswelbrook, NSW).

**Telekom 1/108E:** Further testing, now on 3580Hz, Sr 20.000, 3/4 with CNBC only service reported.



YES IT IS but they got the numbers wrong in their analogue "sign off" on As3. The better news is it is for the time being FTA.

**Thaicom 3/78.5E:** Mediasat (Sydney) was testing on 3684.5 (some reported 3695Hz) for one week late in January, Sr 5.000, 3/4. "MRTV is back - again - now on 3665Hz, Sr 6.000, 3/4; Bloomberg is FTA on 3565Hz, Sr 26.666, 3/4 but others here CA" (D. Leach, NSW). "Adult services 123 Sat and 69XX have apparently shut down on 3551Hz (13.330, 3/4)" (Bill Richards, Australia).

**Errata:** "We are receiving very strong Ku analogue signals through LIM at 75E with the three Israeli national channels; lots of top rated US and UK shows in English including the current release Survivors. They must be breaking every copyright rule in the books!" (SG, Bangkok, Thailand). "Audio on Mediasat channels is absolutely superb now; they should be complimented for excellent stereo audio that makes for very pleasant listening" (IF, Queensland). "Best way to keep track of Star's As3 transponder use is with a Promax 3 Spec/an or equivalent. Star digital services always have an identifier riding in the data stream" (D. Weaver, Hong Kong). "The joys of digital television (DVB-T). Programming with black bars at top and bottom of screen have been 'ARced' (aspect ratio converted) for use on analogue. When shooting in 4:3 you have different restrictions for 'protecting' material at the edges of the display than in 16:9. When shooting in 16:9, the ARC system makes sure things near the edges of the screen are not left out when shown on 4:3" (D.Y.). "Built a BDM

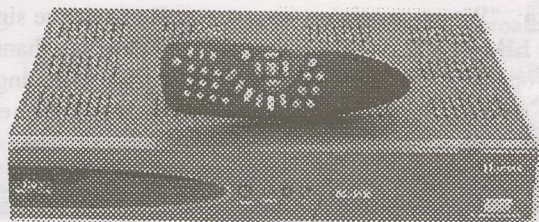
**WITH THE OBSERVERS:** Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for March 15th issue: March 4 by mail or 5PM NZST March 5th if by fax to

64-9-406-1083 or Email skyking@clear.net.nz.

(background debug module) to load new bootloader DVB2000 software into Nokia d-box. Very pleasant results - faster loading, searches, recalls than any IRD previously used. PCB to scale available" ([satelliteman@free.net.nz](mailto:satelliteman@free.net.nz)). "TCN9 16:9 test card (Optus B1, 12.729.5Vt) is egg-shaped on 4:3 but reproportions nicely to perfect circle on 16:9 display; Quantas Inflight news here around 4PM NZST" (L. Mathews, Auckland). "Optus advised me they don't like non-authorized decoders because when 'OPEN TV' starts the software inside a Humax, for example, will not be upgradeable for this new service" (Adam Takacs, WA). "Best Russian reception here in WA is none to good but try 80E 3675RHC, RTR IS P3 on 3m dish with best reception after 1100UTC, or, 53E 3675RHC for ORT also P3-P4 around 1100UTC" (A. Zapara). "SMS IRD from Hills has sticker on top proclaiming, 'Runs Cooler'. Than *what???*" (LA, WA). "Digital satellite receivers are basically special purpose computers and just like Bill Gates, the antichrist!, has tried to control our minds whilst taking our money for half-baked software, there are many of his helper's out there, lesser devils, full of criminal energy trying to do the same" (R. Pitwon, Switzerland). "A fair warning to those Hong Kong residents who are jumping at the opportunity to subscribe to pirated UBC service there (SF#76, p. 15). The service is being purposefully degraded because UBC is in a battle with the Thai government over being allowed to show commercials. Whenever ads come up on CNN, BBC, Cartoon Network (etc.) UBC places a still caption in Thai with very boring, repeated music. By this subterfuge they hope to get subscribers angry enough that government will cave in and

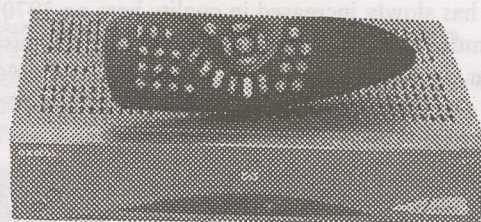
allow them to insert their own commercials. In fact, to get rid of these captions and the same boring music, subscribers would probably vote for anything offered as an alternative! We can only hope UBC will call off its campaign to drive subscribers potty and that the Thai government will not fall for such trickery and ballot rigging." (S. Global, Bangkok) "Someone was in a friendly, Christmas mood when on the 22nd of December they released 'Wallbanger IRD to emulator' software for most Nokia, Humax IRDs in Windows based software ([http://www.geocities.com/digi\\_satchat/miscpage.html](http://www.geocities.com/digi_satchat/miscpage.html))" (S. McLeod, NZ). "My application for a satellite dish (construction) permit is enclosed. This is red tape gone mad. The rules were obviously created for the 'big boys' who have numerous staff people capable of complying with the regulations. I have had my dish installed since 1996 and now the local council says their new rules are retroactive" (Paul Hadlow, Victoria, Australia). "I understand Telemann is considering bringing out a 4:2:2 IRD later this year" (Roger Bunny, UK). "Pollution will be recognised as a serious problem when it interferes with our TV reception" (Daily Courier Newspaper, Kelowna, BC, Canada January 21). "Does anyone know for sure status of the WIN/GWN/ABC/SBS contract for PAS-2 Ku? Nobody out here seems to know and it is important to my business to know this" (SG, Western Australia). "STAR TV began what they call a major publicity offensive February 5th, hinting at new As3 programme channels 'sometime this year' but no indication they are reconsidering decision to drop service into Hong Kong as early as March" (DW, Hong Kong).

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## Recent bouquet changes of interest to enthusiasts

**TARBS:** PanAmSat PAS-8 12.526Hz, Sr 28.067, FEC 3/4 plus 12.606Hz, same parameters: Has altered channel line-up recently, major improvement in "quality" of radio stations including addition of two Australian based stations. "**2ME**" on (radio) channel 10 is a 24 hour Arabic language service apparently originating in Sydney in the expanded AM broadcast band (1638 kilohertz). "**NTC**" (channel 11) is an English language country music format service with studios in Sydney as well, 24 hours daily, apparently broadcasting on 1611/1620 kilohertz terrestrial. Contact is 02-9635-1638, they self-promote as "Variety country radio 16 Australia." TARBS line-up as of 4 February was as follows: 12.526 TV (1) RAD, (2) ESPN, (3) CNN, (4) MCM, (5) TCM, (6) ESC, (7) NDM, (8) FUT, (9) NTV, (10) NTVP, (11) KDTV, (12) ATV, (13) TGRT; 12.526 radio (1) EBE, (2) ESEA, (3) EQK, (4) ELSH, (5) FUTR, (6) TGR, (7) RD, (8) RDSP, (9) VOT, (10) 2ME Sydney, (11) NTC Sydney, (12) RA72 - English language DW, (13) REE. 12.606 TV (15) TS15 - apparently not in use, (15) MKTV, (16) TVP, (17) TLIB, (18) TVC, (19) TVE, (20) TI, (21) TVG, (22) KOTV, (23) Phoenix, (24) BTV, (25) TFC and (26) PBC; 12.606 radio (14) RA74 (not in use), (15) RA75 (not in use), (16) DZMM (Manila). Radio services typically FTA on most satellite receivers.

**STAR TV Asia:** AsiaSat 3S, 3880Hz (Sr 26.850, 7/8), 4000Hz (Sr 26.850, 7/8), 3780Vt (Sr 28.100, 3/4) and 3860Vt (Sr 27.500, 3/4). If you start on 4000, 3780 or 3860, the NIT instruction table loads the services as 4000Hz, 3780Vt, 3860Vt and 3880Hz (plus it tries to load 11.185Vt Ku which has its own Sr of 9.375 and FEC 3/4). If you start with the NIT 3880, the sequence to load is 3880Hz, 4000Hz, 3780Vt and 3860Vt (plus 11.185Vt Ku tries to load). The following lists are from a UEC 642 (5 February 2001) using 3880Hz as the NIT start point. Channels which repeat may be created by the IRD software, or, there may be more than one audio (language) service and like the WorldNet radio, the same video loads multiple times with differing audio (language) tracks. 3880Hz (Sr 26.850, 7/8): (1) UKtv, (2) UKtv, (3) UKtv, (4) VIVA Cinema, (5) VIVA Cinema, (6) VIVA Cinema, (7) STAR World, (8) STAR World, (9) STAR World, (10) STAR World, (11) Channel [V] International, (12) Channel [V], (13) Channel [V], (14) Channel [V], (15) Fox News, (16) Fox News, (17) Fox News, (18) Fox News, (19) Sky News, (20) Sky News, (21) Sky News, (22) Sky News, (23) National Geographic, (24) STAR Plus, (25) STAR Plus, (26) National, (27) Phoenix Chinese Channel (Note: **currently FTA and identical in content to As3S 3920 analogue**); 4000Hz, Sr 26.850, 7/8: (28) STAR Movies Int'l Taiwan, (29) STAR Movies, (30) STAR Chinese Channel, (31) [V] Taiwan, (32) National Geographic, (33) Phn'x Movies, (34) Movies

Int'l China/SEA, (35) STAR Movies Int'l China, (36) Subtitle test, (37) STAR Movie Int'l China, (38) Phoenix Info News (Note: **currently FTA**); 3780Vt, Sr 28.100, 3/4: (39) ESPN Asia, (40) National Geographic, (41) CNBC, (42) 509, (43) CNBC, (44) STAR Movies, (45) 501, (46) STAR Movies, (47) Channel [V], (48) 502, (49) Channel [V], (50) STAR Plus, (51) 503, (52) STAR Plus, (53) STAR News, (54) 505, (55) STAR News, (56) National Geographic, (57) National Geographic, (58) National Geographic, (59) 508, (60) ESPN India, (61) ESPN Gold, (62) ESPN Gold; 3860Vt, Sr 27.500, 3/4: (63) 402 ESPN India, (64) 413 STAR Sports Taiwan, (65) 414 STAR Sports Taiwan, (66) 405 ESPN Asia, (67) 401 ESPN Taiwan, (68) 406 ESPN Asia, (69) 407 ESPN Asia, (70) 408 ESPN Asia, (71) STAR Sports India, (72) 409 STAR Sports Asia, (73) 410 STAR Sports Asia, (74) STAR Sports, (75) 412 STAR Sports India, (76) 411 STAR Sports India, (77) STAR Sports, (78) 415 ESPN Contribution, (79) 416 ESPN Contribution, (80) ESPN Asia.

**Austar Weather Channel:** Optus B3 12.626Hz, Sr 29.473, 3/4. Channel has been FTA for several days at a time, apparent testing of new interactive weather and information service functions. (Austar could get much better mileage out of this channel if it was left FTA allowing airport lobby and other public places to play it "in the open" as a public service that would also promote Austar at the same time.)

**Aurora Reminiscent (Indian) Channels:** Optus B3, 12.532Vt, Sr 30.00, 2/3. These channels (1-6 or if loaded with all of Aurora bouquet, 50 - 55) now indicate there is programming present (previously only on first 2 channels).

**Zee TV on 4135Vt of As3:** Sr variously reported but appears to be 15.000, FEC 2/3, has added ZEE TV News (previously FTA on analogue but now shut down) creating ZED TV, Kaveri, Zee Music and Zee News in FTA format (NIT load from 3700Vt).

**ABC NT on Optus B1:** The previous 12.256/12.258/12.260 Vt service disappeared for several weeks late in January, early February but was back February 5 with NT television at VPID 832, ABC Classical APID 836, ABC Radio National North APID 838, ABC Regional Radio North - Alice Springs APID 837. One source saying this entire package may move to 12.280Vt because of terrestrial interference problems at some sites using the 256/258/260 frequency.

**Mediasat:** Originally on Optus B3, 12.336Vt, Sr 30.000, 2/3 in PowerVu, now capable of virtually any CA or FTA format. Also appears on Optus B1 12.404Vt - both on Australia + NZ beam. Also scheduled to appear on B1 T11 (12.438Hz centre frequency - exact frequency will vary slightly) on NB/NE (Australia) only beam. New FTA and CA channels coming shortly including "multi-view" links for sporting events.

### "Hell bent on the Pace box"

The New Zealand Herald (newspaper) is scheduled to report on the status of the TVNZ (Television New Zealand) and Telstra-Saturn satellite initiative shortly before this issue of SatFACTS goes into the mails. They are likely to report that "differences of opinion" have surfaced between Television New Zealand and Telstra-Saturn over the selection of a set-top box for the proposed FTA + CA platform on Optus B1.

The Pace box (they call it the 512 but it is really the DGT400 we all know from Galaxy>Austar>Foxtel) is not capable of executing a return path (communicating with the service provider[s]) simply because that was not state-of-art five years ago when it was born. From the TVNZ position, there are two issues affecting the choice of a box. Number one, the box has to provide a "video and audio quality" which is at least "the equivalent of TVOne and TV2 625 line PAL analogue when received in a high off-air VHF signal area." We all know that PAL quality is a function of video signal to noise ratio, and that if you have a super clean off-air VHF service, the video signal to noise might approach 48 dB in a very good case. We also know that if you have enough signal to lock a digital service, the video signal to noise is automatically not less than 48 dB and more typically 52 or more. So seemingly the "quality" concern at TVNZ is automatically met by virtually any digital service since to lock is to have 50 dB signal to noise anyhow.

TVNZ's second "demand" is for the set-top to be capable of a return path, the ability for the viewer to access Email and other information data bases either directly to Internet or through a "walled garden" version of the web. The Pace box cannot do this and no amount of software diddling will make this happen.

Telstra-Saturn is only half convinced that going to a satellite platform is in their long term "best interest." As you read these words, Telstra-Saturn is busy building a fibre optic + coaxial two-way cable network which they claim will pass by the doorstep of 65% of all NZ homes. What concerns them is that if homes are offered a choice between a satellite service for perhaps \$50 a month (our number, not theirs) and a full blown two-way interactive cable service for perhaps \$75 a month, many more will opt for the satellite than the cable. So they have a corporate answer to this - "*Don't make the satellite service all that good, purposefully degrade the satellite service below its full potential so that when people have a choice between cable and satellite, they typically choose cable.*"

Which gets us back to the "quality" of the service through the Pace set-top. Telstra-Saturn has chosen the Divicomm hardware/software for their uplink. That is the same Divicomm which provided their equipment for the Optus Aurora platform, and the same Divicomm which forces IRDs to be "non-MPEG-2-compliant." In fact, as you read these words, Divicomm is unpacking cartons of Pace set-tops preparing to work out how they can be made to work with a

Divicomm uplinked bouquet. You see, only a few weeks ago somebody at Telstra-Saturn discovered the Pace boxes won't work with Divicomm; not properly, anyhow.

Telstra-Saturn are firmly resolved to use these ex-Austar (Galaxy) set-tops in New Zealand. They have a "book value" of between \$80 and \$100 sitting in warehouses after being removed from Austar homes. By insisting on the Pace 5 year old set-tops, Telstra-Saturn are covering their bets twice.

Number one, they can keep the satellite service in a supporting role to cable simply because these are not interactive capable devices.

Number two, at \$80 to \$100 per box "book value," if the TVNZ + Telstra-Saturn project falls over in the marketplace, they will have far less money to "write off" in a closing down sale. In other words, they are hedging their bets by investing in cheap boxes until they see if the service is able to survive against the existing Sky NZ competition.

All of this is frustrating to TVNZ which believes the best approach is to be interactive from day one and to have a "free market" in boxes, available either "direct" by mail/courier or perhaps through a general "open market" offering at retail shops around New Zealand.

This is a serious difference of opinion. Serious enough to kill the project? *Perhaps.* TVNZ has "control" over the two B1 transponders at this point, but in a show of frustration has basically told Telstra-Saturn, "*Sort this out - you know what we want out of this arrangement.*" If Divicomm is able to make the Pace set-tops work with their non-standard uplink data stream, Telstra-Saturn then must convince TVNZ that the second TVNZ demand - interactivity - is not essential on launch day. Telstra-Saturn suggests that once they are convinced this platform can be economically viable against the Sky competition, they "*might reconsider more state-of-the-art boxes for consumer use.*"

TVNZ has arranged for transponders 4 and 8 on B1. But, worried about Telstra-Saturn's ability to make the Pace boxes work, TVNZ is withholding 27 MHz (one half) of transponder 4 from initial joint venture use. This half transponder *could be* used by TVNZ, quite alone, to distribute TVOne, TV2, TV3, TV4 and Prime in yet a *third* FTA platform - without the impediment of a Divicomm uplink package and simultaneously offer dish packages designed to provide all (5) of the national free to air services as well as interactivity. This is TVNZ's "line in the sand." The consumer cost for such a package would ideally not exceed NZ\$550.

One must wonder why Telstra-Saturn insisted upon the Divicomm uplinking package, why if it is such a technical hurdle in making their Pace set-tops work, they don't simply replace it with some other package that has proven itself elsewhere as being capable of functioning with the Pace boxes. With the well documented history of problems which Aurora has had with the same equipment, why would Telstra-Saturn be so keen to go down that same trail?

The anticipated April first start date is now off. May first looks only slightly better and inside of Saturn they are talking about a "*before the end of May*" launch date. However, if Divicomm cannot make the old Pace set-tops function to the satisfaction of Telstra Saturn and TVNZ, well, even midyear 2001 seems doubtful. Telstra-Saturn appears "hell bent" to get into NZ homes with boxes that cost them not more than \$100 each and the only way that will happen is with somebody's second hand IRDs. Not a very intelligent way to launch.

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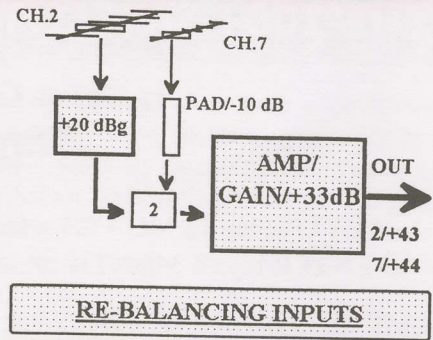
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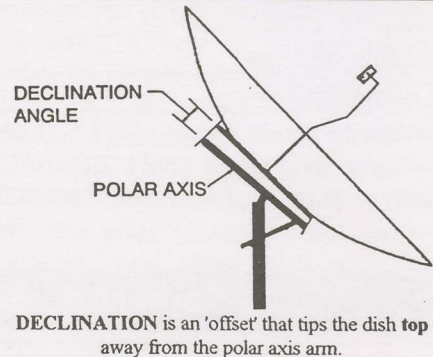
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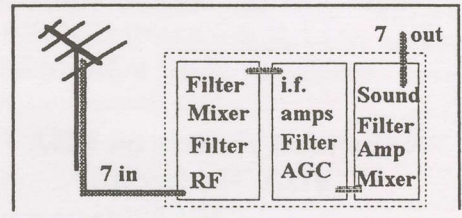
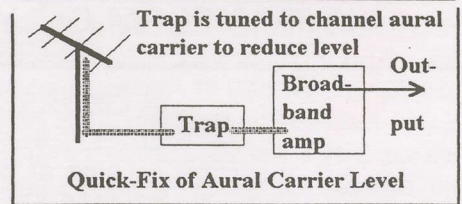
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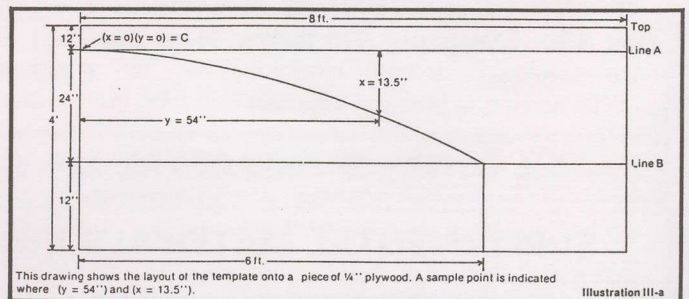
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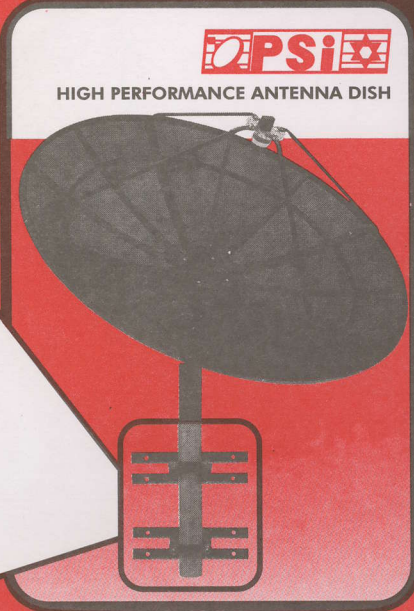
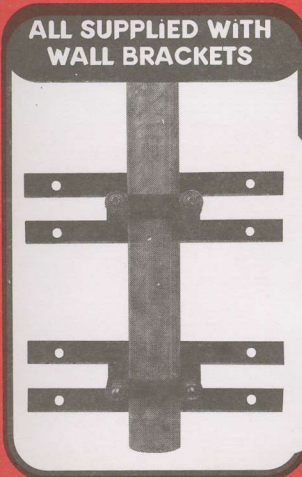
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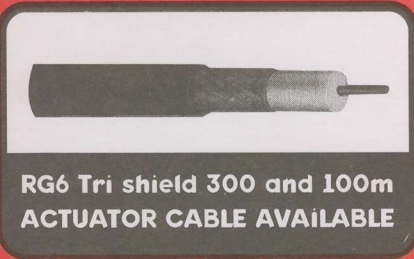
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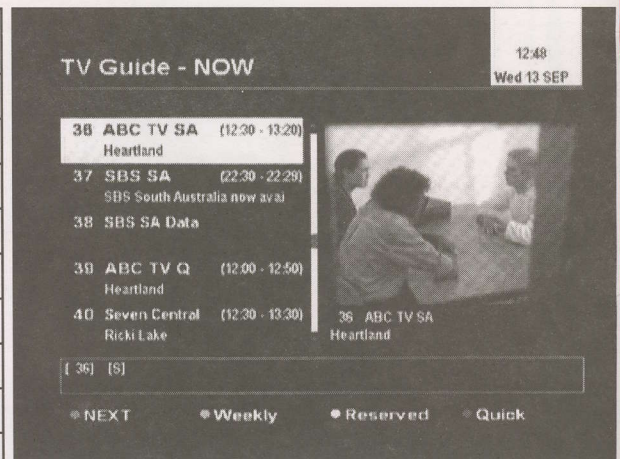


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