

10am 15-08-01

Bob Cooper's

AUGUST 15 2001

SatFACTS

MONTHLY



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

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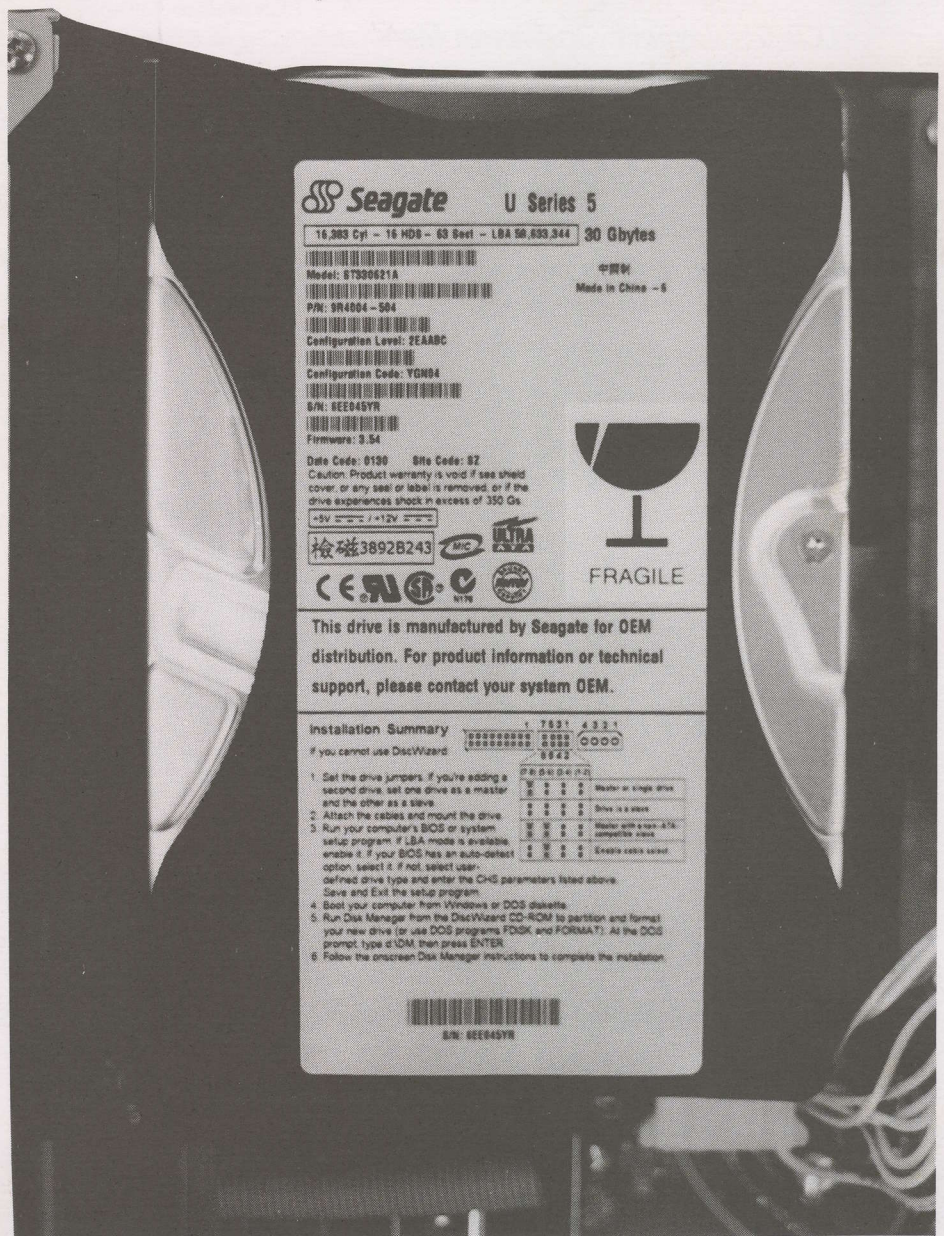
**First PVR-IRD
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a review**

**SDS 10 watt
long range tests:
it works!**

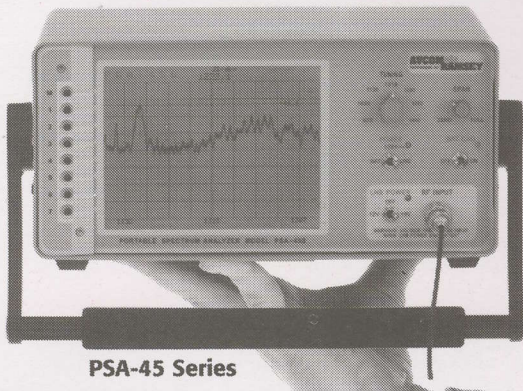
**TelstraSaturn
Mess:
shut down DTH**

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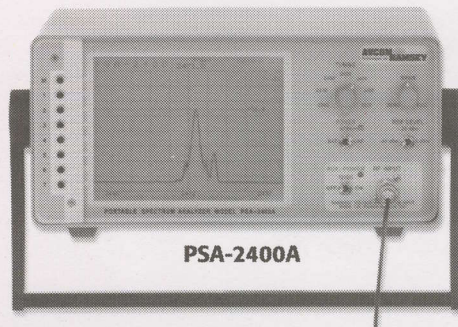
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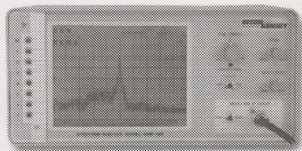
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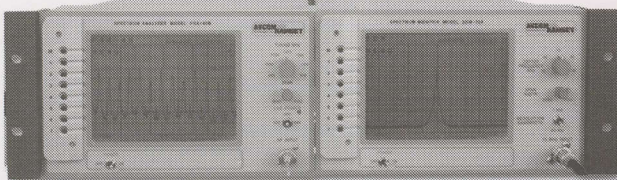
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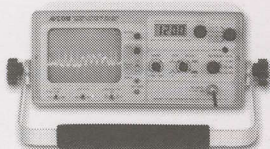
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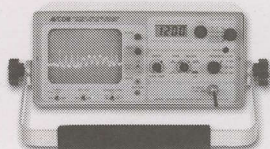
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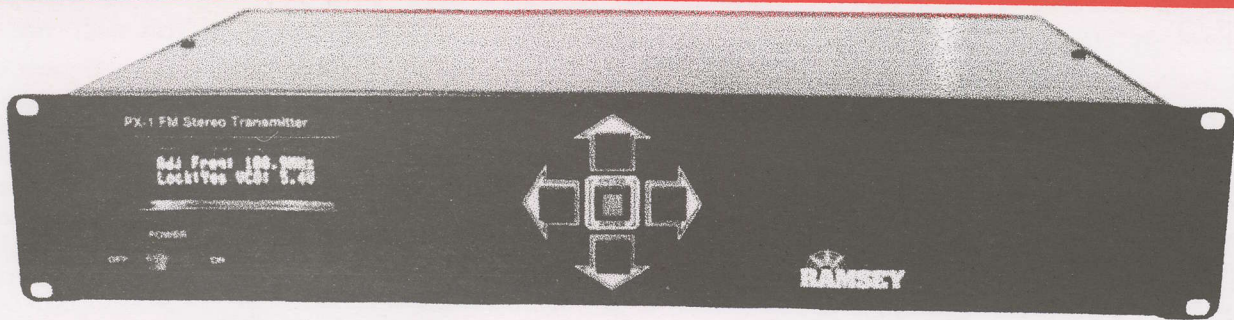
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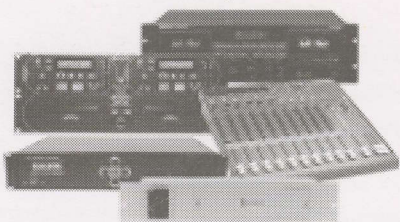
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the SPRSCS 2001 schedule

Thursday September 27:

General Sessions: (10AM) "Preview of show technology"; (11AM) "Digital signal metering technology" (Patrick Lagerstedt, Skinka Electronics, UK); 1.30PM "Everything you ever wanted to know about digital" (Pietro Casoar, Ikusi ANZ Pty Ltd; work book provided).

Work Shop: (11AM to 4PM) "Terrestrial Digital - how it works, why it does not work, how to fix it" (multiple sessions led by Leon Senior, Strong Aust.)

Exhibits open: 3PM to 6PM - exhibitors have Exhibit Hall (Red-Line) Passes, **everyone welcome!**

Friday September 28:

General Sessions: (10AM) "Design challenges in multi-storey analogue + digital distribution systems" (Eric Fien, Broadnet International); (11AM) "DiSEqC switching techniques" (Scott Nesbitt, Sciteq Pty Ltd and Garry Cratt, Avcomm Pty Ltd); (1.30PM) "SDS Overview - this is how it works" (John Ramsey, Avcom-Ramsey Technologies, New York); (2.30PM) "DVB-T Overview - practical solutions" (Michele Gazzola, Fracarro Electronics, Italy); (3.15PM) "Open Forum - DVB-T side by side set-top testing" (Garry Cratt, Avcomm Pty Ltd.)

Work Shop: (10AM-12N & 1.30PM to 4PM) "Shared Dish Systems/SDS - everything you need to know" covering low and high power transmitters, transmit and receive antennas, propagation paths, masthead amplifiers, CA and FTA service parameters, modulator and translator formats (John Ramsey, Avcom-Ramsey Technologies, New York).

Exhibits open: 3PM to 6PM - exhibitors have Exhibit Hall (Red-Line) Passes; **everyone welcome!**

Saturday September 29:

Work Shop: (9.30AM-4PM) "Low power community FM broadcasting - a cram course" covering all aspects of creating and operating a 100 milliwatt- 1 watt - 100 watt community FM station. Including transmitters, satellite programme audio sources, transmit antennas. **Special:** Optional kit construction of 100 milliwatt and 1 watt FM transmitters from Ramsey Electronics kits during course; kit builders MUST be registered no later than September 7. **Note:** This full day session also open to all Thursday and/or Friday session attendees with appropriate admittance badges (John Ramsey, Avcom-Ramsey Technologies Inc., New York).

Work Shop: (10AM to 3PM) "Eric Fien's hands-on treatment of DVB-T distribution systems" covering all aspects of wiring homes, offices, motel/hotels for companion digital terrestrial and analogue.

Note: Registration for this session ends September 1 - no attendees accepted past that date.

Exhibits open: 10AM to 3PM - exhibitors have Exhibit Hall (Red-Line) passes; everyone welcome!

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Schedule updates - if required - will appear in September 15 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.

Editor/Publisher

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Gay V. Cooper (ZL1GG)

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ERRATA

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COOP'S COMMENT

We may never know precisely why TelstraSaturn decided to kill their New Zealand pay-TV DTH project at the 11th hour but educated guesses are possible (p. 15, this issue). Ultimately, these decisions come down to money. At some level in Telstra (Australia) or Austar (Australia) or UIH (USA/Europe - owners of Austar and Saturn) an individual or a Board of Directors elected to cancel DTH in NZ even if millions had already been spent, millions more would be spent over 7 years to pay for unused Optus transponders, and DTH partner TVNZ (Television New Zealand) was going to be furious with the decision. Unravelling who this individual might have been, and why this step was taken, is the challenge.

TelstraSaturn is spending at least NZ\$1.2 billion to create fibre optic plus coaxial cable two-way high speed data networks in Wellington, Christchurch and Auckland. To install their thousands of kilometres of cables, TS is relying on agreements forged back in 1995-1996 by Saturn with the local power companies. These "pole attachment agreements" state that Saturn (now TelstraSaturn) may rent "space" on existing (power) utility poles for NZ\$20 per pole per year. Wellington's cable plant actually predates the 1995-1996 agreements and is "grandfathered" by virtue of "being there" before rules and regulations were adopted nation-wide to control such activities. Christchurch, where cabling is still progressing, bought the TS story that by allowing new cables and wires on poles throughout the city hundreds of new jobs would be created and the community would be a totally state-of-the-art "information age city."

Auckland. A 1996 agreement with then-called Mercury Energy was assumed by now-called Vector (Energy). Vector management is new, perhaps more feisty than Mercury's had been, and basically has told TelstraSaturn, "Get lost - we are not going to let you cherry pick our poles for \$20 a pole [per year]." One year ago TS began burying hundreds of kilometres of mainline fibre optic cables in Auckland, progressing towards the day when they would request Vector honour the Mercury agreement. In June of this year Vector told TS they would have to go to court to force Vector to honour the agreement. Vector says TS slipped up, was required to advise the electrical utility of any corporate changes and when Saturn became TelstraSaturn nobody bothered to formally advise Vector. But that is just a court defence which Vector hopes (perhaps against hope) will void the 1996 agreement.

In fact Vector wants money. Not \$20 for each pole TS uses per year. More like \$2000 per pole per year. Vector figures TS would be getting a free ride on Vector poles (\$20 being pretty damn cheap) and this windfall would save TS not less than NZ\$200 million in cable/fibre construction costs. How's that? If TS is forced to go underground with their complete Auckland system, not allowed on Vector poles, Vector calculates TS would spend \$200 million more than if they built the city of Auckland above ground. Vector figures that is a freebie TS is not entitled to, 1996 agreement or no agreement.

Vector has their own undergrounding project just now starting. In December or so, they will launch a forty year project that will when completed underground virtually every metre of overhead power line in Auckland. At a budgeted cost of \$10m a year for 40 years - \$400 million total. If Vector can keep TS off their poles, then TS might consider doing a joint underground venture with Vector which would save both firms big money.

DTH? Would you be launching DTH if your \$1.2 billion investment was in danger of blowing up in your face? No, you'd wait. Which is just what TS has elected to do.

In Volume 7 ♦ Number 84

STRONG's 4890 PVR + IRD -p. 6

SDS Report #2: 10 watt range -p. 10

The New Zealand TelstraSaturn mess -p. 15

Bandscan: AsiaSat 2/100.5E -p. 28

Departments

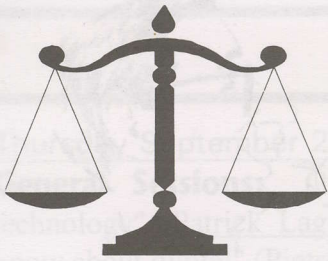
Programmer/Programming Update -p.2; Hardware/Equipment Update -p. 4; Technical Corner (Finding SDS "safe" frequencies) - p. 20; SatFACTS Digital Watch -p. 22; Supplemental Digital Data -p. 26; BANDSCAN: AsiaSat 2/100.5E -p. 27; SPACE Pacific Report - TV Show schedule -p. 28; With The Observers -p. 29; At Sign-Off (Zee TV blames Irdeto for business problems) -p. 32

-ON THE COVER-

PVR Hard Disk recorder built into a satellite IRD makes the Strong 4890 just about the most versatile FTA + CA receiving package available in the Asia-Pacific region (p. 6).



August 15, 2001



LETTERS

SDS in NT?

"Thinking about how SDS could be put into service in (the) Northern Territory. I could probably find a couple of hundred homes here that want access to ESPN (which was the only reason most people signed up for Boomerang up here). What are the issues involved in licensing SDS in say rural northern Australia? If we had a license, could we negotiate a carriage deal with ESPN? I was once told they will only deal with licensed services. TV service choice is really poor in NT and most homes are limited to 'the big four' - ABC, SBS, 7 Central and Imparja."

RA, 'Red Centre', NT

A single channel SDS transmitter described in July and further tested here (p. 10) can be set up to operate within any 27 MHz wide portion of the spectrum between 950 and 2150. In any given area, even downtown Sydney or Auckland, there are holes where it could fit in. Our job here is to create the device, show you how to use it, and suggest ways that it can be used in both licensed and unlicensed situations. At that point it is up the end user to complete the project. We look at the 'frequency congestion' aspect of SDS on p.20 here.

A Reamer-Matic!

"I had to notice in Section 2.1, page 5 of the TelstraSaturn Installer Manual they suggested that in a difficult installation spot, 'Kiwi Ingenuity' would come to the front and solve the problem. We were quite excited after receiving our letter of offer from TS, but now they have cancelled the entire project, it appears their labelled 'good ole Kiwi ingenuity' may have failed us. For example, did the Aussie writing this manual think we are incapable of lifting roof iron without falling through ceilings, drilling holes down walls or blasting ourselves to Mars (or Saturn!) and beyond when we hit a mains feed ??? The day we received the 'sorry mate, it is all called off' letter I had just finished designing a special telescopic drill for installing TelstraSaturn DTH systems. And being a friendly Kiwi, I planned to share my invention with other installers. Here is how it works. (1) Ask the home owner where they want the decoder box. If the homeowner is a TV addicted, bed ridden womanless creature, then its in the bedroom pure and simple. (2) Measure where the unit will go - precisely. (3) Get up on the roof and locate a spot directly above the decoder location. (4) Get out our special 4 - 6 foot telescopic drill and WHACK a hole clean through the lot. (5) Great - this is now the spot for your dish and you are guaranteed a super-short cable run. After a bit of practice, you can come out right in the corner of a room where the ceiling and wall meet. And man is this quick! Bugger TelstraSaturn - with their 'delay' in starting DTH, I am now retrofitting the invention with a miniature video camera at the tip of the drill - the ultimate in accurate positioning!"

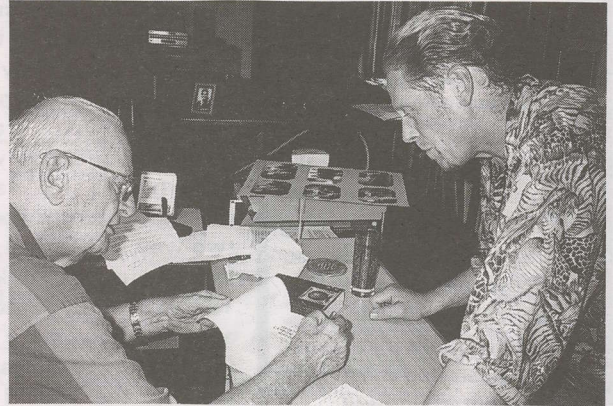
Peter, Auckland

PROGRAMMER PROGRAMMING PROMOTION

UPDATE

August 15, 2001

Arthur and Peter. Sir Arthur C. Clarke, the "father" of our geostationary satellite system, autographing one of his novels for Kiwi Peter Escher of Cordless NZ. Peter's digital camcorder brought back a lively interview with father



Clarke, to be aired on SPACE Pacific Report when editing is complete in November.

At it again. Mediterranean MUX on PAS-2 3836Vt, with ART/LBC/RAI/ANT ran two announcements per day towards end of July advising viewers ART and LBC were being encrypted, those wishing to continue service to contact Optus (for cable connection). Simultaneously, JSC (Al-Jazeera) which has been on PAS-2 California bouquet MUX making similar announcement giving 1800 700 506 number to contact. Which got you telephone advisory they too would be available on Optus cable. But, if you wanted service where Optus cable is not available, they will supply you with a Humax receiver (quoted at "more than A\$600") and a monthly fee of A\$30 on a 12 month contract. Strange part? "Humax receiver???"

Untangling ABC HDTV. ABC-TV has pioneered distribution of HDTV/SDTV digital services via satellite now using Optus B1 trio of frequencies (12.670, 12.688 and 12.706Hz with Sr 14.300, FEC 7/8). Alek Zapara reports his Humax 5400 sorts the slightly unusual digital format signal(s) with no real problems. Some reported audio recovery difficulties - Zapara suggests, "Disable the digital audio in the set-up menu so the receiver no longer defaults to Dolby each time you change channels." Channels are (1) ABC HDTV, (2) ABC TV Sydney (SDTV), (3) ABC Kids /0600 - 1800 AEST and (4) ABC TV3 test card which will become 'Fly' later in year.

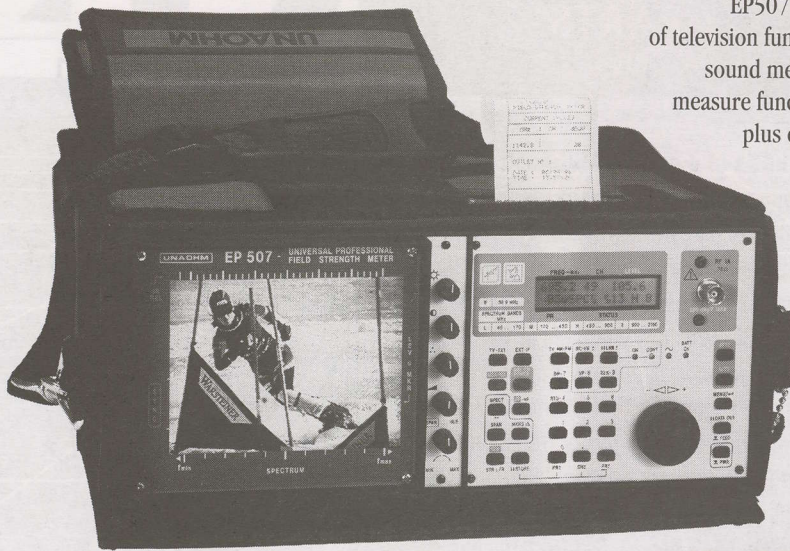
Aurora doesn't have style but it has Rhythm? New (FTA) audio service channel Optus B3, 12.532Vt transponder (which includes NZ in coverage) loads as "SMA RFM Rhythm FM". Station is low power Sydney terrestrial (87.6 MHz) catering to "alternate life style" male and female listeners, "yuppie-techno" music, and apparently is on satellite to feed new Brisbane 87.8 MHz affiliate. It began with mono one side, has gone to mono "X" 2 and may end up being stereo before it is done maturing.

SatFACTS Web Site Crashes - Permanently

The US company (livebuilder) providing our http://www.satfacts.kwikkopy.co.nz web site for the past 38 months selected 31 July midnight USA time to crash and burn. To go out of business. With no notice, no warning. Just pull the plug and go out for a beer.

We would like to avoid this kind of scenario in the future and between working on SPRSCS 2001, this issue of SF and the next issue of CTD, have made progress in that direction. In the interim, check our space so kindly provided as an act of friendship by Craig Sutton at http://www.apsattv.com. When we are back running again, we'll post it on Craig's site and re-announce here our new web address.

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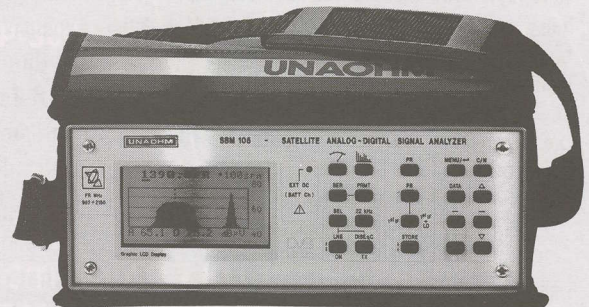
EP 319 level and Spectrum measurements feature high accuracy and selectable Resolution Bandwidths of 100kHz, 1.5MHz and 4MHz to provide real time spectrum displays of signals from TV stereo audio and colour sub-carriers to SCPC satellite signals. 5-40MHz is included, with Analogue and Digital data logging. Options include Digital Signal Quality measures of QPSK+QAM or OFDM. Operational running time is extended thanks to a Ni MH battery pack. Dual Spectrum Markers with Frequency and Level difference (Delta) measures, an electronically generated graticule, On Screen Display function indicator, automatic analogue Carrier to Noise and Vision to Audio ratio measures, DiSEqC 2.0 switching, Teletext etc. are included.



EP-313 provides a new benchmark for price, function and quality in a Television Analyser. Spectrum mode uses an easy to see frequency marker. Carrier to Noise ratio, Vision to Audio ratio and Digital Channel Power measurements display digitally and are automatic. 100 PReset tuning positions store your favourite channels, whilst factory preset channel plans enable tuning by CHannel almost anywhere, by FRequency either by direct entry or step. Teletext is standard. Factory Digital Signal Quality options for QPSK, OFDM or QAM round out the EP-313's measurement abilities.



SBM-105 makes all the necessary measurements for Digital and Analogue Satellite signal Quality. Built around the standard Unaohm Digital Signal Quality measures, the SBM-105 includes Spectrum with Analogue and Digital signal level measurement. The graphic matrix LCD is readable in direct sunlight or low light. Versions are available for QPSK, QAM and OFDM. The SBM-105 is a low cost answer to installer measurement requirements of digital from a company with over 60 years experience manufacturing electronic instruments.



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Frightening Concept

"I must say I am surprised at some of the proposed ideas relating to SDS. The notion of re-transmitting the output of an LNB within the 900 - 2000 MHz area of the spectrum is frightening! This is a very crowded piece of spectrum (in Australia). There are satellite uplinks and downlinks, mobile phones, amateur operators and air navigation aids in this region to name only a few users! I don't think such a translation service would ever be granted a licence to operate in Australia on the proposed output frequencies and the perils of operating an unlicensed service are many. I would not like to be held responsible for a lost aircraft and suggest you be very careful advocating people set up such systems. Further, the notion that copyrighted material (radio & TV) could be rebroadcast also needs to be addressed."

Timothy Dixon, Elizabeth East, SA

All valid observations. The frequency range of interest, 950 to 2150 MHz, actually has many holes in it where a 27 MHz bandwidth (TV modulated) FM transmitter could operate without causing any harm to any other user - including radiolocation and aeronavigation. When the LEO (low earth orbit) and MEO (medium earth orbit) 'mobile tel' satellites were first proposed, virtually every developed country in the world rushed to rearrange for new spectrum space that would suit these platforms. When DAB (digital audio broadcasting) radio was proposed, new (1400 MHz region) channels were identified and allocated - including in Australia. Furthermore, anyone holding an Amateur Radio (ham) licence already has all of the 'legal' sanctions required to set up SDS on 1250 or 1270 MHz - subject to as you suggest paying attention to copyright rules. In that regard, Deutsche Welle for TV and World Radio Net (for radio) quickly approved our request to rebroadcast their 'copyrighted materials' using SDS. Having said all of that, we should also point out that people residing outside of developed nations (such as Australia, New Zealand) face virtually no restrictions if their respective Governments have no frequency allocations 'policy' in some or all of the 950 - 2150 region. SF is read in more than 60 countries these days and the majority of those fit this latter category. We are cautionary about this area of SDS - as page 20 in this issue points out.

Hairy knuckled beasts

"Just received SatFACTS July and of course amused by page 2. However, an important correction: my Knighthood was for Services to Literature. Whatever made you think I was associated with those crude engineers with their hairy knuckles dragging on the ground! I look forward to receiving the Peter Escher tape and hope all goes well at Melbourne. Enclosed is a photo of the 'nice little dish' I found in my garden the other day - courtesy of Eutelsat's Giuliano Berretta."

Sir Arthur C. Clarke, Sri Lanka

In fact Sir Arthur has been proposed for a variety of "awards" including Nobel Prize for literature and alternately for Science. His "knighthood" was indeed for literature, which would of course include the October 1945 Wireless World thesis which laid the foundation for geostationary satellites. We find his literature and satellites to be inseparable.

HARDWARE EQUIPMENT PARTS

UPDATE

August 15, 2001

What's in a name? ABC Australia has announced some details for the as-of-yet date-uncertain TV service. It will be called "ABC Asia Pacific" and you will notice our emphasis on Pacific. That the previous ATVI using C2M was not viewable in virtually *any* of the Pacific was always a disappointment. We have suggested that at the very least ABC A-P should use a horizontal transponder with good Pacific reach. Now we'll go one step further - and suggest it not be on C2M at all!

In December a new JcSat (8) launches to 154E with 16 C-band transponders on board providing 34 dBw or better over virtually everyone of interest (30 dBw for lesser Pacific regions). Now that's first-rate coverage! (SF will print greater detail on JcSAT 8 in a future issue. Channels will be all horizontal polarity in 3.4 - 3.7 extended portion, all vertical in 3.7 - 4.2 because of tightly congested C-band in region of 154E.)

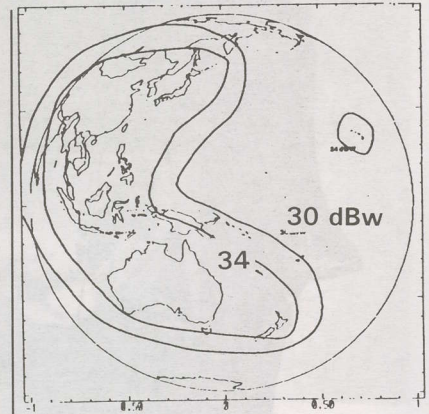
Boomerang's IRDs. Firm advised subscribers it would "buy back" receivers for just under A\$180 in May-June, then turned off e-mail contact address and simply ignored correspondence after 1 July. If you can't sell it back to them, try making it work on C-band. Enter pin 12 01 88 to gain access to set-up/installation menu and/or go to www.eec.com.tw for direct instruction and reload software. Some problems remain - including "switching off Nagravision to allow reception of FTA stations."

NZ DTH failure. Of course the unexpected and sudden announcement that DTH entrant TelstraSaturn was quitting before they began was big news in NZ this month (see p. 15, here). The "other half" of that planned service, State owned broadcaster TVNZ, says they are not giving up Ku-band DTH as a means of fulfilling their obligation to provide a nation-wide digital TV service by some reasonable date. TVNZ's contribution to the TelstraSaturn package was originally scheduled for October - now is set back (understandably) while they figure out what to do with 2 full transponders when they only really need 1/2 of one to do their work. And, to decide where to get set-top boxes for the service, how to distribute the boxes, how best to market them to consumers. Stay tuned.

Ku band polarotor feeds. Enthusiast David Nolan is concerned that sources for *rotating probe* Ku feeds are either discontinuing their products or making them so expensive that only commercial users can afford them. David: "The problem is that on the Optus birds the Ku polarity is different to PAS-8 which is different to PAS-2 which is different to Measat 2 (and so on)." With AsiaSat 3 Ku coming on line for Telstra, more problems. Orthomode (horizontal or vertical) twin LNB feeds are fine for one-satellite fixed position dishes. But when you sweep the sky from horizon to horizon you need a way to fine-tune the polarity probe to compensate for angular shift between birds at different locations. Is there a reasonably-priced solution?

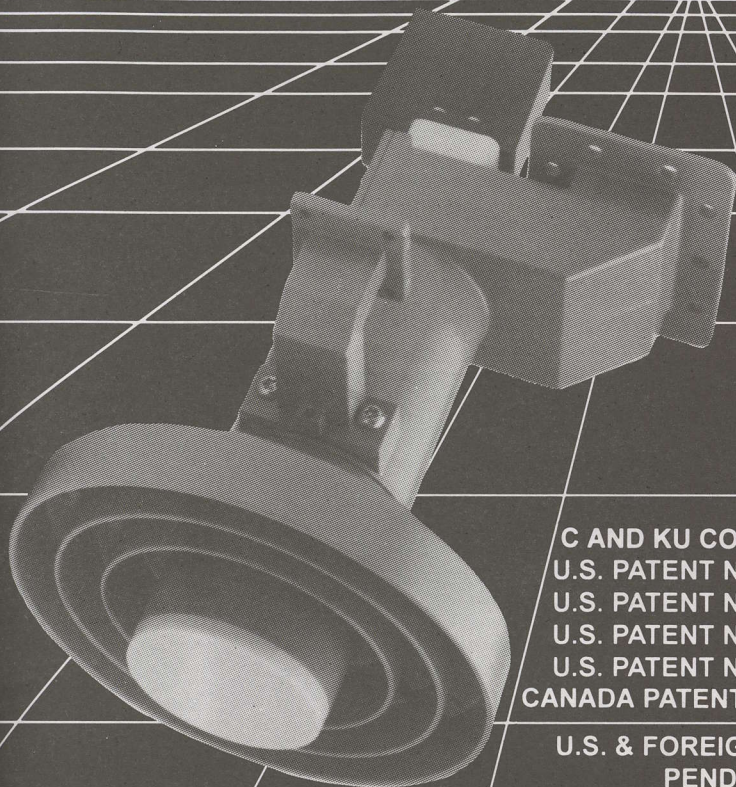
That is Internet. On Optus B3, 12.313Hz, Sr 30.000, 3/4. Optus is testing.

Big dishes. Big lies. Austar's image in Tasmania is not good - at least with the installers. In a tiny segment of the island state, Austar distributes using MMDS (2 GHz microwave). But they refuse to allow satellite installs because they claim 2.4m dishes are required. Of course 2.4 requires local council approval so net effect - no Austar in Tasmania. Hold on - "a new satellite next year" (C1) will be more powerful allowing for the first time 60/72/90cm dishes. It has been a long wait for Tasmanians.

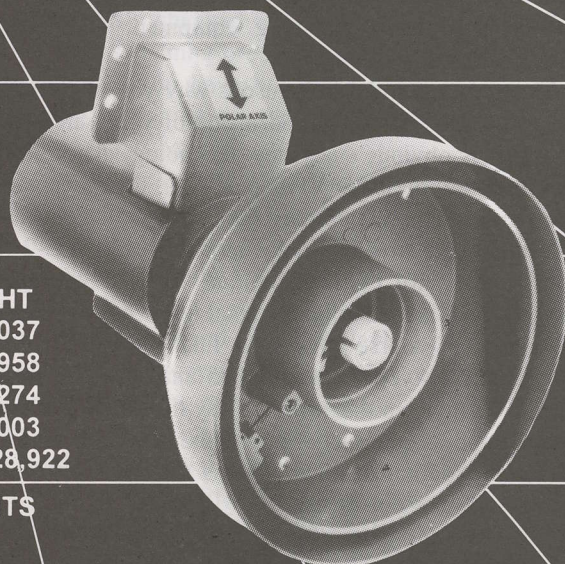


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NEW ADL Web site - www.adlfeed.com

PVR - Personal Video Recorder married to Strong IRD

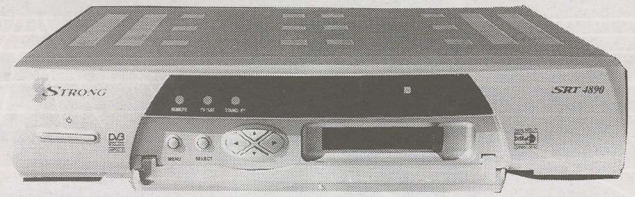
The Strong 4890 satellite receiver with a built-in PVR (Personal Video Recorder) was expected in late April. This is new technology, previously available only in the USA and more recently Europe, which allows the user to retain the MPEG-2 digital data stream straight through to a recording device for playback of programming at will. What makes this recording device even more unusual is the total lack of tape and recording heads. The "recorder" stores digital data on a hard disk just as your PC operates. The line of distinction between television receiving equipment and the PC just became thinner.

There are several good reasons why you might want a hard disk recording device buried inside of your satellite receiver. The first is obvious - any new technology that allows you to eliminate troublesome VHS tapes (or their equivalent) is a good move. The second may not be so obvious at first blush - the digital data stream which characterises MPEG-2 television does not require conversion in a PVR to analogue before recording. In fact, the digital signal never has to be analogue at all except of course when you finally sit down to watch a programme on your old-fashioned analogue TV set or video monitor. And even that will one day (say 2002) be avoidable - just as soon as some legal problems are sorted out relating to digital in - digital display TV sets and monitors. But we are getting ahead of ourselves.

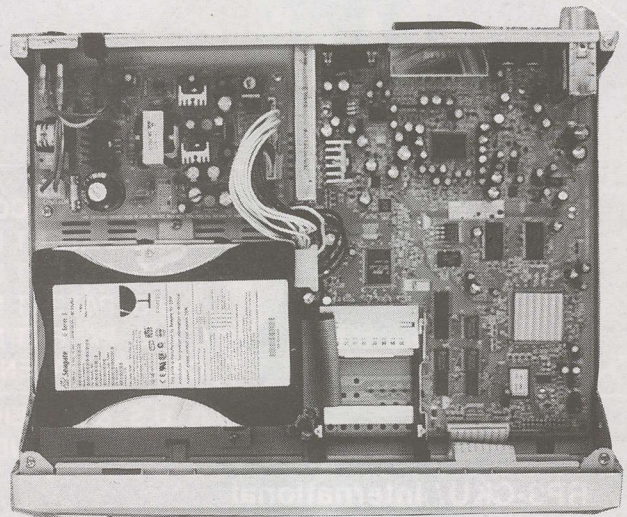
The 4890 is a state-of-art very comprehensive Common Interface (CI) digital satellite receiver capable of reproducing FTA or encrypted services in just about any transmission format except MDS (TARBS), PowerVu and NDS/Videoguard. That means the two CAM slots in the front of the unit will accept appropriate devices to decrypt any of the following formats: Conax, Cryptoworks, Irdeto, Mediaguard, Nagravision and Viaccess. That is the "common" in Common Interface. Irdeto is of course the format of choice for Aurora, Austar, Foxtel, JEDI, UBC and as announced for TelstraSaturn. Nagravision is the choice of MMBM (C2M), Mediaguard (SECA) is Canal + and Zee while Viaccess is used by Tahiti's TNS service on I701. With two slots, you can select any two of the appropriate CAMs, load in matching "smart cards" for the services and be away. All of that is now universal in a variety of top-end satellite receivers.

For those users who plan to access two or more services on two or more (different) satellites, you have another 4890 assist. DiSEqC 1.2 is a software routine which makes it possible for you to pre-program into the receiver the appropriate LNB, polarisation, antenna and even antenna positioner information. If your dish is motorised, through DiSEqC 1.2 and an external V-Box, the software of the 4890 controls everything. Even if you are using one of the new Autosat Toroidal antennas that switches LNBS rather than the dish pointing.

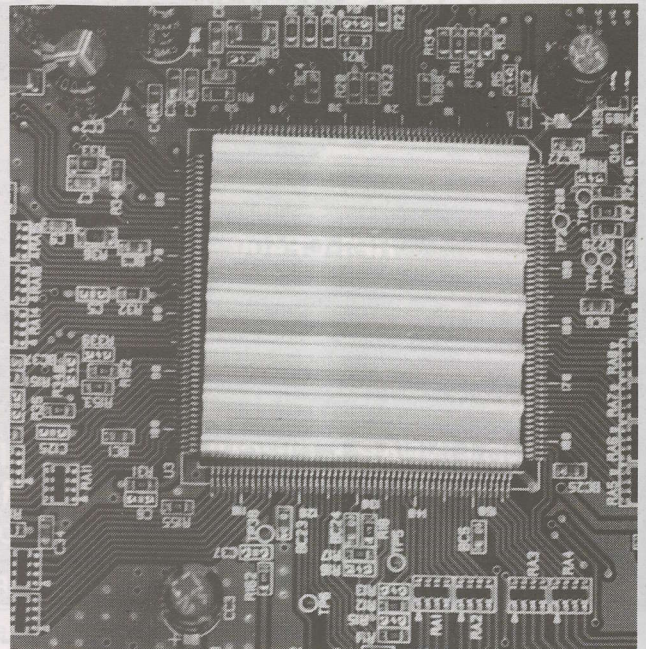
Bottom line for capabilities: The 4890 does virtually everything any other receiver does including PowerVu and NTSC, it provides two separate (or two of the same) CA system reception strings, and comes factory loaded with the

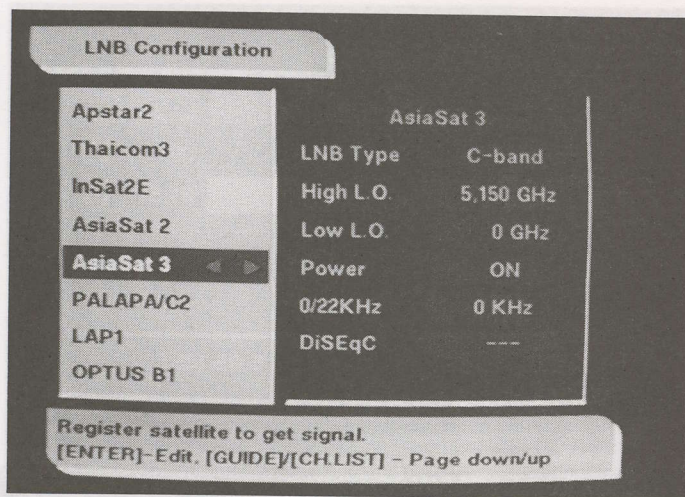


Below - PVR occupies left hand/front portion of case (power supply is rear of same side); full MPEG-2 CI receiver is only half the size of the case.

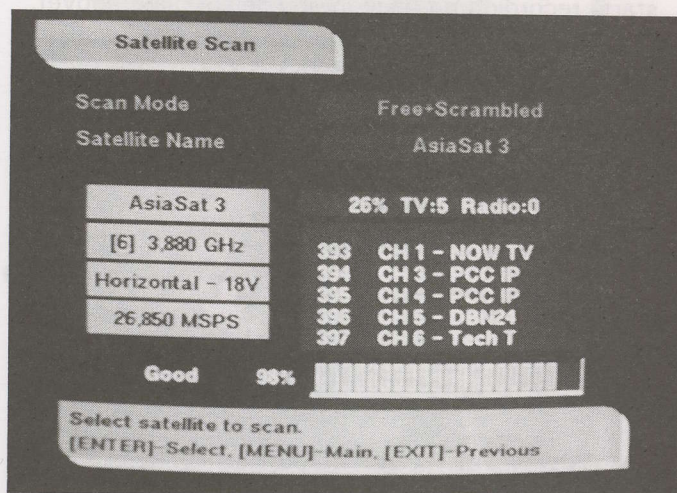


COUNT the legs. In case you've never seen a "monster IC chip" that is essentially a complete receiver on a chip. Imagine trying to desolder and replace this sucker!

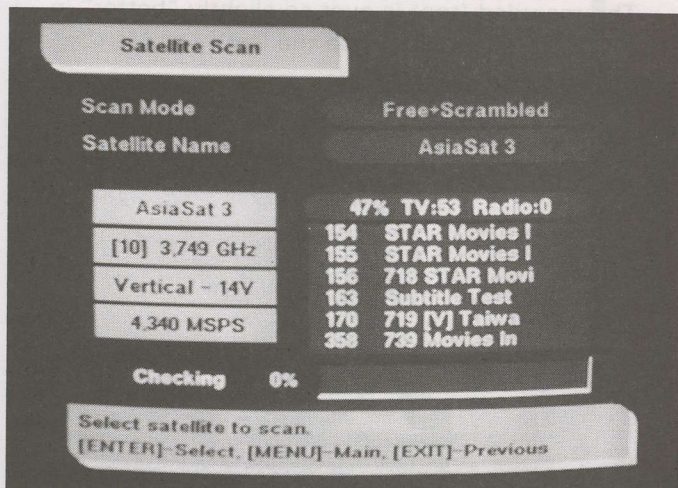




FIRST you select a satellite (above) and make sure the parameters are correct. Then you ask the 4890 to "scan" which it does with no additional data entry (below) using factory loaded transponder memorised data.



AFTER scanning horizontal polarisation (above - note "18V"), receiver switches to 14V and goes through vertical. Total elapsed time for all of As3S- under 2 minutes (below).



most recent software that gets you onto a satellite and a transponder loaded with a minimum of fuss. We were particularly impressed with the seamless transponder loading routine. First you select the satellite of choice, then set up the particular receive system parameters that apply to your

installation (LNB LO. voltage for the LNB[s], switching routines, receiver standards conversion [the 4890 will output video in the same format as incoming, or do a conversion to PAL-output for all channels or NTSC-output for all channels]) and a host of additional functions running from viewing age restrictions to setting automatic changeover to daylight savings time. New satellites or new transponders can be manually entered with one of the most straight forward, direct procedures we have seen to date.

We found the 4890 software factory pre-loads to be spot on. The simplest way to start is to set the clock, select installation, enter the receive system parameters, select a satellite of interest and confirm the parameters for that bird (whether C or Ku for example). From satellite selection you move to TP (transponder) selection, or, you select satellite scan to initially load the full bird. The factory preloaded information relates to both vertical and horizontal polarisations making it important you have previously checked off the LNB voltage switching (or 22 kHz tone) switching procedure you are using. Once the "scan" is initiated, you have but a few minutes to goof off while the 4890 is zipping through the factory pre-sets. As it does this, three things happen:

- 1) The transponders as found are loaded and a channel list for each appears in sequence on the screen;
- 2) The number of TV and radio stations located and loaded is "counted" with a running total notation above the channel service names;
- 3) The signal quality and the signal level are displayed for each transponder or programme channel in real time as it is loading. Level should be over 30%, quality over 10% on the bar graphs for the loading to take place.

If you look careful at the interior (cover sleeve removed) photo on page 6, you will notice a grey coloured bag-like device at lower left front. This is the PVR unit, manufactured for STRONG's assembly plant as an outside item by a firm known as Sea Change. Notice also that the left hand side of the interior space available has only the PVR and the power supply. In fact, the actual satellite receiver including the CI portion occupies just 50% of the interior space. Some of this is because of the super-chip (page 6) which has so many connection legs that even the bravest technician might be put off from attempting to replace this guy. A competent tech can still service the power supply, and some of the baseband (audio and video processing) circuits which continue to utilise common ICs. But the L-band input MPEG-2 data stream processing portion is quite clearly beyond all but factory trained and equipped service facilities.

A word here about the "User's Manual". Strong gets high marks and accolades for creating a manual that is straight as an arrow aimed at the user. The person (or people) writing this (72 page) instruction book must have been paying attention to the Australian-New Zealand industry concerns as reported from SPRSCS 2000 in SatFACTS for July and August 2000. The only short coming we can report is in the technical specs area for the PVR. How to use it is adequately covered but how it works and what special steps should be taken to keep it running are unfortunately not there.

The PVR

When the first hard drive (hard disk) television recording devices for consumer use appeared more than 18 months ago in the United States, the creators realised they had something totally new to explain and sell to the public. Somehow they elected the now generic term "PVR" for personal video

recorder. The name hardly explains what it does or why someone would prefer one if simultaneously offered a current model VCR.

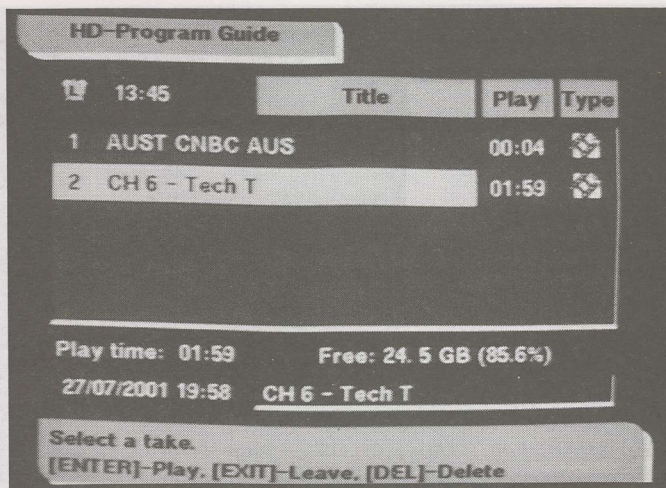
We have already noted there is no tape to break or get damaged, no intricate tape wind (and unwind) sets of arms and levers which move each time a new instruction is entered. Moreover, this PVR is a digital input and digital output device. So if you ask it to record a specific digital data stream (such as Tech TV) at a certain time (using the clock function and a menu system that selects when you wish to record as well as which channel), the combination receiver and recording system simply does what you have commanded. The digital data stream coming in can be viewed on a receiver simultaneously, or not, as you wish. If you were using this with a pay-TV system such as Canal + or Austar, the EPG (Electronic Programme Guide - as available) is the most convenient method of selecting recording choices. Simply go to the menu, move the cursor with the remote control to the programme upcoming to record, and enter. When your internal clock arrives at the appointed hour as determined on the EPG, the receiver turns on (if off) or resets to the chosen channel (satellite/transponder) if you are off with the dish pointing someplace else, and records the incoming digital stream in its original digital format. This stays digital until you come back later and ask it to play back - at which time the recorded digital stream is converted into analogue so your old-fashioned analogue TV receiver (or monitor) can display what you recorded. As you might suspect, the quality of the digital recording is every bit as good as the original "live" transmission (*some* might say it is *better* - see two photos to right).

This is, as married to a satellite receiver with CI capabilities, a brave, new, technology. The 4890 is one of (if not *the*) first to marry PVR and satellite for Asia-Pacific use. We will remember this model years from now as being the "pioneer" in what will shortly - we predict - become commonplace and even standard for virtually all CI capable satellite receivers.

The future is of course not only digital recording and digital playback but digital display. To that end, the recently launched ABC HDTV service (Optus B1, 12.670, .638, .706) which happens to include "ABC Kids" in digital SDTV (standard definition television) is a wonderful place to test the capabilities of the 4890. Software built-in responds to instructions to play back in widescreen (16:9) format, and to deliver through the twin SCART sockets a multitude of user selected output formats including Y-C, RGB and composite. For those fortunate enough to locate a 16:9 monitor, even if in analogue only format, the 4890 can be told to fill the screen appropriately on "ABC Kids".

Alas, these are early days for digital in, and digital *out* is still some months and possibly years away. Before we can expect satellite receivers (with or without PVRs) to provide HDTV digital outputs to connect directly to a digital input on a monitor/receiver, we need reasonably priced and readily available digital display devices. They simply do not exist today and probably not this year - even in small, expensive, quantities.

What all of this says is the 4890 is available, it has features no other satellite receiver will do today, and the price is realistic when you consider the PVR is in-built. Over the next year we will see a virtual explosion in new, expanded PVR related features including twin tuners (record one, watch another channel), twin simultaneous LNB inputs, even



SELECT from either the program guide or channel listing - such as "Tech TV." Tell it you wish to record from (start time) to (stop time) and having previously set the clock on your 4890 click "out" and go on about your business. AFTER it records or starts recording go back in and select play (above).



If we told you one of these two pictures (above and below) was "live" and the other was from the PVR recording, 65% of you would select the top as the "live" and the bottom as "recorded". Wrong. The recorded (top) is ever so slightly "better" in quality than the live!



software directed playback instructions. But the 4890 is here, *now*, and a very exciting product indeed.



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SDS Report #2: 17.7km LOS is piece of cake

If there were any doubts concerning the "oomph" of the SDS transmit package they disappeared when in a series of ever extending steps we completed tests at the practical limit of where we could reach with test reception equipment. The headline above sums it up.

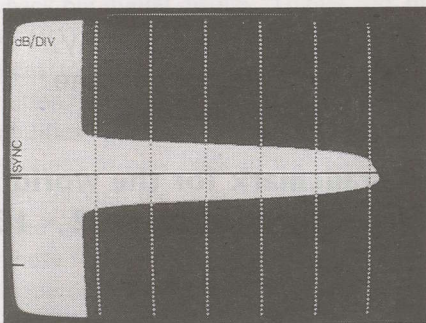
LOS (line of sight) coverage is a numbers game. If you know the output of the transmitter (10 watts), the "gain" of the transmit antenna (3 dB) and repeatedly use the same (or identical) reception equipment within the LOS region, the distance versus signal level can be reduced to a predictable formula.

Non line of sight (NLOS) is a less predictable grey area largely because collecting "signal loss data" for objects that may or do "block" LOS is a tedious chore. Suppose you are within LOS and "eyeballing" the transmission site (sort of "sighting the site" or STS), and, go through a door into a building. Now you are NLOS because the building is a blocking agent. If you knew or had measured signal just outside the door, with LOS, and then went inside to measure again, how much different would the two measurements be? Could you, from NLOS inside move to a window and again STS bringing back the signal if by chance it was lost when you went from LOS to NLOS?

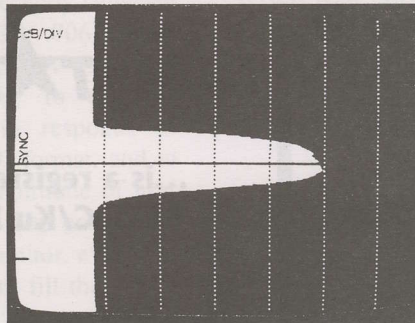
Or, suppose the actual transmit antenna was itself inside and was NLOS from even a few feet away because of the enclosing building. How much signal (*any* signal?) would "escape" through the walls of the enclosure building? The answers: Sit down for a good read as we answer not only these questions but report that even mobile (in motion) reception is possible!



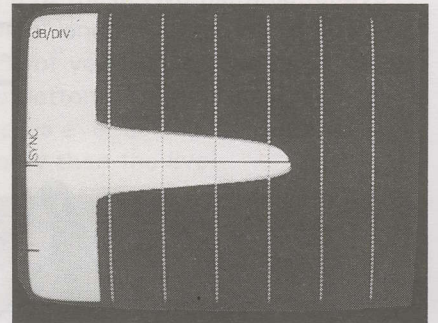
INSIDE the glass window, second deck (third floor) above ground is discone antenna, 10-watt L-band transmitter. Note corrugated steel roofing (see text).



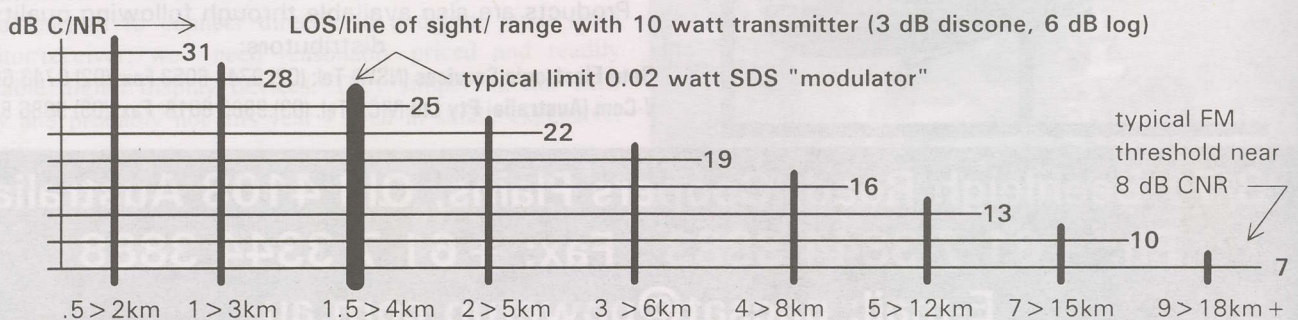
28 dB C/NR - 2km (LOS)



22 dB C/NR - 4km (LOS)

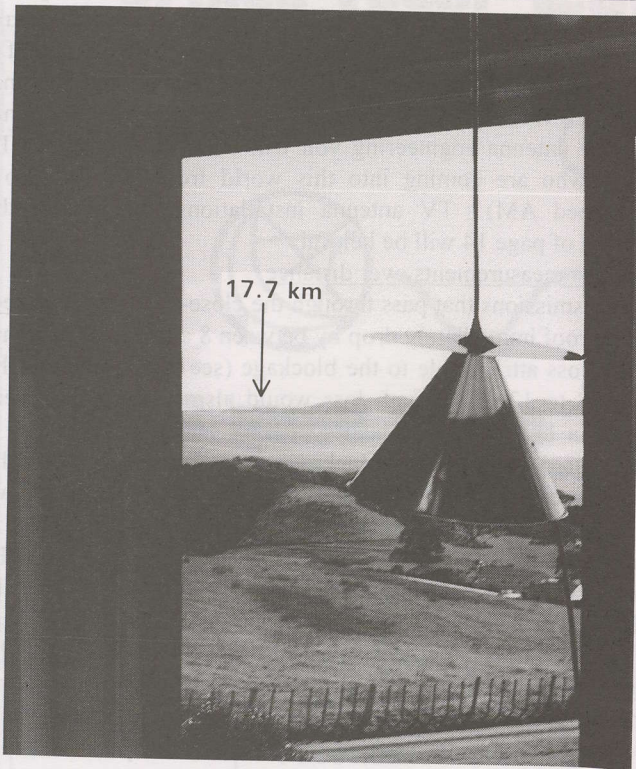


19 dB C/NR - 6km (LOS)



How much signal is required?

A "P5" (above threshold) FM signal of 27 MHz bandwidth typically must be 8 dB or more C/NR (carrier or signal) to (system noise) ratio. If the measured signal is only 1 dB C/NR at a site, raising the receive antenna "gain" by 7 dB or the transmit power level by 7 dB will put you at threshold.



DISCONE transmit antenna, omni-directional in coverage, shoots through glass to distant point marked (arrow) 17.7km away with more than adequate signal for P5 L-band reception.

Numbers

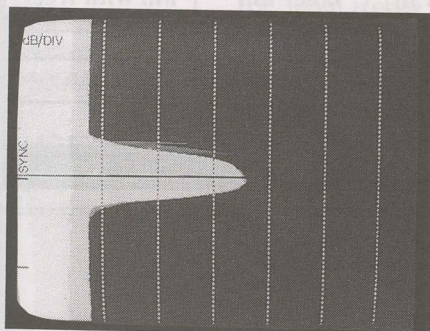
Our test "range" description. The (3 dB gain) disccone antenna is suspended from a wooden rafter by a short (1m) length of Kevlar-Dacron rope; 8m above ground, 89m above sea level, but inside a building which has bronzed (sun glare reducing) windows on the north and south sides, corrugated (iron) walls on the east and west sides. This test system is quite ideal because it allows LOS and NLOS measurements to be accurately made both close in and at LOS limit distances - both through the bronzed glass (north and south) and through the close-in corrugated steel siding (east and west).

The reception test package consists of a Promax MC944 spectrum analyser (with built-in demodulator allowing you to view the reception as well as measure the signal level), a 6 dB gain log antenna, and optionally a 15 dB gain low noise (3 dB noise figure) masthead amplifier. Polarisation is vertical, and we described and illustrated these parts in July SF.

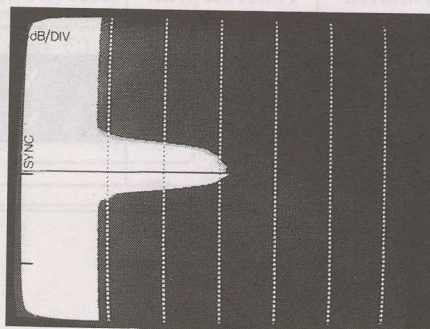
And a quick review of what the objective is with SDS: to transmit a signal to one or more points within a desired radius using where practical transmit and receive antennas that are located "inside" out of the weather, out of view where they are unlikely to attract any non-supportive neighbourhood reaction.

Any object that destroys LOS is bad to this objective but "bad" is relative. The desired signal level is 8 dB C/NR (carrier to noise ratio) or better. If an object blocks LOS and cuts a 15 dB C/NR signal by 5 dB, we still have 10 dB C/NR ($15 - 5 = 10$) which is above "FM threshold" for our SDS signal. The blockage could be at either (or both) end(s) of the circuit: close to the transmitting antenna, close to the receiving antenna. The signal "lost" to the blockage is independent of where the blockage occurs, even if in the middle of the path.

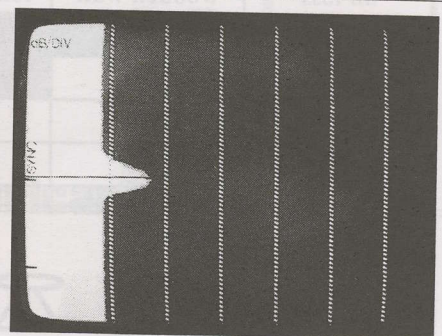
In our tests we were using the maximum power (ten watts) currently practical. This is 27 dB more transmit power (signal) than our 20 milliwatt modulator; *remember that number*. But the transmit antenna is omni-directional (shooting signal in a complete 360 degree circle around itself) and the receive antenna is a very modest (6 dB) gain device. How "small" is a



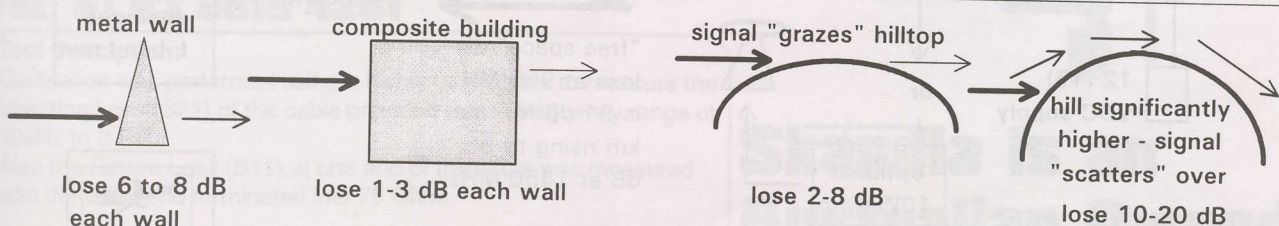
15 dB C/NR - 9km (LOS)



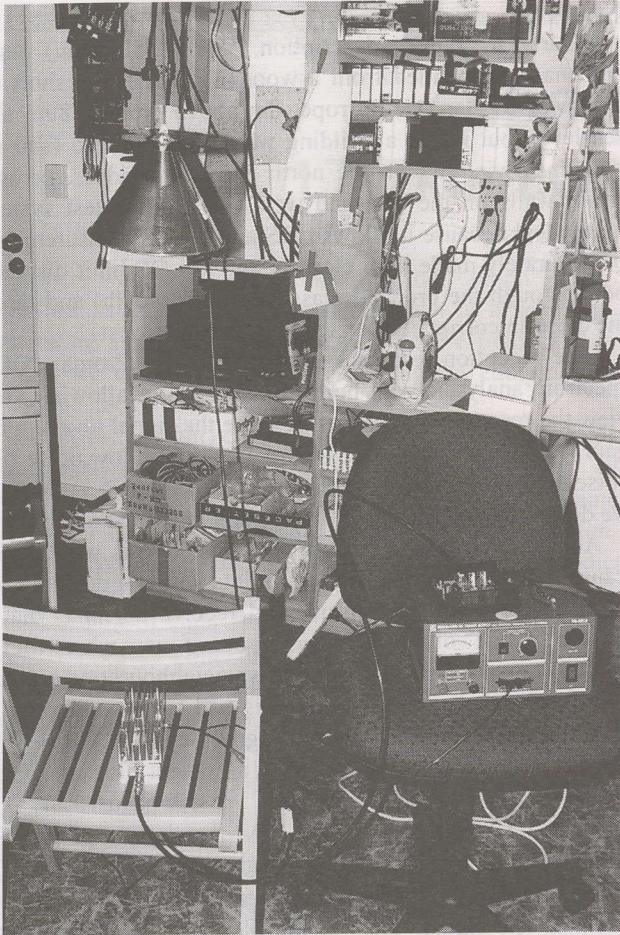
12 dB C/NR - 13km (LOS)



5 dB C/NR-17.7km (almost LOS)



Typical signal losses measured with ten watt transmitter when signal is "obstructed" by a solid object



CLUTTERED? Test bed. Component parts include pair of power supplies, 20 mW 24-channel agile transmitter, ten watt solid-state power amplifier able to operate anyplace between 950 and 1450 MHz, and wide frequency coverage discone transmit antenna. See block diagram below.

6 dB gain log? The physical part - if you *reduced* a C-band parabolic antenna down in size until it had only 6 dB gain, it would then be 2.2" in diameter. That is inches, not feet (or metres). So you can see how much "signal level enhancement" potential we have remaining at the receive end of the circuit merely by making the receive antenna more effective (few of us would attempt C-band reception with a 2.2" diameter dish!).

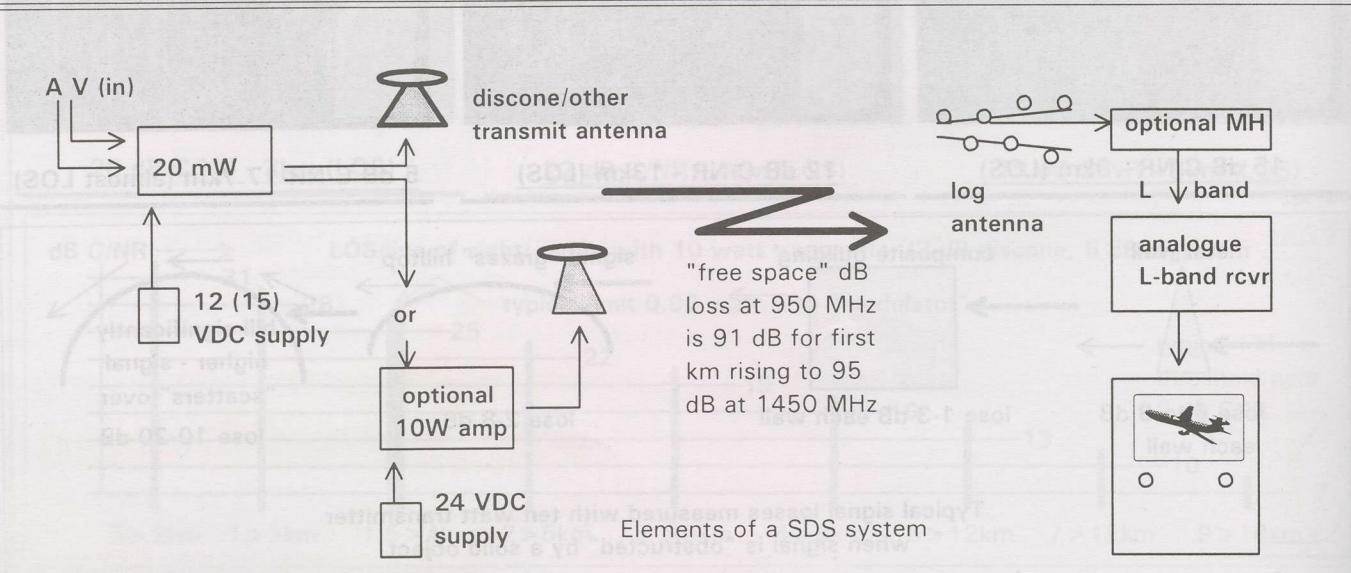
What this says is if you can detect even a "whiff" of signal at a test location, using the hand held log antenna, with just a modestly larger (more gain) receive antenna the signal would be at or above the 8 dB C/NR FM threshold point. So if a particular site measures 1 dB C/NR on the log antenna, consider this simply a place where with some additional receive antenna engineering you will be above threshold. To those who are coming into this world from terrestrial (old fashioned AM) TV antenna installations, the box at the bottom of page 14 will be helpful.

Our test measurements over distance

Transmissions that pass through the close-in corrugated steel (iron) roof immediately drop by between 8 and 12 dB in signal level; loss attributable to the blockage (see table, below). The same 8 to 12 dB of path loss would also occur if you were inside a building with the log receive antenna which had a corrugated steel roof blocking you from LOS to the transmitter. The signal loss with LOS is pretty linear as shown along the bottom of pages 10 and 11. At 1-2km (.61 to 1.2 miles) the LOS signals run in the region of +28 dB C/NR; that's 20 dB more than FM threshold (heaps of margin). In fact, if you disconnect the log antenna and substitute a 2.5cm (1") nail stuck into the F fitting on top of the MC944, the signal level is still way above threshold (suggesting a very tiny "patch antenna" created by John Ramsey could "stick" on a wall and be more than adequate for indoor reception within a couple of kilometres of the transmit antenna).

In textbook theory, the signal drop will be in the region of 6 dB each time you double the LOS. So if we have +28 dB at 2km, that suggests +22 at 4km, +16 at 8km, +10 at 16km.

db loss	wooden wall	foil insulated	concrete wall	steel (iron) wall	taller hill	hill with trees
<3 dB	X	X				
approx 8 dB		X	X	X		
approx 12 dB				X	X	
15 dB +					X	X



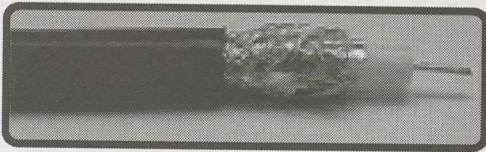
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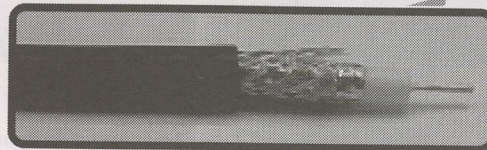
Master



RG6 quad cable



RG6 dual cable



Inner Conductor:	1.02mm Copper Clad Steel
Dielectric:	4.60mm Foam Solid Polyethylene
Inner Braiding:	0.16mm Aluminium wire x64%
Outer Braiding:	0.16mm Aluminium wire x48% PLUS double Aluminium Foil
Foil Type:	Bonded Aluminium Foil
Sheath:	7.40mm PVC
Impedence:	75 Ohm
Packaging:	305m Quick Pull Box or 305m Reels

Inner Conductor:	1.02mm Copper Clad Steel
Dielectric:	4.60mm Foam Solid Polyethylene
Braiding:	0.16mm Bare Copper x64%
Foil Type:	Bonded Aluminium Foil
Sheath:	6.90mm PVC
Impedence:	75 Ohm
Packaging:	305m Quick Pull Box or 305m Reels

Attenuation:	dB/100 metres(20 deg. C) ±5dB			
500MHz	1GHz	2GHz	3GHz	
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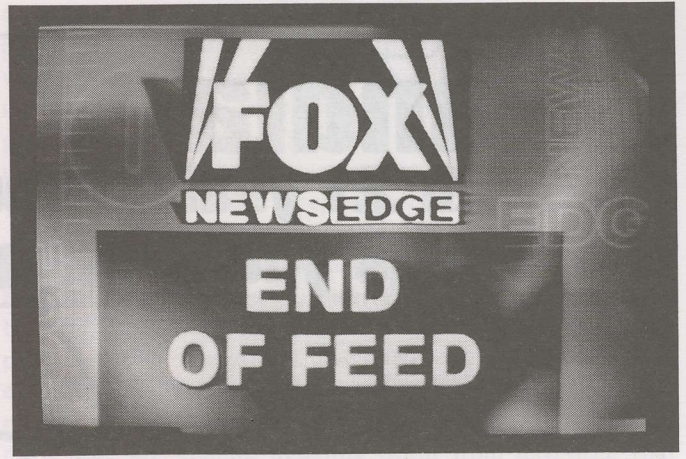
Test Description:

Calibration was performed using a Network Analyzer to measure the Insertion Loss (S21) of the cable provided over a frequency range of 30kHz to 3 GHz.

Also the Return Loss (S11) at one end of the cable was measured with the other end terminated into 75 Ohm.

Markings on the cable were indentified as follows:
 "CABLE MASTER RG6 QUAD SHIELD 75OHM".

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WHAT it looks like at 17.7km. We knocked on a door and asked, "can we use your TV set for 5 minutes?" connecting the AV output of the Strong SRT 170LT to their wall mounted TV receiver while feeding the SRT 170LT from the 6 dB gain log antenna described in July SF. "Is that a Sky channel?" they asked. We assured them it was not! (Modulation feed from PAS-8 California Bouquet 3940Hz - should you wonder.)

This reduction in level is due to "signal spreading" (June 2000 SF, #70, p. 12). Our measurement charts along the bottom of pages 10 and 11 show we were slightly lower than theory but within the general range none the less.

In SF#83, we wrote about the 15 dB gain masthead amplifier noting (p. 7), "low noise (masthead) amplifiers at (the) receive antenna will increase range but we find these equipment enhanced receive-end improvements are modest (typically 10% or less greater range)." At our most distant (almost) LOS measurement point (17.7km), with a 5 dB C/NR measured we cut in the masthead amplifier. Instant 15 dB carrier with what was easily 10 dB C/NR. In other words, the masthead turned a P3 image into P5 with headroom. We were very impressed with this and you can see for yourself the quality of the 17.7km path image directly above.

Non-LOS levels

Most users of SDS will not have LOS, especially if the transmit antenna is inside a building itself. Note from the table on p. 12 a "standard" (if there is such an animal) wooden, wooden + foil insulated or concrete wall (whether re-enforced with steel or not) will attenuate the signal by between 8 and 12 dB. If you are within the 22-28 dB C/NR coverage region (typically 4 km of under), any signal attenuation that adds up to some number that leaves you at least 8 dB C/NR or better is tolerable.

Example: The transmit discone is inside a wooden frame building but you still measure 20 dB C/NR when you do a STS from the outside of the receive location. If you go inside,

FM versus AM perfection?

If your primary involvement with satellite TV has been since digital began, you can be pardoned for not knowing how FM (frequency modulated) analogue works. Or how it relates to terrestrial AM (amplitude modulated) TV. Look at the picture off-screen at the top of this page. That is a FM C/NR (carrier to noise) of between 8 and 10 dB and as we used to say in the pre-digital days, "there are no sparklies in the picture."

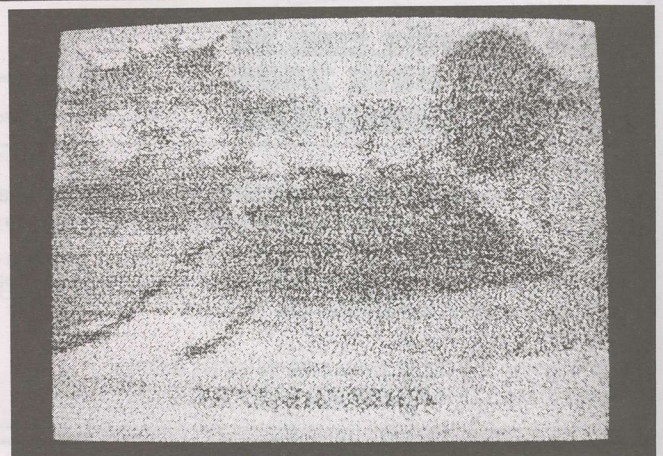
Now look at the TV screen photo to the right. This is also 10 dB C/NR but - BUT this is an AM terrestrial TV signal. The "FM advantage" over AM is very significant just as the digital advantage is over FM!

through a concrete wall, the signal will be attenuated by approximately 8 dB leaving 12 dB (20 - 8) C/NR. You only need 8 so you are home free.

If you follow our measurement experience precisely, are located 4 km distant through a hill, the signal level should be in the region of 22 dB C/NR (4km LOS - p. 10, bottom) minus the loss of the hill (15 dB +, p. 12 table). That says 7 dB C/NR which is close enough to 8 to be practical if you also use a masthead amplifier. But hills are funny things because their shape and the objects on their slope and top are variable. We found we had one location 4km distant from the transmit discone which went through our corrugated metal siding at the transmitter, through one hill 20m taller than the transmit site and another 30m taller and we still ended up with 2 dB C/NR using the log measurement antenna. With the masthead we were 15 dB C/NR but only P3 because of the poor below threshold input signal. The solution, of course, would be to add another 6 dB of receive antenna gain.

Lower power tests

All tests reported here began in a 20 milliwatt (0.02 watt) modulator driving the 10 watt output amplifier. Using the 0.02 watts alone ("barefoot") reduced LOS to around 4 km and wall penetration to around 600m. The next series of tests will transmit six (not one) FM SDS signals through the ten watt amplifier creating six separate channels of reception. We'll have a report here and of course the hands-on all day work shop for SDS during SPRSCS 2001 in Melbourne on Friday September 28.



Liar-Liar - your pants are on fire!

The New Zealand TelstraSaturn Mess - have they no conscience???

Consider this situation. You are a well known, influential member of society and become engaged to be married in September to an equally well known partner. The partner's family spends millions of dollars on preparing for the wedding, a date is set, invitations are mailed, entertainment and lavish food arranged. And you are within 30 days of the event. Alas, you have cooling feet, something you totally neglect to share with your partner. But within your family you do talk about this, and then while you are away on a trip someone in your family tells the local press the wedding is off. Only nobody bothers to tell the bride-to-be or her family and they read about the cancellation on the front page of the next day's newspaper.

Substitute TelstraSaturn for the groom and TVNZ for the bride and you have the latest chapter in New Zealand's pay-television soap opera - "As the digital worm fornicates."

The players: TelstraSaturn, macho male lead, spending NZ\$1.2 billion to wire up three major cities and their suburbs (Wellington, Christchurch, Auckland). TVNZ, the coy female bride to be, twice spurned at the alter before TelstraSaturn's arrival and heavily into Prozac and therapy because of lingering family difficulties that preceded the TS engagement.

TVNZ has previously been jilted by Sky Network (actually, while each side professed to be into marriage, both were in reality just having a fling) and with a boot in the backside provided from NZ Government, by British consort NDS. Left at the alter for the third time, TVNZ looks to end life as an apoplectic old maid mending nephew's socks and providing tea and bickies for the revolving doors of Government.

TelstraSaturn is a dyslexic family huddled together for warmth in a cold environment created by NZ Telecom and Sky Network NZ. The amazing thing here is that the individual elements of TelstraSaturn are larger and more powerful than either Telecom NZ or Sky Network NZ but somehow as a converged entity they end up weaker and less able to cope with adversity. This is one of those business circumstances where $2 + 2 = 1$ or perhaps 2 on a good day, but never 4 .

Into this "mixed environment" steps New Zealand State Owned Enterprise TVNZ. Like any savvy terrestrial broadcaster, Television New Zealand has been worrying about, and planning for, the eventual transition to digital for many years. In Australia, Government legislation has determined when, where and how free to air terrestrial analogue will be replaced with terrestrial digital. In New Zealand, Government has stayed completely out of any planning for digital believing that, "the TV broadcasters can sort this out between themselves." The single step Government is willing (but not anxious) to take - creating a new set of (UHF) channels which could be used for DVB-T.

The Original Saturn (called Kiwi Cable) began in a television sheltered community near Wellington. Saturn's original Kiwi owners sold to an American who sold to a Canadian group who sold to another Euro/American group and today Saturn has laced cable primarily hanging on pre-existing utility poles throughout much of Wellington. Saturn was



majority controlled by UIH - the same international firm that also controls Australian pay-TV provider Austar - when Australia's Government owned Telstra proposed the TelstraSaturn co-venture. Telstra of course owns 50% of Foxtel in Australia.

TelstraSaturn found bankers willing to put up NZ\$1.2 billion for the purpose of completing (fibre optic and coaxial) cabling of Christchurch, and then Auckland, as well as creating an undersea fibre optic link tying the three cities together. Standing aside watching all of this activity with raised eyebrows - pay-TV monopoly Sky Network NZ.

Only months after Saturn became TelstraSaturn, a new announcement. TS would joint venture a new nation-wide satellite DTH business with Television New Zealand: target date - May 2001. TVNZ was eager to find a replacement for its own terrestrial analogue service and considered 3 options:

1) Build a national DVB-T network parallel to the existing analogue transmission nets, and as the public gradually replaced analogue TVs with digital TVs, schedule some future turnoff date for analogue.

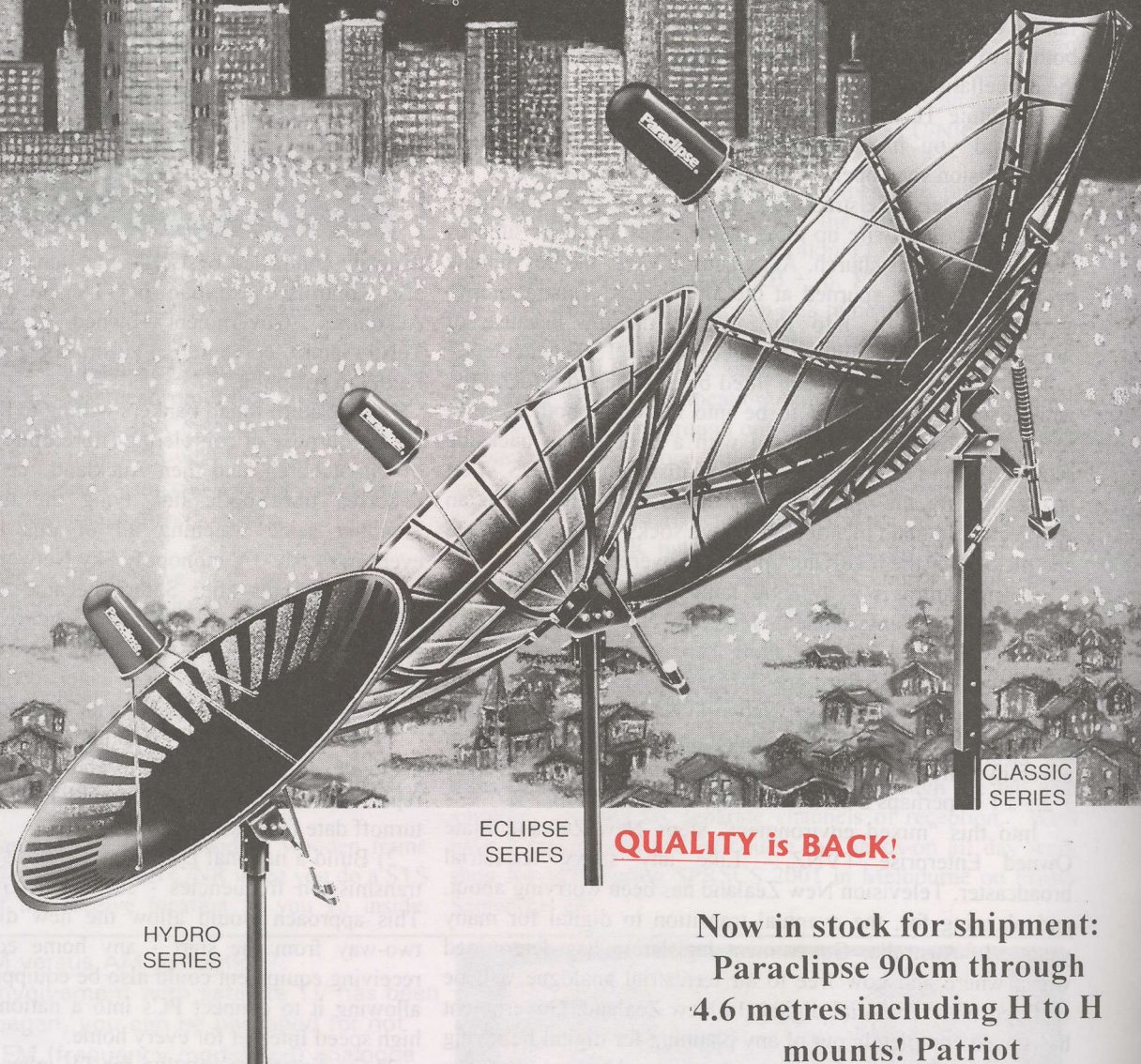
2) Build a national DVB-T network using non-standard TV transmission frequencies - such as 2 GHz region channels. This approach would allow the new digital network to be two-way from the start - any home equipped with digital receiving equipment could also be equipped with a 2 GHz link allowing it to connect PCs into a national/international grid; high speed Internet for every home.

3) Go directly to satellite for TV, plan ahead for a two-way Internet compatible system which would in five to ten years become a reality as new 20/30 GHz generation satellites designed for 2-way linking replace the existing C and Ku birds.

TelstraSaturn offered a way for TVNZ to elect plan = 3 with only a minor-league cash investment from the State Owned broadcaster. And so "TVNZ + TelstraSaturn" was born - a

TS text continues - page 18

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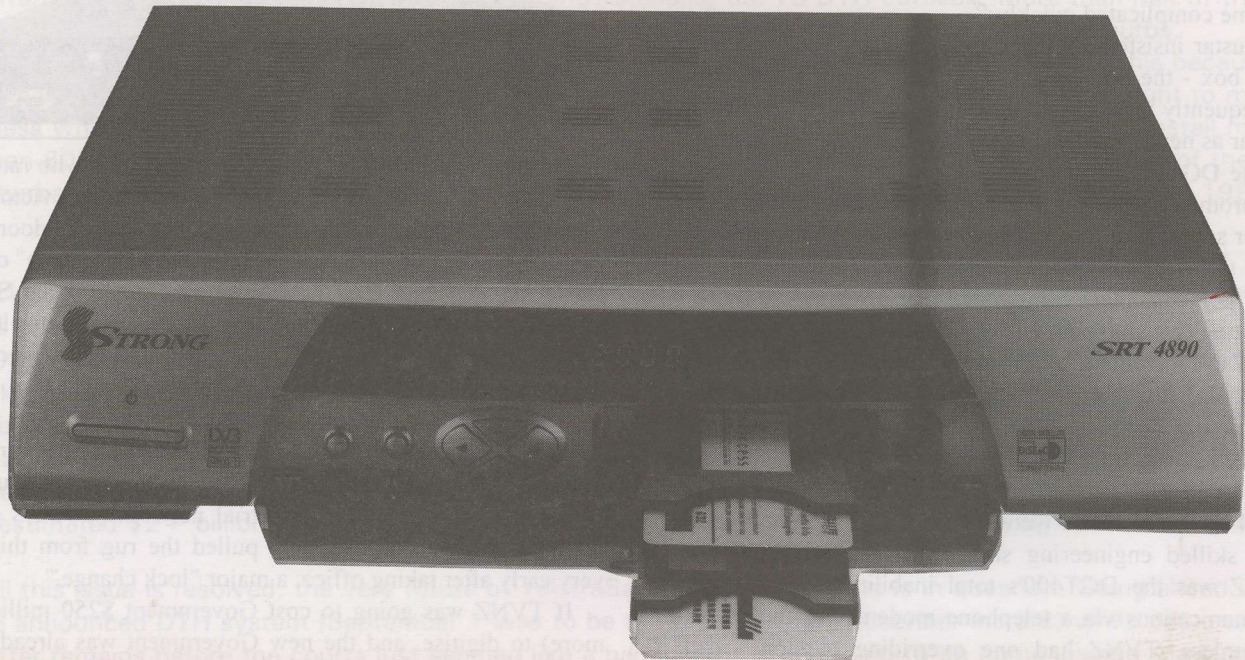
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"mixed marriage" of convenience. What apparently escaped notice at TVNZ was the dysfunctional nature of TelstraSaturn operations.

TVNZ, very anxious for this to work, may have been guilty of ignoring serious warning signs from the would-be groom. From the outset, there were disagreements which with 20-20 rear vision should have been red flags to the State broadcaster.

First, but ultimately a minor element, the matter of selecting a suitable set-top box (IRD) for the DTH service. Here life became complicated quickly.

Austar insisted TS use the DGT-400. You remember this Pace box - the one Galaxy was using when it went bankrupt, subsequently used in diminishing quantities by Foxtel and Austar as newer models became available for replacement.

The DGT-400 carried baggage with it. The box had been compromised by Australian pirates (remember Mad Max?), its power supply had proven to be troublesome in Australian rural areas (where mains voltages are high - 20 to 30 volts higher than NZ), customers complained that it was hot to touch when operating (causing people to be inclined to turn them off when not in use - creating a new set of problems when they turned back on, including rebooting the CA system) and the interference created by the switch mode power supply which wrecked havoc on TV reception in Band 1 (NZ channels 1, 2 and 3).

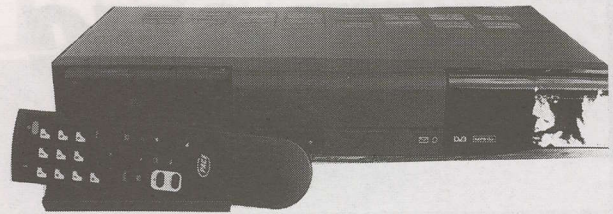
All of these factors were known to TVNZ, and concerned their skilled engineering staff. But the real death note for TVNZ was the DGT400's total inability to handle two-way communications via a telephone modem. For the DGT400 is modemless. TVNZ had one overriding passion - call it a demand - in converting to digital. The system had to be two-way capable. *And this they would not abandon.* Whereas TS could care less about two-way satellite because TS planned to do their two-way using the under construction fibre + coax cable networks.

Set-top box selection was more than an engineering decision. The joint venture between TS and TVNZ had TS paying all of the costs associated with getting a satellite system into the home. The original plan was, (a) TVNZ would supply and TS would pay for their share of Optus transponder space, while, (b) TS would manage and pay for the home installs and TVNZ would use their portion of the spectrum to reach homes with digital versions of TVOne and TV2.

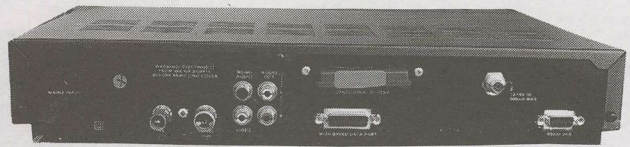
But if TVNZ could not use the TS selected set-top for two-way modem connections, then TVNZ would have to supply its own set-top with that capability. This is where the turkey fell off the truck.

The TS DGT400 would land in NZ for well under NZ\$100. They were second hand (or older), scratched, dirty and dented. Did we mention cheap? While Sky NZ is paying NZ\$450+ for their brand new (Pace, Zenith) set-tops, TS saw a marketing opportunity to "do it cheap." Which left TVNZ, insisting on two-way, out searching for a set-top of their own. Brand new of course. NZ\$450/\$500/\$600 most likely.

And here is where the turkey had its neck cut off. If TS supplied the home dish system with set-top, placing TVNZ's two terrestrial channels into NZ homes in digital format for only a very minor cost to TVNZ, the State owned broadcaster was migrating to nation-wide digital without having to build a very expensive terrestrial digital network. Getting to digital for TVNZ, at no or very little cost, was a matter of life and



The receiver TVNZ would not accept - PACE's 1995 era modem-less DGT-400



death. Government of the day (those politicians who ram their way into Wellington on the strength of an election victory and immediately begin changing the locks on all of the doors) had just about decided it should get the State out of TV broadcasting - leave it to the guys in blue suede shoes. Serious proposals - white papers drafted by expensive consultants - were suggesting selling off TV2, selling off the technical division of TVNZ (known as BCL), turning TVOne into a public service, non-commercial broadcaster (similar to the ABC in Australia). *Or all of these.* The previous Government of the day had approved a NZ\$250 million expenditure for creation of a new digital terrestrial network (TVNZ's option one) but the new Government pulled the rug from this plan very early after taking office; a major "lock change."

If TVNZ was going to cost Government \$250 million (or more) to digitise, and the new Government was already of a mind to sell the networks off, the threat of the digital costs was more than enough to push the decision makers. So when TVNZ announced its own almost-no-cost digital rescue plan, built around a joint venture with TelstraSaturn, the turkey was hauled down from the cross and given a new opportunity to live.

TS appeared in TVNZ's neighbourhood just in time to allow Government of the day to back off and reconsider the break up of the broadcaster.

But there was that *damned box*. As long as TVNZ was insistent on having two-way modem capability, the real economies of the DGT400 install were lost. Even if TS paid for the dish and LNB and cable and minor parts - plus installation labour, somebody was still going to have to pick up the NZ\$500+ for that *damned box*. It was not going to be TS and Government was never likely to agree they would sponsor or subsidise (through TVNZ) digital set-top boxes for consumer use. Which left only the consumer as a candidate to pay for "that damned box".

Everyone kept asking, "Why will consumers spend \$500 or more to buy a box that only gives them the same TV channels they already receive in analogue?" The quick answer was - "because the picture will be clearer, because the box will allow them to access Internet, because with that box they can also optionally subscribe to the TS DTH services."

Take away "Internet", and the TS \$80 box does all of the rest. Would people pay a multi-hundred dollar premium for the ability to one day in the indefinite future use it for Internet? A serious question not to be answered for TelstraSaturn's higher management had a new plan. Kill the turkey at the last minute and oh by the way - don't tell TVNZ the plan.

Why TelstraSaturn pulled the plug on DTH

- 1) A Foxtel/Austar merger seems more imminent each week. If FoxtelStar is the survivor in Australia, what is the future for the illegitimate child in New Zealand? Will anyone even want it?
- 2) If TelstraSaturn does actually survive an amalgamation of the four primary pay-TV players in Australia (Austar-UIH, News Corp-Murdoch, Packer and Telstra), how might it function as a competitor to News Corp controlled Sky NZ - especially if Murdoch's News Corp plays a major role in amalgamating Australian pay-TV?
- 3) If there is no amalgamation, what happens to TelstraSaturn? Might they bring back DTH (the answer is - "possibly")? But DTH is a small paragraph in the TS plan to place high speed Internet, fast two-way capability, and hundreds of potential TV channels onto streets for New Zealand's three largest cities by offering fibre + coax. And here is the key to understanding the TS DTH cutback. More than half of the NZ\$1.2 billion investment in fibre + coax plant is scheduled for Auckland and the suburbs.
- 4) TS has been digging up streets and hacking through concrete to lay their cables. They do this because they have a Ministry of Economic Development/Commerce slip of paper proclaiming their legal right to make a mess when sticking cable underground into public rights of way (easements). But TS plans to install more than 80% of the Auckland Fibre + Optic plant not underground - but above ground. Virtually all of their suburban plant will be suspended on power company utility poles. At least that is the plan. Back in 1996, Saturn negotiated an agreement with the Auckland power utility to, "rent pole space for the installation of communication cables" when and where needed throughout Auckland. But that was 1996 and this is now. The top management - even the name - for the power utility has changed and the new bosses want TelstraSaturn to pay much more for the pole attachments than the 1996 agreement specifies. A serious dispute is in the courts; if TS wins, they go ahead with building the Auckland region cable system. If TS loses, they have three options: (1) *Swallow hard* and agree to pay what the present power company board is demanding (which might be 20 to 100 times more per pole per year than the 1996 agreement), or, (2) *forget about* power company poles and continue building Auckland by being 100% underground (which will make their original NZ\$1.2 billion construction plan escalate to an estimated \$2+ billion), or, (3) *go home* leaving behind a 15% completed hodge podge of main artery underground cables and ducts.

Until this issue is resolved, the very future of TelstraSaturn in New Zealand is in question. Going ahead with the announced DTH system (September 1 was to be the first date for subscriber installs) while this crucial matter remains before the courts just seemed like a bad idea. It is one thing to go home leaving Auckland's cable system unfinished; quite another to also having to dismantle a nation-wide DTH service as well. With all of this uncertainty about the future of TS in New Zealand, perhaps this is not such a good time after all to be launching a new DTH business.

Weird Wednesday

TVNZ's top man, Rick Ellis, opened the morning New Zealand Herald while spooning his morning cereal. He never finished the meal because the front page proclaimed TelstraSaturn had scuttled the DTH plan. To Ellis, it was just like learning, "*your marriage was over because the local newspaper proclaimed it so.*" Nobody at TelstraSaturn had bothered to advise TVNZ of this last minute change. TVNZ people were, a later Herald edition reported, "*pissed off and embarrassed*" by the unusual way to terminate a business relationship.

TS's top guy, Jack Mathews, was returning to Wellington late Tuesday (July 31) when an upper level staff person advised him the Herald was going to break the story in the Wednesday morning edition. Mathews said he tried to reach Ellis that night but failed, and later observed that while he had known of the decision to stop the DTH rollout, he had not attached very much importance to it. He told a later Herald, "*Foolish me. I should have been able to work that out.*"

In fact, in the aftermath TVNZ tried to do damage control by assuring the press, "*We have a contract with TelstraSaturn and they assure us they will live up to that contract.*"

(SatFACTS understands the two Optus B1 transponders were originally leased for a 7-year period by TVNZ. The "contract" subleases portions of the transponders [typically 1-1/2 of the 2] to TS. The contracts are described as "tight" and only a closing down of TS might allow TelstraSaturn to

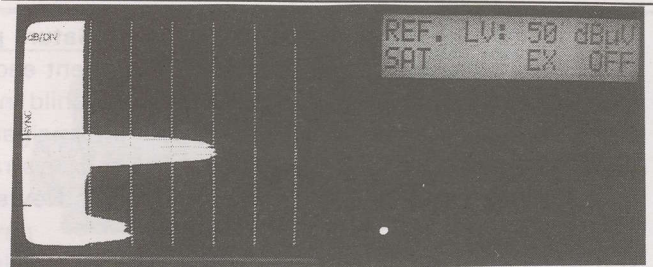
escape being financially responsible for the B1 contracts. However, TS could find a new user for their sublease but only with TVNZ approval of the new sub-licensee and even then TS would continue for the term of the contract to be financially responsible.)

During June and July, TS had engaged the services of three NZ firms (Strongline Antennas, Downer and GDC) to create and manage an installer program. With TS direction, the trio divided NZ into geographic thirds and went about the task of locating and encouraging field installers to pledge their work time to the rollout of TelstraSaturn DTH. Homes would pay \$99 installation, \$29.99 a month for 18 channels (including TVOne and TV2). Teams of supervisors toured the country conducting interviews and classes - right up to the eve of July 31 (with more scheduled but then cancelled throughout August). Installers were to be paid \$90 per home, be expected to cover a radius of 50 km from their base, be available 7 days a week and - this hurt - "*lift roof iron*" to snake RG6 down into interior walls from the roof mounts. Sky installers who have been bitching suddenly were glad they work for Sky.

A large number of trades people - including hundreds associated with TelstraSaturn itself, were as surprised August 1 with the Herald revelation as TVNZ's CEO Ellis. And that included TS people assigned to TVNZ and working at TVNZ in Auckland on the project. They came to work the morning of weird Wednesday and found their jobs had expired overnight. And nobody in TS management seemed to give a damn.

TECHNICAL

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Cellular telephone operates right up to 950 MHz (top carrier) and GSM is present into 960 region; (bottom carrier); something to "work around."

Finding "spectrum space" for SDS

Virtually all nations of the developed world have "reserved" for national (as opposed to world) allocation frequencies in the region between 950 and 2150 MHz. This spectrum space, 1200 MHz wide, is of interest to us because it represents the tuning range of standard analogue (and digital) so-called L-band receivers. The concept of SDS is that you create low power transmitters using the same 27 MHz bandwidth FM (frequency modulation) "standard" to operate someplace within this spectrum region, allowing the receivers to be off-the-shelf, standard, "L-band receivers."

Some fine points first. "L-band" which is what we commonly call the satellite IF (intermediate frequency) region actually only extends from 1,000 to 1,500 MHz: the region from 1,500 to 2,000 is called "M" band and the region from 2,000 to 2,500 is "N" band. But for our purposes we'll for now simply refer to the 950 - 2150 region as "L".

And although the history of "L" has been for individual nations to allocate segments for specified national uses, with the growth of satellites and the telephone industry most of the frequency ranges have now been "adjusted" to more international-based standards. When it looked as if those multi-billion dollar LEO (low earth orbit) satellite constellations might work, countries such as Australia and New Zealand quickly rearranged assignments to create "open spectrum" for the would-be telephone satellites. That they have not yet been commercially viable means the frequencies set aside for their use are in fact not in use.

In the table below, we have a general summary of the region from 950 to 1450 MHz - the "original" TVRO L-band IF region. If you are involved with Thaicom 2/3 and other "expanded C-band" satellites, your L-band is actually 950 - 1,750 as the C-band satellites operate from 3,400 to 4,200, not the older 3,700 to 4,200. A 300 MHz expansion in C-band is paralleled by a similar expansion of "L" band.

SDS transmitters operating in the FM format are channelled just like satellite transponders. The table shows channels 1 through 24, 20 MHz apart, covering the L-band region from 1430 down to 970. On the front of the Avcom-Ramsey 20

milliwatt "modulator" you have two buttons and an LED display. Apply power and it automatically says "1" which means the default frequency for the transmitter is 1,430 MHz. Push the "down" button and it says "24" which corresponds to 970 MHz. The channels are 20 MHz spaced to allow the SDS operator to "stack" up to 24 channels in the 950 - 1450 region, with each channel being centred on a 27 MHz bandwidth frequency modulated signal. This corresponds to the satellite design practice of placing transponder centres 20 MHz apart but switching polarities (vertical to horizontal to vertical) for each 20 MHz step. SDS can be used in the same fashion, or, another feature of the "channel-agile" approach is it gives you a better shot at settling on a "clear" and "non-interfering" frequency after identifying where that might be in your neighbourhood.

There are no "formal allocations" at this time for SDS although applications for this purpose are in process in a number of countries. Those who pioneer SDS will want to be careful to avoid (when "testing" equipment) any frequencies which might interfere with pre-existing services. In the table below we show how the 24 channels relate to existing users in New Zealand. Some of the spectrum chunks are universal - 1240 - 1300 (MHz), for example, is assigned to amateur radio (ham) use in most countries of the world. The hams share this with radiolocation devices but for all practical purposes if you select SDS channels 9 or 10 to "test" on, there is almost no chance you will interfere with any existing, licensed user. Likewise, SDS channels 1 and 2 are pretty safe as well unless you are using SDS #2 nearby to a professional radio astronomy site ("nearby" might be anywhere within 200 km).

The spectrum analyser shot at the top suggests one way to "investigate" present occupancy in your planned SDS operating region before connecting a transmit antenna to a SDS transmitter. Simply connect the SDS wideband log antenna (and the masthead amp for maximum sensitivity) to a L-band capable spectrum analyser, adjust it for wide sweep (950 - 1450) and sit back to try to locate existing signals. We found GSM telephone service (above - 959.800 MHz and 935.200) very strong and that eliminated "testing" on SDS #23

Ch #	1	2	3	4	5	6	7	8	9	10	11	12
L-band	1,430	1,410	1,390	1,370	1,350	1,330	1,310	1,290	1,270	1,250	1,230	1,210
Users	Pt to Pt	Astronomy	R.N. + R.L.	R.N. + R.L.	R.N. + R.L.	R.N. + R.L.	R.N. + R.L.	amateur + R.L.	amateur + R.L.	amateur + R.L.	Radio location	Radio location
Ch #	13	14	15	16	17	18	19	20	21	22	23	24
L-band	1,190	1,170	1,150	1,130	1,110	1,090	1,070	1,050	1,030	1,110	990	970
Users	Aero Naviga.	Aero Naviga.	Aero Naviga.	Aero Naviga.	Aero Naviga.	Aero Naviga.	Aero Naviga.	Aero Naviga.	Aero Naviga.	Aero Naviga.	Aero Naviga.	GSM telco

or 24. If you are within 50 km of a proper airport, you will probably also find carriers within a *portion* of the region of SDS#'s 13 - 23. These are aeronautical radionavigation systems and while a 20 mW FM TV transmitter might not be harmful to them (nor their occasional bursts of transmission to you), the ten watt version of SDS could be very difficult for them to work around. If you see short signal bursts on the analyser, determine the frequency as best you can and then stay at least two full SDS channels away from those "spikes" - even if they are only visible occasionally.

This caution courtesy of Tim Dixon in South Australia:
 "One service that would object violently to the sudden appearance of television signals is the (location determining) transponder system used by aircraft. This identifies each aircraft in controlled airspace and is the source of the identifying markers on air traffic control screens (world-wide). The prospect of unlicensed TV translators wiping out local air traffic control does not bear thinking about! And an aircraft at 30,000 feet can "see" several hundred miles so no translated TV signal could be regarded as being 'only local'."

All of which underscores the need to be very-very careful with SDS 'tests' and to be certain where local/regional users operate or more safely stick to the SDS channels where allocations limit users to individuals or groups that while possibly annoyed by your testing (pending working out a suitable arrangement) would not place any life and safety communications at risk. That is why we suggest sticking to SDS# 1, 2, 9 and 10 for initial coverage testing even if you are on Vanuatu, PNG or Solomon Islands. We'll have more to say about this in a future report.

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- BENJAMIN** analogue receiver model BEN-4400
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SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 August 2001

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
Ap2/76E	AXN	3920/1230I	up to 8	7/8	28(.340)
Them3/78.5	SkyChAust	3695/1455V	up to 3	3/4	5(.000)
	MRTV-Mymr	3676/1474H	1	2/3	6(.000)
	Mega +	3640/1510H	12	3/4	28(.066)
	Mahar/DD1	3600/1550H	up to 8	3/4	26(.661)
	Nepal TV+	3554/1596V	3+ in mux	3/4	13(.333)
	TRT +	3551/1600H	4+ TV, radio	3/4	13(.330)
	Alpha TV	3430/1720H	1	2/3	3(.255)
	PTV1	3424/1730V	1	3/4	3(.333)
	TV Maldives	3412/1738V	1	1/2	6(.312)
	Thai Global+	3425/1725V	up to 7?	2/3	27(.500)
InSat 2E/83	ETV mux	4005/1145V	6+ TV	3/4	27(.000)
	DD2	3910/1240V	1	3/4	5(.000)
	DD National	3830/1320V	1	3/4	5(.000)
	Kairali TV	3699/1451V	1	3/4	3(.184)
	AsiaNet	3683/1467V	1	3/4	4(.340)
	Sky Bangla	3525/1625V	1+ capable	7/8	24(.800)
As2/100.5E	Euro Bouqt	4000/1150H	6TV, 21r	3/4	28(.125)
	Reuters Sing	3907/1243H	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)
	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)
	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	3+/tests	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	3760/1390H	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)
	Indus Music	3900/1250V	5TV	7/8	27(.895)
	Star TV	3940/1210V	12(+TV)	3/4	26(.850)
	CNNI	3960/1190H	6(+TV)	3/4	26(.000)
	StarTV	3980/1170V	2+TV	3/4	28(.100)
	Star TV	4000/1150H	7(+TV)	7/8	26(.850)
	Sun TV	4095/1055H	1	3/4	5(.554)
	CCTV bqt	4129/1021H	4(+TV)	3/4	13(.240)
	Zee Bqt #2	4135/1015V	4(+TV)	2/3	15(.000)
Cak1/107.5	Indovision (S-band)	2.536, 2.566, 2.596, 2.626	33(+TV)	7/8	20(.000)
C2M/113E	TPI	4185/965V	1	3/4	6(.700)
	Satelindo Bqt	4089/1061H	2+ 1 radio	3/4	14(.062)
	Indosiar	4074/1076V	1	3/4	6(.500)
	Anteve	4055/1095V	1	3/4	6(.510)
	SCTV	4048/1102V	1	3/4	6(.618)
	MMBM#1	4000/1150H	11TV, radio	3/4	26(.666)

Receivers and Errata

Tests, promos, up to 5 chs FTA
Finally settled here from As2 erratic service
Mega Cosmos here; use exact Sr
USA religion chs, CMM music FTA
FTA + CA mux
3 Angels USA, Ch of Hope, + 9 radio
Greece SCPC-OK in Australia
FTA, also 3420 PTV3
FTA (reaches SE Australia)
FTA
increasingly active mux; wide beam
SCPC; , OK E. Aust. wide beam
SCPC; OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
SCPC, OK E. Aust. wide beam
MCPC capable; zone beam (weaker Aust)
FTA (TV5 teletext); MCM gone
occasional feeds, some FTA MPEG2
FTA SCPC, teletext
FTA SCPC, teletext
FTA SCPC, radio APID 81
FTA: #1 Mongolian, #2 Mandarin
Mostly CA; some FTA
FTA & CA
FTA; up to 20 radio channels; SA format
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 poss?
FTA SCPC feeds
Occ. FTA, not same as Aust. version
FTA SCPC, + radio
FTA SCPC
FTA SCPC, + radio
FTA SCPC + radio
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 includes MTA
Mediaguard CA, ch 8 FTA sometimes
PowVu and now CA
FTA SCPC; reported audio problems
includes TECH TV from USA, both FTA
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DV211, Zenith) + 1 FTA
PAL, NTSC, 1 ch CA
Recently started -NDS CA as above
PowVu CA; CNN + Cartoons, occ FTA
Most recent addition-NDS, tests only
NDS CA + info card FTA
"History Channel" testing SCPC
moved from 4115 July 1
some FTA + CA
NDS CA using RCA/Thomson, Pace IRDs
FTA SCPA; NT/NC only
ChNewAsV33/A34,
FTA SCPC; NT/NC only
FTA SCPC; NT/NC only
FTA SCPC; NT/NC only
FTA SCPC; NT/NC only
CA, Aust subs avail-sometimes FTA

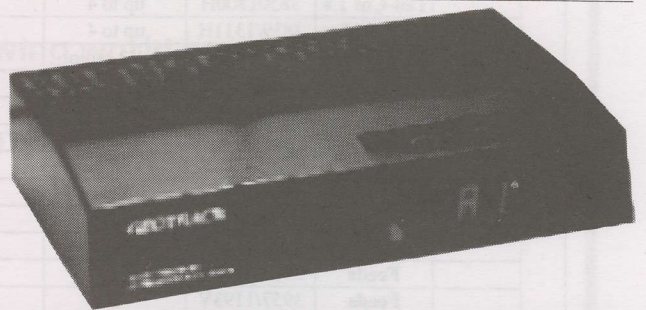
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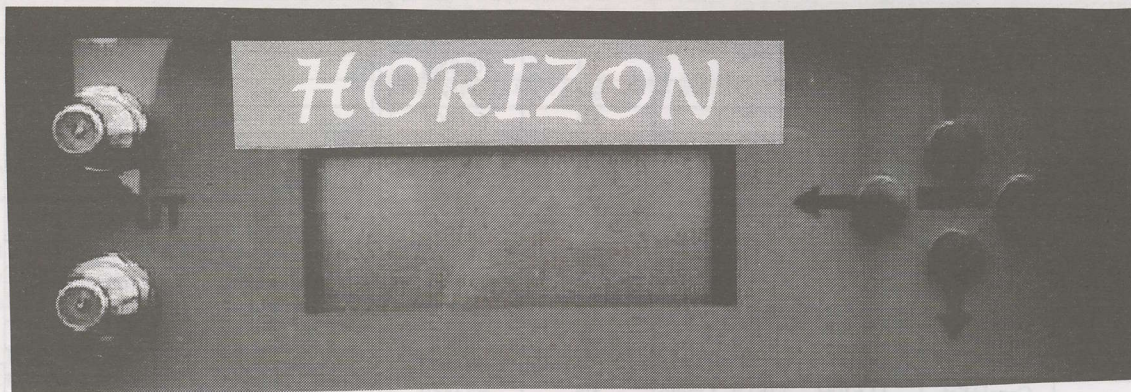
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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(C2M)	MMBM#2	3760/1390H	11TV,radio	3/4	26(.666)
	Brunei/Sing	3733/1417H	1TV	3/4	6(.000)
	RCTI	3475/1675H	1	3/4	8(.000)
JcSt3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(.000)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)
MeaSat 2	Astro Mux	11.478H(+)	up to 10TV	7/8	30(.000)
Op 3/156	Mediasat	12.336V/T2	7TV, radio +	2/3	30(.000)
	Aurora	12.407V/T3		2/3	30(.000)
	Aurora	12.532V/T5	Inc Zee TV	2/3	30(.000)
	Aurora	12.595V/T6		3/4	30(.000)
	Aurora	12.657V/T7	6CA testing	2/3	30(.000)
	Aurora	12.720V/T8		3/4	30(.000)
	Austar/Optus	12.376H/T10		3/4	29(.473)
	Austar/Foxtl	12.438H/T11		3/4	29(.473)
	Austar/Foxtl	12.501H/T12		3/4	29(.473)
	Austar/Foxtl	12.564H/T13		3/4	29(.473)
	Austar/Foxtl	12.626H/T14		3/4	29(.473)
	Austar/Foxtl	12.688H/T15	(some FTA ra)	3/4	29(.473)
Op 1/160	ABC NT fxd	12.260V	1TV, 3 radio	3/4	5(.026)
	ABC feeds	12.317H	1	3/4	6(.980)
	Central 7	12.354H	1TV	3/4	3(.688)
	Imparja mx	12.360H	1	3/4	5(.424)
	Mediasat#2	12.406V	up to 6 TV	2/3	30(.000)
	Mediasat#3	12.424H	3+ TV	2/3	19(.800)
	TVNZ DTH	12.456V	1+ TV	3/4	22(.500)
	TelstraSaturn	12.483V	8TV	3/4	22(.500)
	Nine Net	12.512H	1 TV typ.	3/4	5(.632)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(.500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)
	Sky NZ	12.644/671V	9TV	3/4	22(.500)
ABC HDTV	12.670H	4TV	7/8	14(.300)	
PS8/166	TARBS3	12.326H	13TV + radio	3/4	28(.067)
	TARBS	12.526H	13TV + radio	3/4	28(.067)
	TARBS2	12.606H	13TV + radio	3/4	28(.067)
	JEDI/TVB	12.686H	11+ TV	3/4	28(.126)
	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)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)
	Filipino Bqt	3880/1270V	up to 9 TV	3/4	28(.700)
Tzu-Chi TV	3850/1300H	up to 4	3/4	13(.240)	
CCTV Mux	3839/1311H	up to 4	3/4	13(.240)	
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)	
PS2/169	Pv Bouquet	12.281V	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)
	TVB Mux	4058/1092V	up to 5	3/4	13(.382)
	Fox Bouquet	3992/1158V	8TV/data	7/8	26(.470)
	Feeds	3966/1184V	1	2/3	6(.620)
	Feeds	3957/1193V	1	2/3	6(.620)
	Aust-feeds	3942/1208V	1	2/3	6(.620)
	Feeds	3929/1221V	1	3/4	10(.850)
	Feeds	3912/1238V	1	2/3	6(.620)
	Feeds	3898/1252V	1	2/3	12(.000)
	Middle East	3836/1314V	4 typ	3/4	13(.331)
Feeds	3803/1347V	1	2/3	10(.322)	
YTN Korea	3769/1381V	2+ TV	3/4	11(.570)	
BBC +	3743/1407V	3	3/4	21(.800)	
CCTV Pv	3716/1434V	3+ typical	3/4	13(.240)	

Receivers and Errata
CA, Aust subs avail-10 radio typ FTA
FTA; share time, Brunei-23hrs, Sing 1h
FTA SCPC, Australia OK
PowVu, some FTA (ch # 1,3)
CA & FTA NTSC: Japan, Taiwan
+11.664; 18 pay-TV svcs, CA
FTA, CA - new chs June-reload
cvrs Aust, NZ 90 cm; CA (*)
cvrs Aust, NZ 90 cm; CA (*)
Aust only; * - smart card p. 26
cvrs Aust, NZ 90cm; CA(*)
Aust only; * - smart card p. 26
Austar I-TV and Optus tests
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
CA, subscription available Australia
may go to 12.280; V832, A833
also 12.326, 12.335; ex PAS8 Ku
VPID1280, APID 1281
VPID 1024, APID 1025
also try Sr 28.000; FTA & CA
net feeds, Australia only, FTA & CA
Tests; also 12.706, 12.733; CA, Irdeto
FTA tests; typ 0630-0900 NZT wkdays
testing digital feeds
NDS CA, subscription available NZ
NDS CA, subscription available NZ
NDS CA, subscription available NZ
also 12.686 12.706H-same parameters
TPG/Eurodec CA, occ. FTA
TPG /Eurodec CA, occ. FTA
Tests, inc. ESPN, see TARBS above
Irdeto CA, some FTA tests
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
inc. 'Power TV' - Chinese
PowVu FTA, will replace PAS-2
was As2; PowVu CA
PowVu, CNN now CA
1-7 CA; #8 FTA occ. feeds
PowVu CA, WIN, ABC NT
PowVu CA, WA only - D9234
PowVu CA; some FTA, occ feeds
CA feeds to pay-TV
Pv, CA/FTA (FTA ch 3 only)
PowVu (FTA) occ feeds
PowVu (FTA) occ. feeds
Mediasat outward bound feeds
PowVu (FTA) occ sport feeds
PowVu(FTA) occ. feeds
PowVu (FTA) occ. feeds
Pv FTA, testing CA-poss. NDS
PowVu (FTA) occ sport feeds
Svcs 1 and 2, CA
BBC FTA, othrcs CA usually
PowVu FTA; # pgm chs varies



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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS-2/169)	Feeds	4040/1010H	1	3/4	10(.850)
	KBS/Korea	4026/1124H	1	3/4	5(.062)
	7thDayAdv.	3872/1278H	1	3/4	6(.620)
	Feeds	3868/1182H	1	2/3	6(.620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)
	occ feeds	3776/1374H	1 typ	3/4	5(.560)
	Korean Bqt	3762/1388H	up to 3	3/4	11(.570)
	Satcom 1-6	3743/1407H	up to 5	7/8	19(.465)
I702/176E	AFRTS	4177/973LHC	8TV, 12+radio	3/4	26(.694)
	RFO Poly	4027/1123L	1TV	3/4	4(.566)
I701/180E	TNTV	11.060V	9	3/4	30(.000)
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)
	TVNZ	4195/955RHC	1	3/4	5(.632)
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)
	TVNZ	4178/972RHC	1	3/4	5(.632)
	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	3769/1381R	4	7/8	20(.000)
	USA feeds	3749/1401R	4?	?	26(.400)

Receivers and Errata
PowVu occ FTA feeds
occ. FTA, usually CA
Sat, Sun 0900+UTC; also sport 3873
FTA (occ sport); also try 3863, Sr6.100
FTA-typ NTSC-occ sport, live Shuttle
PowVu CA + FTA
occ feeds, typ FTA; also Sr 5.600
Korean MUX, reload June 01
poss. USA pgming to Carnival Line
PowVu CA
SE spot beam
eastern spotbeam CA; 8,000 subs
Mediaguard CA, up to 3 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 thru 2003+
DMV/NTL early version, occ feeds, 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
16-QAM (not MPEG-2 compatible)

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness! Note: Some deletions July 15 issue - old IRDs no longer common in commerce and/or impossible to obtain service for.)

ASTRX D 1000CI. SCPC, MCPC, two CAM slots, auto search routine. Reviews SF#78 & #79. 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)

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 had NTSC glitch, now fixed. Widely available, review SF#76.

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

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

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

MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. 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), now only from established users.

Nokia 9500/9600. Numerous versions for different world parts; not distributed in Pacific but assistance from Av-Comm Pty Ltd.

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.

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 never 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)

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

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

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

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

Strong 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, Aurora, exc. vendor support. Strong Aust 61-3-9553-3399.

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

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

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

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

Accessories:

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

PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 7/8; pgm ch 11 and follow instructions (do not leave early!)

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AsiaSat 2 was the first of the so-called "super satellites" for Asia. It joined well aged AsiaSat 1 (105.5E) which would ultimately be replaced by AsiaSat 3 - alas As would be asks when the first attempt failed. But that is ahead of our story.

Historical facts: As2 began testing over the Christmas holidays (1995). The first non-testing "official" use was when Portugal's RTPi began broadcasting on vertical transponder 9A at 0900UTC on January 28 (1996). Today RTPi has migrated off of analogue to the European Bouquet on As2 and As2 is the hands down winner as the most successful (translation - most used, heaviest loaded) satellite in the Pacific region. True - the Ku band portion has never functioned properly but the C-band segment is as we are about to review top to bottom occupied (around 87% of capacity). And an AsiaSat 5 satellite on the planning boards is scheduled to collocate with As2 at 100.5E providing expanded C-band and functional Ku from this location.

(Our gratitude to Observer David Leach - NSW - for cross checking what follows.)

3640Hz/Egyptian Bouquet (controlled by TARBS Australia) /MPEG-2 Sr 27.850, FEC 3/4: 11 CA TV + 2 occ FTA test cards, 6 usually FTA radio.

3660Vt/Middle East (Dubai) Bouquet/MPEG-2 Sr 27.500, FEC 3/4: 5+ CA & FTA TV (new at press time), 5 FTA radio.

3706Hz/(China) Henan TV/MPEG-2 Sr 4.418, FEC 3/4: Regional SCPC TV + 3 radio.

3713Hz/(China) Qinghai TV/MPEG-2 Sr 4.418, FEC 3/4: Regional SCPC TV + 2 radio.

3720Hz/(China) Fujian South East TV/MPEG-2 Sr 4.418, FEC 3/4: Regional SCPC TV + 1 radio.

3727Hz/(China) Jiangxi TV/MPEG-2 Sr 4.418, FEC 3/4: Regional SCPC TV + 2 radio.

3734Hz/(China) Liaoning TV/MPEG-2 Sr 4.418, FEC 3/4: Regional SCPC TV + 2 radio.

3765Hz/WorldNet (USA)/MPEG-2 Sr 6.100, FEC 3/4: Asia-Pacific TV (one ch) + 19 special service radio [Radio Free Iraq, Voice of America, VOA News Now, RFE/Radio Liberty etc.].

3766Vt/Myawady TV/MPEG-2 Sr 5.080, FEC 7/8 (which makes it difficult to load).

3786Hz/GlobeCast/MPEG-2 Sr 5.632, FEC 3/4 (feeds-see p. 29 here)

3791Vt/MAC TV/MPEG-2 Sr 4.340, FEC 3/4.

3796Vt/Fashion TV/MPEG-2 Sr 2.533, FEC 3/4.

3799Hz/APTN Asia/MPEG-2 Sr 5.632, FEC 3/4; usually CA.

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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 (Robin Colquhoun), **#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; **#0101 -** Preview of new technology including SDS from SPRSCS 2001 (September 27, 2001 Melbourne). "Report" is broadcast by Mediasat on Optus B3, 12.336Vt, ad-hoc channel 4(*) (Sr 30.000, FEC 2/3). The coming-weeks schedule: **Sunday August 19 -** Show 9905, 0200-0300 UTC (1400 NZ, 1200 AEST. 0900 Western Australia; repeats 0700 UTC/7PM NZ, 5PM Sydney, 2PM Perth). **Sunday August 26 -** Show 9906, same times as August 19; **Sunday September 2-** Show 9907, same times as August 19; **Sunday September 9 -** Show 9909, same times as August 19; **Sunday September 16 -** Show 9910, same times as August 19; **Sunday September 23 -** Show 9911, same times as August 19; **Sunday September 30 -** Show 0101, same time as August 19. (* - Mediasat may pre-empt showings, check other bouquet channels - such as 3 - if not on 4.) 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.apsattv.com>). Peter Escher's (June 2001) visit to Sri Lanka and Sir Arthur C. Clarke scheduled for play on Mediasat is 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. IKUSI ANZ contributed funds for completion of 9910. If interested in sponsoring future shows, contact Bob Cooper at skyking@clear.net.nz (64-9-406-0651).

* - Note: Mediasat Sunday feed loads have increased and the first showing (0200UTC) may be "bumped" to accommodate other clients. The 0700UTC feed typically is not bumped and would be the better choice if taping for later review.

BANDSCAN: What you will find on AsiaSat 2 at 100.5E - continued

- 3806Vt/(China) Guangxi TV/MPEG-2** Sr 4.418, FEC 3/4, Regional SCPC TV + 2 radio
- 3813Vt/(China) Shaanxi TV/MPEG-2** Sr 4.418 FEC 3/4, Regional SCPC TV + 2 radio
- 3820Vt/(China) Anhui TV/MPEG-2** Sr 4.418 FEC 3/4, Regional SCPC TV + 2 radio
- 3827Vt/(China) Jiangsu TV/MPEG-2** Sr 4.418 FEC 3/4, Regional SCPC TV + 2 radio
- 3830Hz/(China) Mongolian 'MUX' / MPEG-2** Sr 8.400, FEC 3/4, Regional MCPC TV (2) + 4 radio
- 3834Vt/(China) HeiLongJiang TV/MPEG-2** Sr 4.418, FEC 3/4, Regional SCPC TV + 1 radio
- 3840Hz/(China) Guangdong TV/MPEG-2** Sr 4.418, FEC 3/4, Regional SCPC TV + 1 radio
- 3845Vt/(Australia origin) TVSN/PowerVu** Sr 4.300, FEC 3/4, CA shopping network service feed for Asia.
- 3847Hz/(China) Hunan TV/ MPEG-2** Sr 4.418, FEC 3/4, Regional SCPC TV + 1 radio
- 3854Hz/(China) Hubei TV/ MPEG-2** Sr 4.418, FEC 3/4, Regional SCPC + 2 radio
- 3864Vt/(China) Beijing TV/MPEG-2** Sr 4.418, FEC 3/4, CA link (occ service) to SBS Australia, others; unknown CA format
- 3874Vt/(China) Jilin Satellite/MPEG-2** Sr 4.418 FEC 3/4, Regional SCPC TV + 1 radio
- 3880Hz/WorldNet (USA)/ analogue (!) PAL**, audio 6.6 +4 radio (7.02, 7.20, 7.38 & 7.56-R)

- 3936Vt/EBU feeds/MPEG-2** Sr 6.666 FEC 7/8 in 4:2:2 format (acts like CA)
- 3944Vt/EBU feeds/MPEG-2** Sr 6.666 FEC 7/8 in 4:2:2 format (acts like CA)
- 3951Hz/Five Star Media (Macau)/ MPEG-2** Sr 13.185 FEC 3/4, 2 FTA + 1 CA
- 3954Vt/EBU feeds/MPEG-2** Sr 6.666 FEC 7/8 in 4:2:2 format (acts like CA)
- 4000Hz/European Bouquet/ MPEG-2** Sr 28.125 FEC 3/4, 6 FTA TV (DW-Germany, test card, RAI-Italy, TVE-Spain, TV5-France, RTPi-Portugal) and 21 radio (inc. DW1,2,4,5,6,8,9, WRN 1&2, Radio Nederland, Radio Canada, REE Spain, RFI (3) France, RAI Italy, RDP Portugal including RDP Timor and Radio Finland).

Note: You will notice there are no transponders in use above 4,000 Hz although tests have been reported in May 2001 with carriers on 4086Vt, 4095Vt and 4185Vt. There has not been an adequate explanation for why As2 does not routinely use this high-end spectrum space but a technical problem is likely.

- 12.221Vt/(China) CCTV world News/MPEG-2** Sr 6.000, FEC 3/4 China beam
- 12.240Vt/(China) ETTV feeds/MPEG-2** Sr 4.100 FEC 3/4 China beam 12.247Vt/(China) tests
- 12.305Vt/(China) CCTV/ MPEG-2** suspected but not verified, parameters unknown, CA with CCTV 3-4-5-6-7-8 China beam
- 12.329Hz/(China) Beijing TV/MPEG-2** Sr 6.930, FEC 1/2 China beam (note: not same parameters as 3864Vt)
- 12.339Hz/(China) Shaanxi TV/MPEG-2** Sr 6.930 FEC 1/2 China beam (note: not same parameters as 3813Vt)
- 12.349Hz/(China) Hebei/ MPEG-2** Sr 6.930 FEC 1/2 China beam (note: not same parameters as 3854Hz)
- 12.368Hz/(China) Tianlin/ MPEG-2** Sr 6.930 FEC 1/2 China beam (note: believed to be PowerVu tests with VPID 1160, APID 1120)



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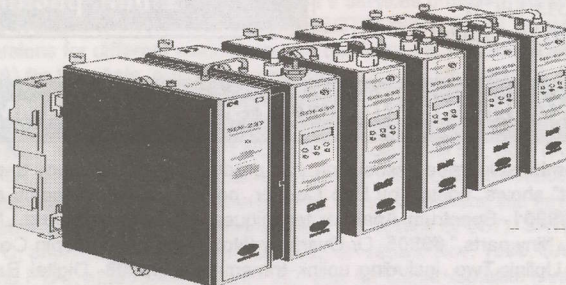
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SatFACTS for August 15, 2001 - see page 2 for SF Web Site announcement - this is page 28!

WITH THE OBSERVERS

AT PRESS DEADLINE

How do you say "Give me the money" in French? RFO Polynesie, operating on 4027L MPEG-2 FTA at the unusual spot of 1702 (176E) had their satellite signal cut-off for 5 days in early August. "A slight dispute over payment between Tahiti's Government and the post office." Result? No TV, radio for outer islands. Next hurdle - October 15th deadline for larger payments!

AsiaSat 3/105.5E: "Ekushey TV World 3749Vt now CA" (D. Leach, NSW). "STAR TV has added a sixth transponder, 3980/1170Vt, Sr 28.100, 3/4 - first testing with only two (CA) channels - '777 test logo' and '728 bars & tones'. Also new on 3860Vt STAR (Sr 27.500, 3/4), first radio channel '419 ESS Radio' but is CA" (IF, Qld.).

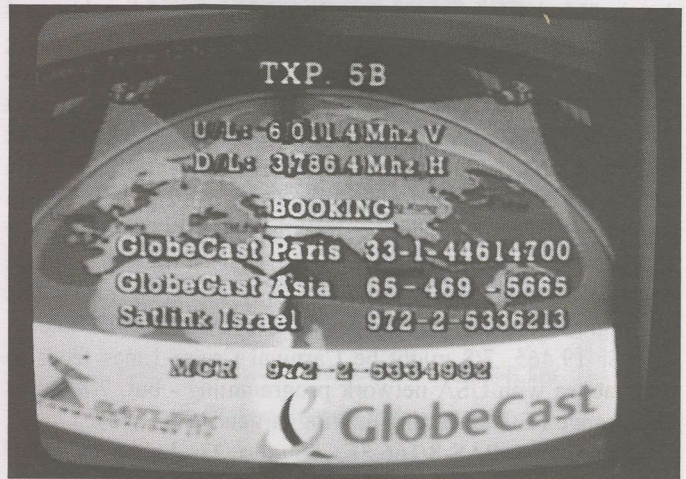
LMI 1/75E: "TV Lanka + Radio Lanka testing 3403/1747 Hz, Sr 3.500, 3/4 FTA" (D. Pemberton, Aust).

MeaSat 2/148E: "All I need is 45cm dish here for 11.478 and 11.664Hz (both Sr 30.000, 7/8) which load 18 channels" (D. Leach, NSW).

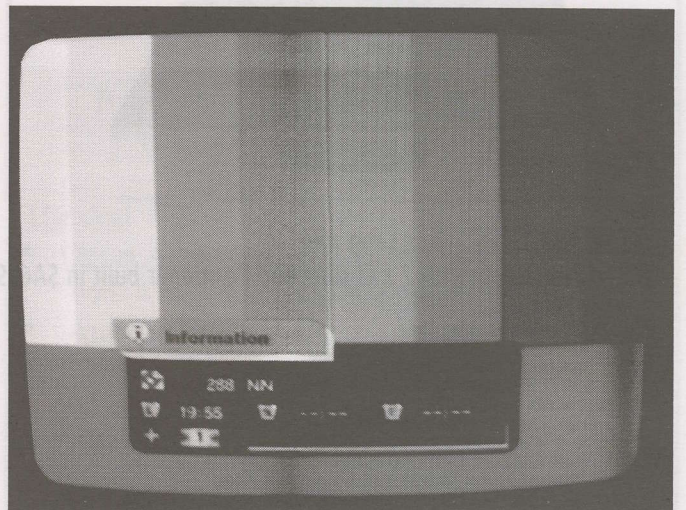
Optus B3/160E: "After day long shut down (see p. 32 here), Asianet Bharathi has replaced Alpha TV Gujarati and Alpha TV Bangla on Aurora's Zee package 12.658Vt" (C. Sutton, NZ). "Mediasat has eliminated RTPi from menu list, now loads new 'occasional 1' in its place as programme channel 3; DW and TV5 continue to be on list but colour bars only" (IF, Qld - Ed's note: Off-As2 antenna in use by Mediasat reportedly was wind damaged shutting down the 30-day-trial test period before it finished - if RTPi has been deleted but DW and TV5 remain, that is a good sign they will come back!)

Optus B1/156E: "Perhaps just to prove they can do it with NDS - Sky NZ noted testing FTA 'EXTRA EXTRA' on 12.671Vt, Sr 22.500, 3/4 VPID 515, APID 653, SID 1044 plus 2nd "Knowledge Wave" with same numbers except SID 1028" (C. Sutton, NZ). "12.456Vt has TVNZ running FTA tests from around 0630-0900 weekdays, Sr 22.500, 3/4" (S. Johnson, NZ). "Even after DTH-drop dead announcement, testing continues on 12.483, 12.706 and 12.733Vt of TelstraSaturn Irdeto" (C. Sutton, NZ). "ABC Kids now regular service 12 hours daily (0600-1800AEST) 12.670, 12.686 and 12.706Hz with VPID 2306, APID 2307 or 2311/2312 - delightful on 16:9 screen!" (L. Senior, Aust - Ed's note: Another SDTV service tentatively called 'Fly' is scheduled before end of the year). "Two new additions to Sky NZ line-up: 12.606Vt has 'Wolf Radio' which is excellent country music and 12.671Vt has (radio) 'Eng 45'" (R. Whitehead, NZ).

Palapa C2M/113E: "Strange indeed - Open TV, Tzu Chi TV and STV-MTV 3760/1390Hz now CA with both Nagravision and Viaccess encryption streams" (X. Bush, Taiwan). "Scratch ETTV Shopping 3790Hz - gone" (D. Leach, NSW). "I don't load CNBC on 4089/1061Hz as reported July SF - loads as (1) 'Ch 1' which is flickering horizontal green line. (2) 'Ch 2' which is MetroTV Indonesian



ADVERTISING your linking availability is a popular way to keep the SCPC channel warm at GlobeCast on 3786.4 Hz, AsiaSat 3 (above). WHEN MCM pulled the plug on its carriage within the European Bouquet there was much speculation about what might replace it. For now, a test card identified as "NN" which Peter Merrett (SCITEQ) suggests gives no clue at all as to the eventual inhabitant of this programme channel on As2 (below).



news channel, FTA and '(3) Metro bu' which is parallel to (2) but low volume audio" (IF, Qld).

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 September 15th issue: September 4 by mail or 5PM NZ September 6th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

PanAmSat PAS-2/169E: "AD-HOV sport feeds 4148/1002Vt, Sr 24.430, 2/3 at midnight AEST - this is Power TV MUX" (Bill Richards, Aust). "TVB bouquet 4044/1106Vt, Sr 6.620, 3/4 replaces earlier 4058 listing; YTN (SBS Seoul) is on 3769/1381Vt, Sr 11.570, 3/4 has services 1 and 2 CA" (D. Leach, NSW). "ART 3836Vt again saying they will go CA, along with LBC, advising you contact Optus for subscription; JSC (Al-Jazeera) on 3901 California MUX advising Australian viewers to contact 1800 700 506" (Hashishm, Aust). "My UEC 642 refuses to load 3836Vt, but lists bouquet name as 'NDS' whereas you have reported it to be testing Irdeto. I don't think so!" (IF, Qld). "TBN (labelled) tests 3906/1244Vt, Sr 6.620, 2/3" (B. Richards, Aust). "Correct downlink frequency for Pv Bouquet is 12.281Vt, not 12.290Vt; and, NIT lists 12.281Vt Sr 27.500, 3/4 as 'Telstra Bendigo uplink' while 12.637Vt, Sr 18.500, 1/2 lists as Telstra Bunbury GWN" (IF, Qld). "HK bouquet 4148/1002Vt, Sr 24.430, 2/3 seems to be in disarray suggesting it may close down or change character shortly: Only PowerTV on ch 1 is running, rest are cards or dead" (IF, Qld). "3743/1407 'Satcom 1-6 Sr 19.465, 7/8 might be Carnival Cruise Lines feeds to ships at sea with USA network programming - but, 7/8 seems like strange FEC for hitting moving targets!" (IF, Qld).

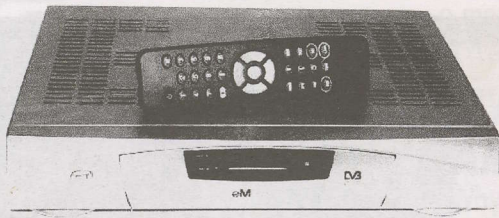
PanAmSat PAS-8/166.5E: "Studio 23, Lakbaytv 3880/1270Vt Sr28.700, 3/4 are FTA while balance (ABN, CBN etc.) remain CA" (D. Leach, NSW). "TCM was back on TARBS as FTA (Sr28.066, 3/4) 12.326Hz" (Oliver, Aust). "Correction for MTV bouquet 3740/1410Hz - #7 is now CA Philippines MTV and FTA feeds if any are #8" (IF, Qld).

PanAmSat PAS-10/68.5E: Exceptional coverage from new satellite replacing PAS-4/7 at this location; reports of 11+ dB C/NR signals on 1.75m dishes in France, 1.2m in Germany and Italy, 1.6m in Sweden. Additionally, "Comparing PAS-10 with PAS-4 from near Perth with 3m dish: 3905Hz SET P5 (was P2), 3905Vt Maharishi Veda Vision P5, 4034Hz MTV India P5 (P2), 4182Vt BBC World P4 (P0), 4154Vt DD News P5 (P0); For digital, my Humax 5400 has threshold at 17% whereas I read Multichoice 3716/(3744)(3836)(3863)Vt 44%, NHK 3730Hz 60%, Discovery 3799Vt 70%, B4U 3812/(3836)Hz 40%, MOU 3932Vt 18%, Sony Ent TV 3932Hz 44%, Turner Int 3974Hz 71%, Doordarshan 4034Vt 71%, CCTV 4090Hz 20%. Early checks on Ku side using 2.4m Paraclypse Hydro suggests signals there but probably too weak for this size dish" (A. Zapara, WA).

ThaiCom 2/3/78.5E: "Essential absolute correct parameters be entered for Mega (3640Hz, Sr 28.066) and Alpha (3430Hz, Sr 3.255, 2/3) or they will not play - zero tolerances here" (PC, Sydney).

Soapbox: "Can anyone advise of their experience dealing with Australian Satellite Services? Have tried to talk with Trevor Chapman relative to they having contract to install Optus uplink/downlink dish systems but nobody seems home (?)." (AO) "Rumour that Mindport was scheduling major crack down on piracy cards on Monday July 30 created mild panic on web sites and chat rooms. Somebody even gave it a 'code name' - Armageddon, probably to give it authenticity. Did not happen but sure chewed up the bytes of Internet traffic!" (B.K. Qld) "TelstraSaturn was going to pay us \$90,

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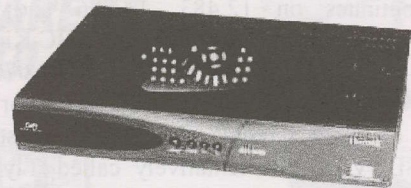


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expect 50 km each way coverage, an internal cable run? The only obvious influence on TS pricing is the already too low Sky NZ pricing! Why is the installer treated like he or she is the least common denominator? In fact, for 99% of all DTH customers.. the only "staff" person they ever meet and see and talk with in person is the installer. If they wanted us to represent them properly, they should be willing to pay us properly. This is a two-way street guys!" (SJ, NZ) "If TelstraSaturn was going to be attractive to qualified installers, it had to as a minimum meet established IHUG (satellite Internet) system rates which are \$35 an hour for time spent travelling to and from the job as well as on the job. A Telstra 'lift iron' install would require 3 hours on average; thrown in an hour to and from and you have 5 hours spent doing one install. That's 5 x \$35 or \$175 minimum which is a far cry from the \$90 rate they tried to establish." (RW, NZ) "Regarding the reports of Cricket on Aurora Westlink (SF Web Site July 16). It was FTA on Westlink on 20 July but CA on 21 when I tried to watch it. That smells of 7 Network pressuring someone as they own FTA rights to Cricket but are loath to share those rights if they can avoid it. Australia's law in this area needs relaxing to prevent 'hoarding' of sports by FTA operators not willing to show sports during prime ratings times. They would rather no one sees it than onsell to pay TV or another operator." (Bill Scott, Australia) "I think the author of the SF July p. 15 article is confused. FEC refers to the Viterbi or 'inner code' that is added in the form of overhead to the satellite signal at the modulator, on top of the 16 byte of Reed-Solomon error correction. Turbo codes are a more efficient approach to FEC than Viterbi and as such they can in theory be applied to any digital signal being transmitted, including MPEG video, to provide error correction." (RW, Australia) "Answer to e-mail addressed to Melissa P N Lau, Customer Service Officer at Measat's Astro (pay TV): 'At the present time our primary coverage is Malaysia and Brunei but in time to come coverage may be extended to include other regions of South East Asia and beyond.'" (D. Leach, NSW)

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Sign-off

Pay-TV piracy is **not** going away

There is a sentiment often expressed that if we ignore something unsavoury, pretend it does not exist, it will simply go away and die a natural death. Every six to nine months, we are moved to offer observations on the current status of "smart card/ pay-TV" piracy. Each time we do so letters and e-mails arrive condemning the report and urging us to never talk about piracy again with a stated or implied threat that if we do, *subscriptions will be cancelled.*

So be it.

The (Sydney) Daily Telegraph (July 26) reported how a man (Rohinto Anklesaria) who works during the day as a Courier service driver was nabbed by Special Crime and Internal Affairs investigators. Anklesaria's St Clair suburban home was emptied by police of "a large quantity" of piracy products including what the Daily Telegraph called, "credit card size cards that allowed the pirates to access 72 pay-TV channels from Foxtel, Optus and Austar without paying subscription fees." The paper also reported Anklesaria's home gave up pirated videos, CDs, and DVDs including films not yet available on DVD - *Shrek, Cast Away, Meet the Parents* and *Gladiator*.

A few months back copyright police in Hong Kong were able to purchase a DVD copy of a movie which was not being released in the United States until the following week - somehow, a print copy of the film ended up in pirate hands even before the movie was available in theatres!

PAS-10 recently went into service from 68.5E. On board are four South African C-band Irdeto encrypted Multichoice (pay-TV) transponders - around 50 programme channels. On the same day the service turned on and reception reports were flowing into Lyngsat's web site, several dozen postings also appeared on various Internet forums describing a software routine "put to wafer" that allows free access to Multichoice. With PAS-10 reaching what may be the largest Afro-European-Asian region ever under one footprint, millions of excited people will be able to access Multichoice - without paying.

Back in May, the Optus Aurora Renaissance 6-channel Indian pay-TV service gasped, rolled over and left the air. Late in July, competitor Zee TV also using Optus Aurora shut down for approximately a day. Optus won't say but word is Zee had neglected to pay Optus for their transponder space and were taken off air to enforce collection. On the best authority, we understand Zee has managed to sell 1.350 subscriptions to their package (that includes New Zealand as well as Australia). Yet they are paying A\$324.000 per month for that space. That works out to A\$240 per month cost to Zee for each of the 1.350 subscribers. They are actually collecting under A\$40 a month so that leaves them at least A\$270.000 "short" each month. To just break even paying only the Optus transponder monthly bill would require a minimum of 8,100 subscribers. Now the not so funny part.

When Renaissance shut down in May, a market auditing firm studied the Indian TV subscription market in Australia and came to the conclusion that no fewer than 7.500 homes

were using "pirate cards" to access Zee and Renaissance. That was nearly 90 days ago. Renaissance and Zee, not friendly competitors, do agree on one thing: the security of Irdeto on Optus for Aurora is totally inadequate. Renaissance blames Optus (and encryption provider Mindport/Irdeto) for their business failure. Zee is likely to be the next to lay blame in that direction.

Rohinton Anklesaria, alias "The Nokia Man", was but a "dealer" in piracy Irdeto cards. He told the court he paid A\$150 per card, sold some direct to consumers for A\$300, but most he onsold to "co-dealers" for A\$200.

In an interview for Broadband magazine Andrew Curle (title: Special Projects Manager, Irdeto Access) told Peter Jakel:

"Our approach (to combating piracy) addresses all aspects. First there is prevention technology but equally important is infiltrating the pirate's businesses, trolling the Internet for any traffic relating to piracy, and then finally a response." Curle was one of the "Irdeto Team" that nailed Mad Max in Thailand.

"We actually run courses for police forces through industry associations. We search Internet constantly and try to get inside of the piracy operations by acting like a member of that community. We even trade in piracy products to gain their confidence and to try to get to the source. Often what appears to be a source is in fact a low level dealer. It is usually better to 'tag' a dealer for future prosecution, but let him operate while you are trying to use him (or her) to work backwards to the real pirate card creators. It is much like fighting drugs - the guy on the street selling packets is a menace but he's not the real target of our work."

"By purchasing card products it is often possible to reverse engineer their data card to work out a subtle bit change in our own data stream that would knock them out. The pirate sees conditional access as a huge keyboard with infinite buttons. He'll push everything in sight and eventually he'll hit the right combination. Our task is to make our new generation of conditional access system designers aware of how pirates think and operate."

News item from the newspaper El Mercurio (Santiago, Chile). "Sky is changing all (consumer) smart cards because modified cards selling from \$50 are being sold by pirates. The modified pirate cards were activated originally only for Sky's least expensive channel package but after pirate modification allow reception of all Sky channels."

News item from USA Today newspaper. "DirecTV is mailing strongly worded letters to more than 100.000 people suspected of using pirate cards. The letter offers amnesty from prosecution (and a potential \$10.000 fine) in return for giving up the card, taking out a proper subscription and revealing where their card was purchased."

What is significant about Chile and the USA is both pay-TV operators are using NDS Videoguard - the same as NZ and until very recently touted to be "pirate proof." Oh yes, Anklesaria was fined A\$5700 by the Penrith Local Court judge. Any bets on how long it will take him to recoup that loss?



The Nokia Man

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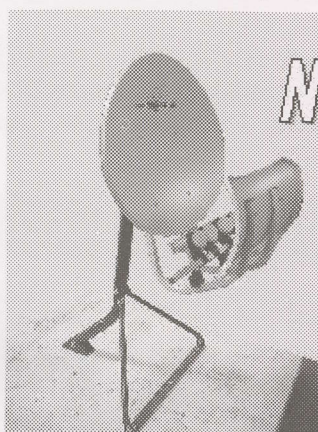
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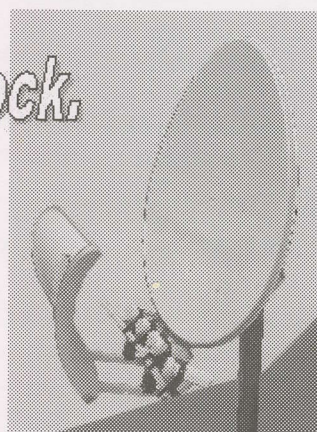
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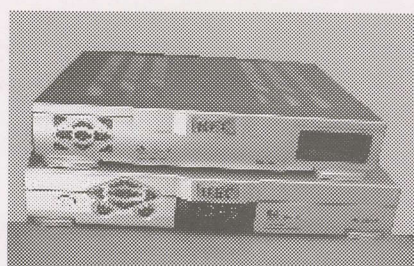


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		35.40 dB (at 20 deg. Azimuth)	39.20 dB (at 20 deg. Azimuth)
Azimuth (at Tilt 0 deg)		+/- 30 deg (total 60 deg)	+/- 25 deg (total 50 deg)
LNB Installation		2 ~ 5 pcs	2 ~ 5 pcs
Efficiency		70 ~ 82%	65 ~ 80%
Polarization		Linear & Circular	Linear & Circular
Material		Galvanized Steel	Galvanized Steel
Finish Coating		Polyester powder coating	Polyester powder coating
Color		White gray, Dark gray	White gray
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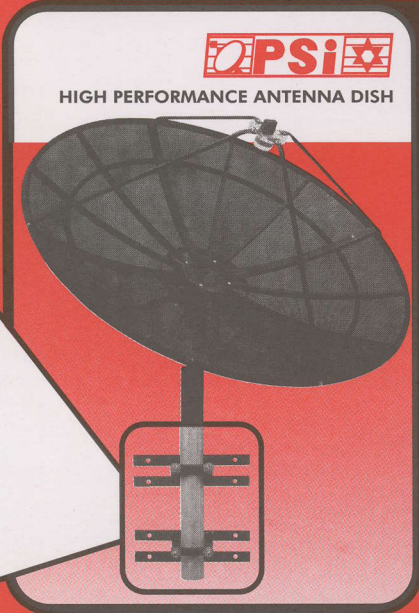
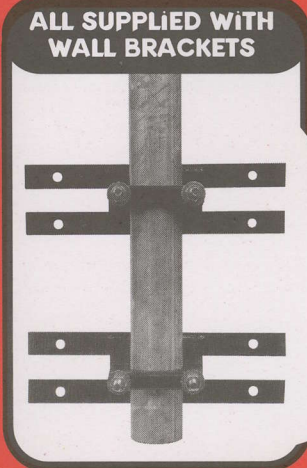
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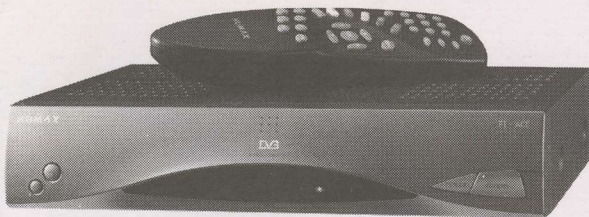
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