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Bob Cooper's

OCTOBER 15 1998

SatFACTS

MONTHLY



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

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TU-DS10
UPGRADES**

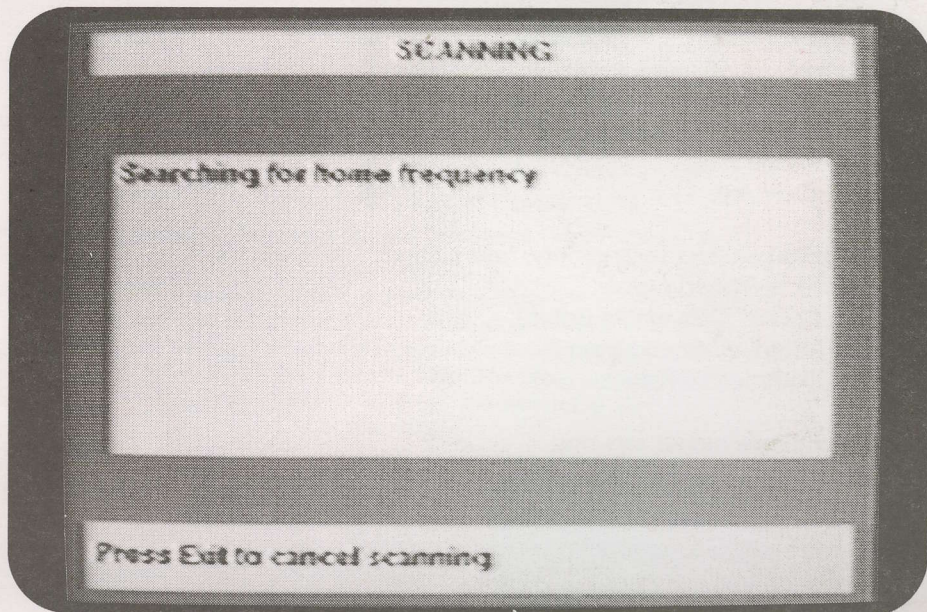
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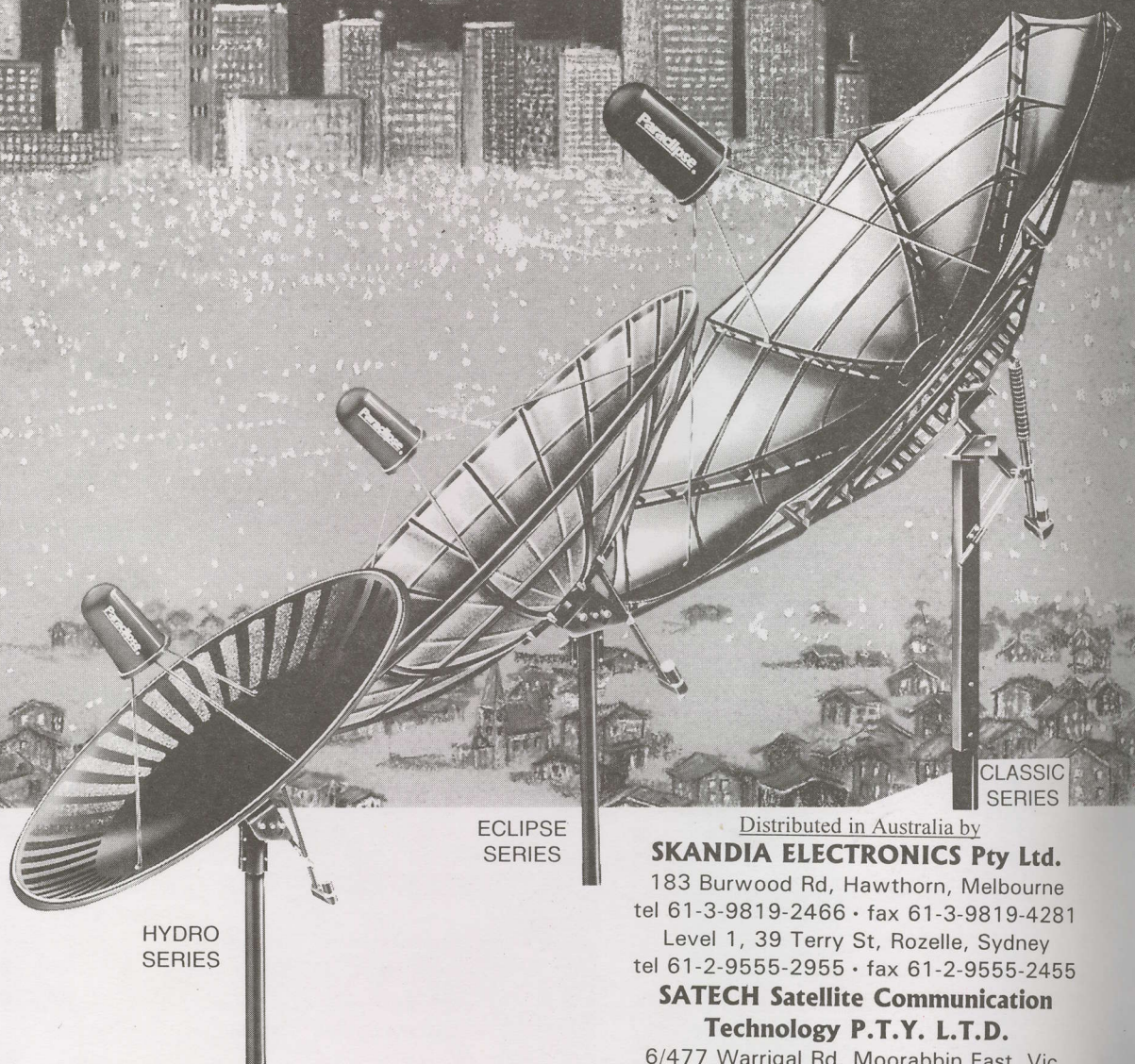
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Vol. 5 ♦ No. 50

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

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

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COOP'S COMMENT

The likelihood that one or more entrepreneurs will realise the bundle of cash to be made by placing country-of-origin (COO) programming on a satellite capable of reaching 1 metre and smaller dishes in Australia continues high. Unfortunately, those who have been playing around the edges of this business opportunity are largely under funded, poorly advised or both. One model is the European Bouquet found on AsiaSat 2 with programming from France (2), Germany, Italy and Spain. Of these five services (plus a litany of radio channels) only Spain ignores the audience and simply pumps terrestrial TV skyward. Italy, Germany and French services have slowly fine tuned their product so each reflects time zones (which is a challenge since As2 covers up to 10 time zones) and areas of interest to the viewers. Germany targets business people and travellers. The two French services (MCM and TV5) try to sell product (France itself is the number one product) while Italy leans more towards Italian immigrants living outside of the mother country. Finding the right slant for export programming is a challenge.

The safe approach is to simply do as Spain does; connect the terrestrial TV network to satellite, forget about time zones (viewers, do after all, own VCRs!) and aim at the immigrants who crave the flavour of the homeland.

DBS (direct to home pay-TV) packagers in North America have discovered ethnicity as a marketing tool. EchoStar, one of the Big Three in the USA, has recently been adding ethnic services in a 21 channel "Vista" package. Arabic and India's Zee TV are the latest additions; Vista sells for US\$19.99 per month and starts off with English language (HBO) movies and then fattens the package with ethnic programming. Their theory is immigrant families to America love US movies plus home town TV. A similar package from Kelly Broadcasting offers 8 channels imported from as many Arabic speaking nations expanding to 16 channels by the end of this year at US\$40 per month.

Ethnic American Bcst. Co. is delivering 10 channels of Chinese, Italian, Russian and Ukrainian programming and will add 10 more by December. EABC has found that 60% of ethnic groups recently transplanted from another country live in multiple dwelling units (MDUs in the trade). They would be called flats or apartment houses in most areas. This makes delivery safer and quicker; one satellite dish per apartment building or group of flats, some IRDs and into coaxial cable using SMATV / CATV techniques. EABC has also found that subscription take up runs as high as 70% and never lower than 50% in such ethnic MDUs.

North American pay-satellite pioneer DirecTV has introduced a 21 channel ethnic package with per channel pricing ranging between US\$8.95 (Ciao Italy) and US\$24.95 (for Sony Entertainment's Hindi package from India). A recent study listed 51 different imported ethnic broadcasters now available inside the USA market. Many are being transported right over our heads in digital bouquets we don't even know about.

Putting together the programming, the appropriate satellite, the CA system and the hardware is a challenge but hardly impossible. Zee Worldwide CEO and Managing Director Dr. Vijay Jinda put it succinctly. *"If you want to sell a service you have to create programming that is relevant to each market."*

In Volume 5 ♦ Number 50

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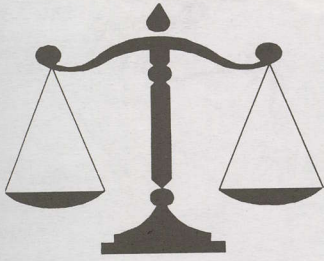
At Sign-Off (The urge to "beat" the system) -p. 32

-ON THE COVER-

Panasonic's TU-DS10 IRD has been subjected to every conceivable Optus road block to ensure it is not a competitor. Alas, it has sufficient design and operating problems that it does not need Optus to put it down (p. 6).



October 15, 1998

**5m Dish?**

"I would like to build a 5m dish. Could you please advise the sources for design information and any other suggestions you may have?"

Nasser I. Jammal, Glenroy, Vic., Australia
Something rather amazing happens with dish pricing at the 3.7-4m point; it virtually doubles at 5m and doubles again by 6-7m. Reason? Mechanically, construction techniques up to approximately 3.7m suit unsupported ribs and mesh approaches while 4m and above require an entirely different, more complex and certainly more expensive superstructure to properly support the reflective surface. In a phrase, 3.7m and below can be quite inexpensively constructed while 4m and above become unsuitable for such techniques. A "big" dish is only an advantage if (1) the surface accuracy of the dish is good, and, (2) the mechanical integrity of the dish is adequate to maintain the required surface accuracy when the parabolic structure is subjected to wind pressures. Dishes larger than 3.7-4m, improperly designed, suffer lower gain than their theoretical maximum, and, run the real risk of coming apart in a wind storm. Additionally, when the wind blows and the dish "flexes" because of poor design, the gain suffers in response to the dish shape changing as the wind blows.

Can you build a 5m dish of suitable accuracy and mechanical integrity? Yes, but not from parts available at your local hardware store. References: "The Nelson Parabolic TVRO Antenna Manual" is the "bible" for do-it-yourself dish builders (AV-Comm Pty Ltd (tel 61-2-9949-7417, or, SatFACTS at \$30). Highly recommended support material: ARRL Antenna Handbook (through your local Amateur Radio association or radio supply house). For serious students, "Antenna Engineering Handbook" (Henry Jasik, Editor) through technical and larger lending libraries.

SPN Recording?

"We have had a number of enquiries for SPN off of I180. Can anyone help us with a tape recording of what is on this service to help us demonstrate this for clients?"

Richard, Horizon Antenna Systems (NZ) Ltd.

Apparently you do not have a suitable dish (3m or larger) with RHC polarity capability or you could make the recording yourself. SPN publishes a sent-by-FAX weekly program schedule which is available upon request. Fax to ++674-444-3893 to request a copy.

Does 3X1 = 3?

"Our local council resists dish size to 1m. Would it be possible to get 3m performance by phasing 3 antennas 1m in size?"

Mr. Chan, Christchurch

Possible, yes - but complicated. Techniques for phasing multiple dishes to a common downline exist but require great patience and no small amount of learn-as-you-do-it skills. Try Bryon Evans at Pacific Antennas [64]9-424-0841.

**PROGRAMMER
PROGRAMMING
PROMOTION****UPDATE****OCTOBER 15, 1998**

SPN Board of Directors has announced continued funding support for unique sport and culture service through end of 1999. Station recently passed six month birthday, is largely subsidised by government of Nauru, and is distributed via SCPC digital service utilising Intelsat 1701 at 180E. Commitment is welcome news to individual viewers, cable systems, widely scattered terrestrial TV broadcasters dependent upon SPN for daily sport and Pacific culture.

Sloppy engineering? National Geographic service on PAS-2 (within NBC bouquet) is pristine quality but 2 to 4 hours daily taken from NBC Network USA (MSNBC, Time and Again etc.) has hum in audio. On both of the digital programme channels. More than two months after the new split schedule began. Is the hum there to inhibit unauthorised terrestrial TV broadcasters from pirating the feeds for their own use? Or is it simply oversight?

BBC World, PAS-2, is dual-feeding on former California Bouquet plus new 3743.5Hz, programme channel 3 (new Msym 21.800, FEC 3/4). California Bouquet service scheduled to terminate on October 31. Aside. This is former TVSN analogue spot, is 1/2 transponder only and is shared with often troublesome CCTV services (TVSN and CCTV "fought" power sharing balance for entire period TVSN was on this transponder). BBC (within California Bouquet) has been troubled by some form of "mysterious interference" in segments of Asia (Hong Kong to Singapore) for more than 6 months which PanAmSat has not been able to identify.

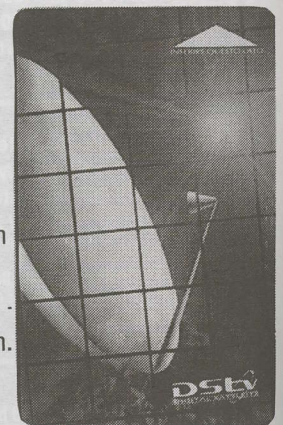
IHUG on satellite. "Slow rollout of our satellite direct service, stretching over several months" is latest word from this NZ Internet provider. Service is presently in "coasting - further test" mode using PAS-2, 12.407Vt (Msym 5.333, FEC 3/4) with 95cm Beta test terminals scheduled for no more than 200 locations during next 60 days. Installers with Internet background are still encouraged to contact firm which recently expanded its terrestrial services into Australian markets as well. Contact: Ron Theaker at 64-9-358-5067, ext. 715.

Rebirth of NBC Asia? CNBC programme guide for October shows increasing non-business news content, especially on weekends when business virtually stops anyhow. CNBC Executive Sports, Saturday + Sunday 2-8PM Australian Eastern is example. So too - Jay Leno followed by Conan O'Brien at midnight both nights.

Card shortage? Austar is currently distributing smart cards sourced from Italian pay-TV operator ATENA in place of original Galaxy cards. One problem - instructions on back are in Italian and instruct viewers with problems to call Milan (Italy) phone number for assistance. Now that could be one very interesting conversation!

TARBS - perhaps under another name - purchased much of ex-Galaxy equipment and is still attempting to lace together an "ethnic satellite delivered bouquet" for sale to émigrés to Australia from Europe, perhaps Asia. They - like everyone else - is waiting to see what happens with PAS-8 launch next month. Small dish ethnic programming? Not a dead issue - yet, for Australians. For New Zealand and the Pacific? Not via Optus.

Heavy promotion. Sky NZ is listing existing terrestrial analogue channel programme schedules plus new satellite only services in printed guide. Fine print notes, "Some satellite channels are not currently available and are indicative only."



Skandia

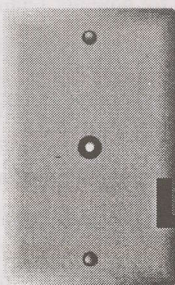
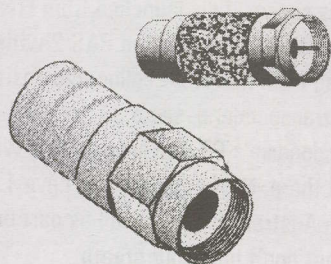
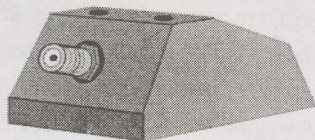
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"At the beginning of September, Foxtel began retransmitting RAI International at the same time Rupert Murdoch and Italian Mediaset's boss Silvio Berlusconi were considering an alliance to pick up the pieces of failed German pay TV. Such is the world of pay TV: put together a public soul and commercial goal and you get ambiguity which is something writer Pietro Casoar identified (August 1998 SatFACTS). We at RAI International make no apologies for our dual nature. RAI International is the foreign division of Italy's public broadcaster RAI (pronounced Reye), and part of its charter is to inform and entertain Italians around the world. In the past, this meant RAI compiled a few programmes especially for Italians abroad and sent them on cassette to small time TV operators. Three years ago it changed strategy and got itself a stronger partner; the Saudi holding company Dallah Albaraka. This firm got the exclusive rights to the commercial distribution of our programming. RAI International was thus able to concentrate on being only a content provider and this is how it came to have a pair of 24 hour channels in this segment of the world; one commercial, the other "public." The commercial channel is the generalist entertainment channel for Italian audiences all over the world - with "Serie A" (first division) soccer, variety shows, movies, cooking programmes, documentaries, magazines on fashion, lifestyle, travel, sport and up to seven news bulletins or updates during the day. The channel is compiled entirely in Italy with material from RAI's three domestic networks plus programmes produced by and especially for RAI International. In Australia, RAI International has been distributed by Optus Vision since early 1997, more recently by Foxtel. Both operators collect the signal - which is not encrypted - from PAS-2. I am not a big fan of the delayed-in-transit solution, but the resources are not available to compile a separate feed just for Australia. However, late in October I believe this feed will become more of an Australian service. The public channel on AsiaSat 2 is RAI's vehicle into Asia. This is a different channel with different aims from the PAS-2 service. Promoting Italy's language, culture and business are number one into a region of the world with few or no Italian communities. As2 carries more information, less general entertainment. From September, this channel has also added Division 2 Italian Soccer (First Division matches having been widely presold throughout Asia to telecasters). As Mr. Casoar suggests, the true objective is for RAI International to give AsiaSat viewers all of the best programs it can without breaching the distribution contract with Dallah Albaraka. RAI only guarantees FTA service on As2. The PAS-2 signal could be encrypted or moved to another satellite by our commercial partners at any time. That is why I advise Italians to only invest in As2 FTA systems and the more responsible installers have echoed that advice. Yes, an Optus B3 (or other bird) pay-TV ethnic bouquet could happen - but no guarantees."

Claudio Paroli, Area Manager RAI International
tel 61-2-9299-6536; fax 61-2-9299-5366
Bottom line: Not even RAI knows the future.

HARDWARE EQUIPMENT PARTS

UPDATE

OCTOBER 15, 1998

Rescheduling. PAS-8 to 166E is delayed - "early November" and that may slip. Orion 3 to 139E now moved to March 8 (1999) from already postponed late November launch date. Orion reason given - more testing time need for satellite electronics. When PAS-8 does go, live coverage PAS-2 California bouquet programme channel 2.

Leonids meteor shower warning. SF#34 (June 1997, p. 6) reported in detail the threat posed by debris from the Temple-Tuttle (comet) which is forecast to sweep close to the earth's atmosphere in a two hour period centred on 19.30 UTC November 17 (18th - 8.30AM NZST, 6.30AM AEST). The accuracy of the forecast "encounter" is +/- 3.5 hours suggesting 16.30 - 2300UTC (17th) will be the most dangerous period. What could happen? With more than 600 satellites in orbit, at least 3 are likely to be directly struck by meteorite particles and damaged. Satellite operators such as AsiaSat will reduce their bird profiles by rotating the solar panel arrays to present an "end-on" view (i.e., diminish the amount of exposed surface area to the comet debris). The challenge for world circling satellite constellations such as Intelsat and PanAmSat/Galaxy is to protect all of their satellites for the same critical period of time. If something 'drops dead' around 19.30UTC on November 17th - now you will know why.

S-band Cakrawarta. Steffen Holzt, New Caledonia reports, "This is the strongest digital signal I have ever had on any band from any satellite." He measures 16 dB CNR on 3m mesh dish, believes dish as small as 1.5m will play. Feeds (ADL ARS-1) and LNBS (Gardiner 90 degree producing L-band IF of 950-1350) from Sciteq (tel + +61-8-9306-3738, fax + +61-8-9306-3737). Channel loading still fluid but late in September was as follows: 2.566V (HBO, Cinemax, 2 radio stations), 2.586V (Hallmark, CMT, BBC World, TNT/Cartoon, ESPN, CNNI), 2.656V (Bloomberg, Star Movies, [V] International, Citra TV, NHK, Films Indonesia, Star Sports, Star World), and 2.536V (TVRI, SCTV, ANteve, Test, RCTI, Indosiar, TPI, Mosaic 2). All NDS CA, Pace DVS211 IRDs - advertised within Indonesia at US\$700 for IRD and 18 programme channel subscription. Literature lists 16 channel "Silver" at Rp 129,000 monthly, 19 channel "Gold" at Rp 199,000. Plus - both include 6 channel terrestrial package. This warning. Indovision sources advise SF, "We still do not expect to deploy Cakrawarta as a commercial service this year because of the devalued rupee." In fact, Indovision is legally bound to provide new S-band antennas (LNBS and feeds) to all existing C-band subscribers and that distribution process has not begun. So the S-band signals may be more of an engineering test than anything else for the balance of this year. That an IRD receiving them, using C-band system smart cards, would function is for now not reported.

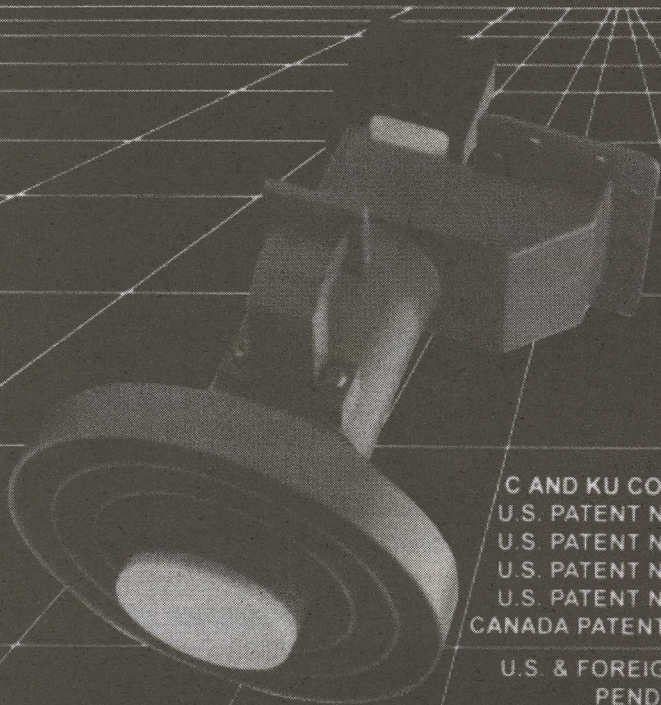
PAS-7, heading for 68.5E, was successfully launched from French Guiana early on the morning of September 16th with live coverage on PAS-2 within the California Bouquet. PAS-7 is already testing from its PAS-4 collocated position as you read these words (30 Ku, 14 C-band transponders); see p.31.

Believe it when it happens. Indonesia's PT Telkom say they will launch Telkom-1 to 108E, replacing old/tired B2R there. New satellite will have 12 C-band 3.4 - 3.7 and 24 more 3.7 - 4.2 and yes! - Australia is mentioned as part of coverage region. When? They say "early 1999" but don't hold your breath.

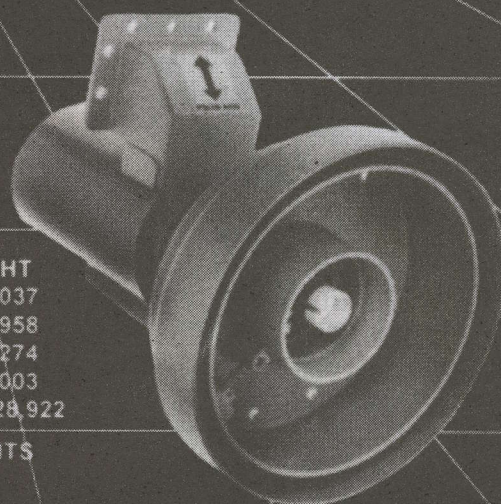
Useful web site. <http://www.BAKKERELECTRONICS.COM> with significant data on upgrading Nokia, older Panasat (such as 520) software through Internet downloads. Nokia version FTA 2.0 software makes older Mediamasters really hum.

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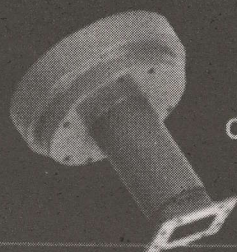
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ARE EITHER OF THESE RECEIVERS ACCEPTABLE FOR RABS or DTH USE?

SatFACTS first looked at the performance of the UEC 642 IRD selected by Optus as their "RTIF approved" receiver for the Aurora project in our March issue (SF#43, p. 10). In April (p. 32) we reported a conversation with UEC Managing Director Francois Stols concerning the 642's service backup in Australia. In May (p. 32) we were concerned that Optus, after going public with their plans to have "up to four" IRDs approved for Aurora, were dragging their feet on approving any IRD other than the 642. In June, SF identified a potentially dangerous-to-humans 642 power supply design anomaly (p. 18). By July, this design flaw had grown into a major safety issue and we explored the 642 in greater depth while presenting a full response submitted by UEC's Russell Futter (p. 6). UEC, by the way, did not agree the power supply was a "safety hazard" but mysteriously did immediately modify all power supplies coming into Australia to correct the weakness we identified. We also provided Russell Futter with a full page forum (p. 32) to answer our concerns in the same issue. In August we reported a test unit sent to us by UEC had quit working - when a power supply part fell off of the circuit board (p. 32).

SatFACTS has been accused of picking on UEC and their exclusive distributor for the 642 (Nationwide Antenna Systems) last chose to advertise in SatFACTS in June. (1)

Although Sun Moon Star (SMS) is reported to have also chased the Aurora market through Optus (and Optus admits they considered IRDs from Hyundai, Panasonic, SMS and UEC), the only other receiver to actually appear in the marketplace early enough to challenge the UEC 642 has been the Panasonic TU-DS10. We first saw this IRD in July and reported in SatFACTS for August (SF#48, p. 15). On page 19 we reported the IRD we received for test displayed a software glitch, and also reported a communication to us from Panasonic admitting, "*We have not been able to*

pinpoint the origin of this problem," an honest response which we give them high marks for admitting. The same report reviewed the apparent "approval process" for IRDs by the Optus Engineering Department and came to the conclusion the TU-DS10 was not yet quite ready for Aurora (or Optus DTH either). Unlike UEC, Panasonic's management team (in Wales) agreed with our analysis and immediately began steps to correct faults which we and others identified. We'll investigate the current status of both IRDs shortly.

The history of developing an Aurora receiver is neatly tucked away in locked files at Optus. Claiming "commercial sensitivity," Optus has chosen to hide from view or outside inspection the procedures that have been followed to date in evaluating and finally selecting suitable IRD hardware. This would be quite acceptable but for one thing. *Optus* is not the buyer or owners of the IRDs nor is Optus the importer or distributor. Rather, Optus has established themselves as a purveyor of a software product (the Aurora bouquet) and has created their own technical specifications for receivers that will access their programming package. These "receiver standards" are ostensibly for programming that is in most regions free to air (i.e., ABC, SBS, Imparja, GWN) and for which Optus claims no copyright. It is by twisted logic that Optus ends up not only setting the technical standards for reception of these FTA services but in the process also ends up being paid for their transmission.

Suppose for the moment your telephone company only provided a line to the terminal box at the *outside* of your home and made you responsible for the wiring that goes into the home as well as sourcing and connecting up your telephone instrument. But - to protect the integrity and guarantee the performance of the telephone service brought to the outside terminal box, they write specifications for all telephone instruments to be connected to "their" line and then refuse to hook you up to their telephone service unless you purchase telephone instruments which their engineering department approves?

Does this sound familiar? Is this not what Optus has done through their engineering department for satellite receivers?

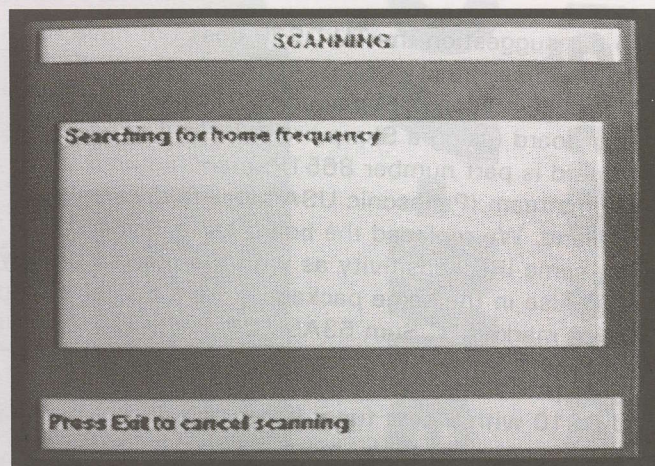
There is a "telephone company mentality" at work here. "*We own the delivery system - if you want our service, you will play the game by our rules.*" Only in this case the wire is wireless, and once having set the standards for the IRDs Optus has distanced itself from

1/ No, you cannot "buy" good editorial coverage with advertising in SatFACTS. Our allegiance is to readers, not advertisers as virtually all suppliers have previously learned. A product submitted for test and review is always at risk of being "slammed" if it fails to work properly. And if we hit hard on a product, we always provide equal space (or better) to allow the supplier to respond - as we did for UEC's Russell Futter in July.

Panasonic is Trying - and Trying - and Trying...

We reported a video glitch problem with the TU-DS10 in August, noting "the problem is only affecting Austar transmissions, not those of Optus." Mysteriously, the problem simply went away one day strongly suggesting that a data bit in the Austar/Foxtel "stream" was causing the problem. Now - after weeks of operation, a new problem. At random times, sometimes several times per day, the IRD decides it is time to start searching for service. It does this while it is firmly locked onto a service (right). To correct the problem, hit "exit" and "OK" and within a few seconds the IRD has returned to normal reception. We reported the problem to Panasonic who advised as follows:

"The latest product shipped to Australia (this from the factory in Wales, UK) has new code and one hardware modification. A resistor value has been changed between the microprocessor and the NVRAM. We made this change because we noticed intermittent noise on some combinations of micro and memory packages. One possible side effect of this - the receiver not properly storing memory settings and if power or reception is interrupted, not returning to last channel viewed when service is restored."



Breaks into search mode without warning ... DS10 developed additional software problems after several weeks of testing.

the entire "connection" procedure and takes zero responsibility for what actually happens in the field. And that includes hiding behind the unfortunate "exclusive distributor" of the only IRD product they have approved while making the distributor - Nationwide Antennas - solely responsible for any errors that Optus Engineering may have overlooked in their IRD approval process. If you think Nationwide fell into a gold mine when it was "selected" to handle the UEC 642 - think again.

What is the quality of an engineering department that did not notice a dangerous-to-consumers power supply design? Or did not insist that the UEC 642 - from the very first shipment - have appropriate C-Tick approval? Or that the UEC be capable of seamless switching between Aurora and future-day Optus DTH bouquets?

In the case of the Panasonic TU-DS10, what is the quality of an engineering department that noticed but did not deny approval to an IRD that entered (and left) their lab with a serious video glitch? Or, as we report separately here, has L-band tuner performance, power-down memory failure and basic component part selection problems?

There are serious concerns here and they are the sort of problems which installing dealers and service centres are facing and will face until eternity.

Improperly completed, immature IRD designs are not new. From the first SK888 (which - *should you forget* - had a serious heat problem) to next year's newest and latest, IRDs arrive in the marketplace with faults. A brand new IRD from MarsPlutoJupier Manufacturing in Laos earns its place in the marketplace only after the manufacturer responsible for the product and the

distributors selecting the product shake it down. Put it into the field, find out what is wrong, and fix it. The models that survive are those that manufacturers and distributors stand behind, repair as needed, and correct design faults when field experience says - hey! *There is a problem here!*

Optus has injected their Engineering Department into the Aurora receiver distribution world by *insisting* that all IRDs used for their service have an "Optus Engineering Seal of Approval." Given the reputed skills of their engineering staff, the sizeable budget available to them, and their ability to source advice from virtually any laboratory in the world, they should not be caught approving receivers that have dangerous power supplies, video glitches, heat problems or modulated RF outputs which are capable of interfering with a neighbour's television reception. But it has happened, and now you - the field installer or service technician - are potentially left holding the bag.

Our "Broken" 642 Power Supply

In our August report (p. 32), we compared a portion of the TU-DS10 power supply to a segment of the UEC 642 power supply. And we noted that a torroid power transformer in our 642 we received for test had literally fallen off of the circuit board. We published photos of the two power supply sections and you could see the "dangling" UEC torroid.

First we asked UEC's Russell Futter about this and he responded, "*Approximately 20 of the first units mounted this core directly to the circuit board whereas in later (production) runs we installed the core on plastic pillars to prevent the problem you report.*" He further added

And trying and trying and trying!

To our suggestion the TU-DS10 does not have the threshold sensitivity of DGT400 or DVB-500 IRDs, Panasonic responded by sending out a replacement tuner board (using a Sharp brand L-band tuner). The board is part number 8651P, manufactured by Comstream (Panasonic USA satellite division) in Thailand. We replaced the board and measured the exact same IRD sensitivity as with the original factory board. Also in the same package were a pair of 44 leg IC chips marked "C.Sum 63A5 / 08-1742-327 / Optus

You probably won't want to upgrade your own TU-DS10 with a new tuner board and 44 leg ICs. A warning - special tools, more than casual skills are required.

3/9/98" with a pink sticker. Panasonic is trying here to adapt their IRD to the slightly irregular uplink data stream originating in a Divicom multiplexer system. The Divicom MPEG-2 is said by many to "*not be totally MPEG-2 DVB Compliant*." We all know what that might mean; Scientific Atlanta's PowerVu is also "*not MPEG-2 DVB Compliant*" and anyone who has attempted to get MPEG-2 performance out of PowerVu, or conversely, make an SA receiver perform with an MPEG-2 DVB Compliant data stream (such as the European Bouquet) knows the challenge.

The bottom line here may be just that simple; Optus Engineering has installed a Divicom uplink multiplexer system which is *not* fully MPEG-2 DVB Compliant. And this means they are guilty of telling us one thing about their data stream but supplying a stream that is quite contrary to their claims. The mystery why receivers have experienced processing problems with Optus services may be just that straight forward.

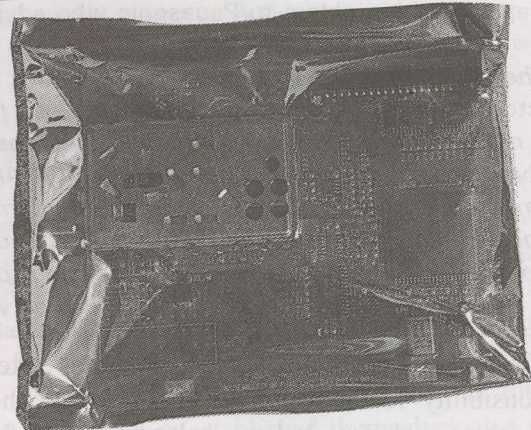
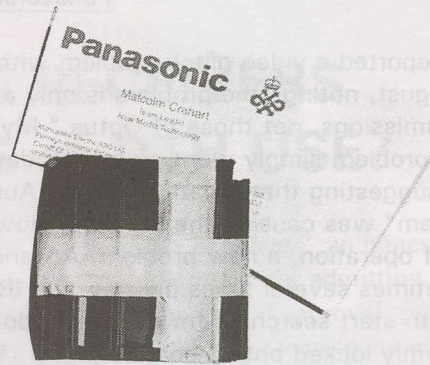
that ours was not the only core to fall off their circuit board. OK - so they spotted a problem and fixed it. That's a plus but we have to note that Optus Engineering didn't spot this problem when they saw the same receiver 60 days prior to our own test unit. And as this same power supply reportedly appeared in up to 15,000 UEC IRDs shipped to Greece *before* the first Australian shipments, we have to also wonder how many Greek receivers came down with "torroid off-the-board?"

Futter asked us to return the broken receiver to Nationwide. We did this, they fixed it, and sent it back. Promptly. Ten out of ten for Nationwide.

Which brings us to a synopsis. Prior to mid-July, you could only obtain Aurora smart cards if you purchased a UEC 642 IRD. Now Nationwide has been instructed by Optus to sell the cards separate from receivers, a response we believe to the fuss SatFACTS made about the way RTIF vouchers were being handled. New buyers of Aurora packages, then, can select between the UEC 642, the Panasonic TU-DS10 and a range of others.

2/ Special thanks to Tony Drexel of Free To Air Satellite Service in South Australia for the continuing updates on software compatibility.

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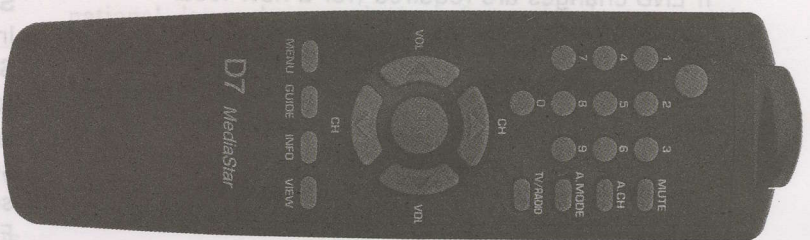
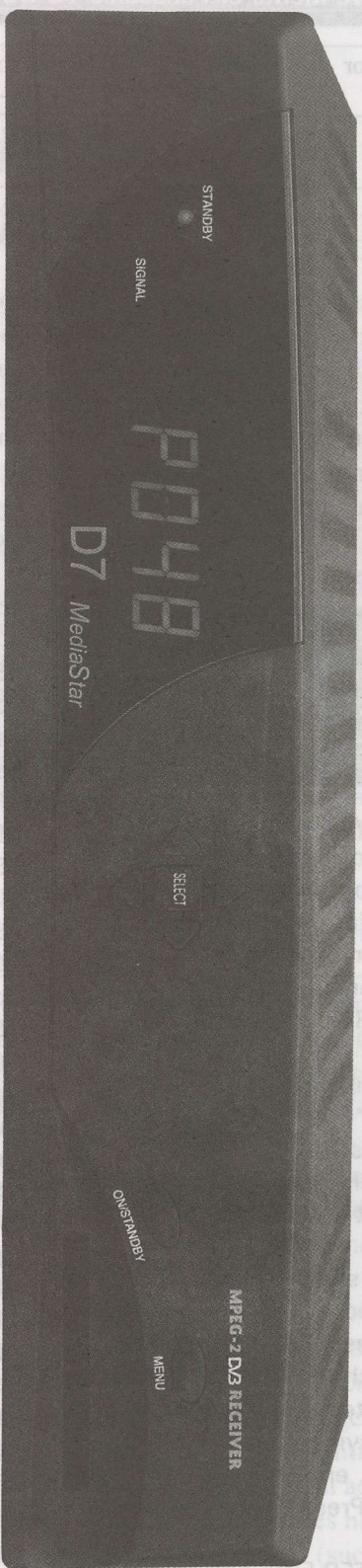
Reports to SatFACTS tell us the following receivers equipped with a CAM will not function on Aurora: DigiSkan SK888, Pace DGT400 (ex-Galaxy IRDs), and Panasat 520s. We have reports, however, the Panasat 520 does work on the Austar bouquet when equipped with a proper CAM.

The Nokia Mediamaster can be retrofitted with a CAM and it will also work with the Aurora bouquet provided you update the software. Free software upgrades for the Mediamaster can be found at <http://www.bakkerelectronics.com/nokia%20soft.htm>. This is software version FTA 2.0 and SatFACTS recommends the upgrade for improved Nokia performance even if you have no need for the CAM and Aurora smart card. (2)

Scorecard

If you want Aurora and the ability to "grow" to a pay-TV service (such as Optus DTH or "another"), there is a single choice in an approved receiver with a minimum of problems. And that is the UEC 642. We summarise the comparisons on page 10. A new model, the UEC 660, is scheduled for introduction before the end of the year; an IRD which has been created specifically for a pay-TV environment (a *pair* of card slots - one is a standard Mondex slot for a credit card so when you "pay" to view with this one, it is charged

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Relative Merits of Panasonic TU-DS10 and UEC 642 Now in Field

	Approved for RTIF	Usable for RABS	Usable for Irdeto pay-TV	Mature power supply	Mature software	Ease of use
Panasonic TU-DS10	No	Yes	Yes with CAM	Yes	Not yet	4 on 0-10 scale
UEC 642	Yes	Yes	Cam built-in	Unknown	Yes but slow	5 on 0-10 scale

directly and in real time!). The 660 reportedly has a Msym range from 2 to 42 and a built-in low and high speed data modem to allow the receiver to be used for pay-per view ordering as well as (what Optus believes will be) an Internet "download service" they hope to provide with 400 kbps satellite data speeds to the home dish system. No, the 660 is not intended solely for the RABS programme and the pricing has not been announced. An aside - no IRD announced to date is likely to be capable of 'self-installation' by a consumer.

Linking Aurora and Austar/Foxtel on UEC 642 (Aurora is done first - below; then pay-TV at right). Data courtesy Skyfox (which can be updated through latrobe.net.au/skyfox).

- STEP ONE:** (1) Connect to AC mains, press red on/off switch if IRD does not turn on; (2) Screen should say "Scanning" at top, receiver enters auto-scan mode searching for default frequency.
- STEP TWO:** (1) When scanning is complete, screen will show summary of scanning. (2) After scanning stops, press menu key on RCU. (3) Select 'Advanced Options'
- STEP THREE:** (1) Screen will show 'Advance Options' at top. (2) Select 'Change Dish Installation' with cursor arrow and press OK.
- STEP FOUR:** (1) Screen will show 'Security Check' at top. (2) Enter factory set default PIN number (9949).
- STEP FIVE:** (1) Screen will show 'Change Dish Installation' at top. (2) Select 'Change Manual Tuning Parameters'. (3) Press 'OK' to continue.
- STEP SIX:** (1) Screen will show 'Change Manual Tuning Parameters'. (2) Enter (Aurora) default frequency (12407), enter symbol rate (30000), enter polarisation (vertical), enter the forward error correction / FEC (2/3). (2) Press OK to confirm new default values.
- At this point return to STEP FIVE and select 'Tune & Rescan' (which begins a new scanning process) or if LNB changes are required (for a new local oscillator frequency) -
- STEP SEVEN:** (1) Screen will show 'Change Dish Installation'. (2) Select 'Change LNB Settings', and (3) make necessary new number entries to correspond to your LNB.

Now return to STEP FIVE and select 'Tune & Rescan' for new loading.

"Linking" of Aurora to a pay-TV service requires some quick finger work. As UEC expert Skyfox advises (below), "Another problem that both the UEC 642 and Panasonic TU-DS10 have relates to upgrades sent over the air. For example, when Aurora or pay-TV change the channel line-ups, often the new expanded channel menu does not automatically load. Then you have to go into the menu (as shown here) to reload for the new, expanded channelling."

The immaturity of the industry is unfortunately still very apparent with cupidity a daily problem.

- STEP ONE:** (1) Connect to AC mains, press red on/off switch if IRD does not turn on. (2) Screen should say 'Scanning' at top, receiver enters auto-scan mode searching for default frequency. (3) Push 'Exit' to cancel scanning.
- STEP TWO:** (1) Quickly press 'Menu' on remote. (2) Screen will show 'Main Menu' at top. (3) Select 'Advanced Options' and press OK.
- STEP THREE:** (1) Screen will show 'Advanced Options' at top. (2) Select 'Signal Detection' and press OK.
- STEP FOUR:** (1) Screen will show 'Signal Detection'. (2) Check 'Coarse Tune' and 'Fine Tune' to determine if there are adequate signal levels. (3) Use up and down arrow to select coarse or fine tune display. (4) Press exit (on remote).
- STEP FIVE:** (1) Screen will show 'Advanced Options'. (2) Select 'Change Dish Installation' and press OK.
- STEP SIX:** (1) Screen will show 'Change Dish Installation'. (2) Select 'Channel Manual Tuning Parameters' and press OK.
- STEP SEVEN:** Screen will show 'Security Check'. Enter default pin number (9949).
- STEP EIGHT:** (1) Screen will show 'Change Manual Tuning Parameters'. (2) Enter Austar load frequency (12438), enter symbol rate (29473), enter the polarisation (horizontal), enter the forward error correction / FEC (3/4). (3) Press OK to confirm new values.
- STEP NINE:** (1) Menu should return to 'Change Dish Installation'. (2) Press 'exit' three (3) times.
- STEP TEN:** (1) IRD will exit from menu mode and go to scan mode, doing one full scan. (2) After scanning and loading Austar, screen will display something like "1 Operators found, 14 accessible services found (# depends upon whether Austar or Foxtel smart card is used) and 3 of 3 transport streams processed." At this point Aurora and Austar/Foxtel are linked.

COPYRIGHT: Part Two of How It Affects Viewing Choice

Unencrypted, free to air satellite transmission differs only by its use of a different frequency band from FTA terrestrial television. And as that affects copyright, the technical transmission differences between VHF or UHF delivery, and C or Ku band delivery matters not.

Terrestrial FTA presents a "clean" definition of copyright because by international accord (agreement between nations), it is universally accepted that copyright laws apply at the point of transmission. If, for example, country "Z" has adopted a law specific to their country defining satellite reception with special language that make it different than FTA terrestrial, that is the law applying to reception of satellite signals in country Z *only*. It is the legal responsibility of the satellite uplinker to establish copyright protection at the point of transmission. A service uplinked in London carries British copyright law. A tiny handful of countries relate copyright law to the point of *reception* (Germany is one).

This is not a new concept; origins of applicable copyright date back to the 1920s and the inauguration of international (short-wave) broadcasting. BBC World (radio), for example, was built upon this basis. In most commonwealth countries there is case law which deals with any signal that "falls" onto someone's property. In the absence of encoding to prevent reception or transmitted notices to the contrary, a signal that lands in your "yard" is yours to do with as you wish.

A satellite telecaster has the unique ability to determine where his viewers are located through encryption and regional distribution of decoders. Indovision, by restricting distribution of decoders (and programming package offers) to only countries they approve, is in a position to deny reception to countries or regions outside of those selected. It is the *legal* responsibility of the broadcaster to notify viewers where "legal" reception regions are and are not. Indovision's refusal to authorise viewers they know to be located in Australia, for example, is a form of notification. (1)

The satellite bouquet operator sits down with the various programmers and outlines his proposed business. This includes defining the regions of the world to be covered so the number of potential viewers can be calculated. Programmer rights are sold to bouquet operators based upon a number of factors including the size of the potential audience. If the programming is supported by advertising (such as Star Asia programming running on AsiaSat 1 in FTA analogue at this time), there are three "parties" interested in the size of the audience. *First*, the programme rights owner who collects fees based upon the estimated audience reached. *Second*, the bouquet operator who sells advertising based upon the reach of the service. And *third*, the advertisers who expect to be charged based upon the size of the audience. In all cases, they seek to reach the largest audience possible.

While each country is responsible for its own copyright legislation, there is a larger copyright "law" that prevails. During the 20th century, there have been five occasions where the nations of the world have met (mimicking the UN but totally outside of the United Nations) to create "conventions on copyright." At the moment, the applicable international rules are based upon the "Bern (Switzerland) Convention." Such conventions are where changes in international copyright law are proposed, debated and voted upon in a democratic way. After the convention, it is the task of the representatives from a country to report back to their national legislatures or leaders the results of the convention. At that point *individual* national parliaments are able to adopt or reject the convention rules. If they adopt the latest language, the nation is said to be a "signatory to the convention" which means it supports the rules of international accord.

Bern Convention rules have the effect of law *if* ratified by a national body (such as Parliament). Bern is "international" and provides a framework for individual countries to follow with the knowledge that if their national laws do not deviate from the international agreements, that nation is in step with the world. The international conventions, then, are the basic building blocks for individual nation's copyright laws.

Article 10bis (Bern Convention Paris Revision) states: "*It shall be a matter of legislation in the countries of the Union to permit the reproduction of communications which are not expressly reserved.*"

1/ The presumption always is that every programmer knows his copyright clearance situation and his obligations, if any, to restrict distribution of his contracted programming to certain countries. It is therefore the task of the uplinker, through announcement or encryption, to state where use is not permitted by some segment of the viewers within the satellite's footprint region.

THE MK12 Programmer - How Does It Mesh With Copyright?

It is the latest "Gee whiz" toy. For A\$250 you can own the MK12 Programmer (imported through a Victoria firm). It claims: "Read and write smart cards ... read and write PIC chips including the 12C508 chip ... emulate a smart card using your computer." About satellite TV, the importer claims, "It can read and write programmable integrated circuit chips. Use your PC to program the chip via the MK12 and use your computer as a stand-alone card, just like a real smart card. The PIC chip can also be used as a blocker with the MK12 - acting like a filter - it stops your card from being turned off (by the programmer)." In the fine print, literature says, "The MK12 holds no codes, the user programs the codes into cards using a variety of (software) programs supplied as shareware for educational purposes only."

That is important. The MK12 without appropriate software is quite useless. There is a broad claim "appropriate software is widely available" but SF sources suggest this is not totally correct.

The threat here is to Irdeto based (and other) conditional access systems. If - if it were possible to clone Austar/Foxtel cards such that one "master" card could support a quantity of non-paying "clone" cards, business could suffer at the pay-TV networks. Some industry response to the MK12? "*It is a joke, a toy for technical people who are not technical enough to appreciate its limitations*" (Bob Kelleher, Antares Satellite). "*A very bad sign that the pirates are not going to give up. Imagine a Pentium PC wired to the IRD wired to the TV set in the family sitting room. Ludicrous!*" (Paris Cockinos, Paris Electronics). "*This product might be of interest to end user hobbyists but not to AV-COMM. We don't sell machine gun parts nor hand grenades either*" (Garry Cratt, AV-COMM Pty Ltd.). "*This is a very simplistic system and if done in the way it is described, we would have no difficulty defeating it over the air. Nothing like this system has been successfully used to break into our conditional access system (any place in the world).*"

I am not worried about this one (Peter Iles, Mindport/Irdeto, Sydney).

Not all countries consider copyright legislation important enough to visit the subject more than every few decades. PNG, as an example, relies upon "*Common Law Copyright*" which appears to be nothing more than an extension of the 1956 British Act as applied (at the time) to Commonwealth countries. An act adopted in 1956, translated to PNG in 1961 and then applied in 1998 is woefully out of date and leaves more questions unanswered than answered.

New Zealand's 1994 Act is the most modern in the Pacific. Australia, by comparison, is in the dark ages which amplifies the importance of the Bern Convention in grey areas of concern. Bern, for example, sets aside television programming dealing with "*current news, economics, political or religious topics*." This means that absent national legislation that conflicts with the Convention on this point, services such as CNN are largely not capable of being copyright protected (so too news feeds for WTN, Reuters). New Zealand recognised this set-aside by the international law in Article 42 of the 1994 legislation which validates the Convention view on this point (i.e., news is not capable of being copyrighted under most circumstances).

The last major revision to the Australian Act was in 1961 which coincides with the dawn of television but predates home videotaping and other storage systems (such as computer hard drives and discs). As you might imagine, technology in the intervening 37 years has shot many holes in the now ancient Australian law.

A "*Copyright Convergence Committee*" has been studying the changes in technology to identify areas that should be updated. Their first area of concern dealt with whether Australian Copyright law (as it now exists) applies to transmissions originating in Australia but

received (and viewed) elsewhere. Conversely, are programs originating outside of Australia and copyrighted elsewhere legally viewable inside of Australia? The Committee's decision: "*Transmissions originating outside of Australia but viewed here may be subject to Australian Copyright provided the entity receiving the transmissions and redistributing them applies for Australian Copyright protection.*" That means a TV station or a cable system could, in effect, re-copyright foreign transmissions "provided a 'copyright reserved' notice is not placed inside the transmission by the original rights holder." As for Australian originated transmissions (such as the former ABC, now Channel 7 international service), the Bern Convention applies; copyright is in effect from the uplink site following the law of the uplinking country.

What copyright law never intended to do is to *prohibit* use of material. Copyright is intended to ensure *compensation* for the rights owner(s). Commercial interests have twisted the original intent to allow them to carve up the world into segments for sale and resale of the same material. This is not illegal, but it is contrary to the reason copyright was created.

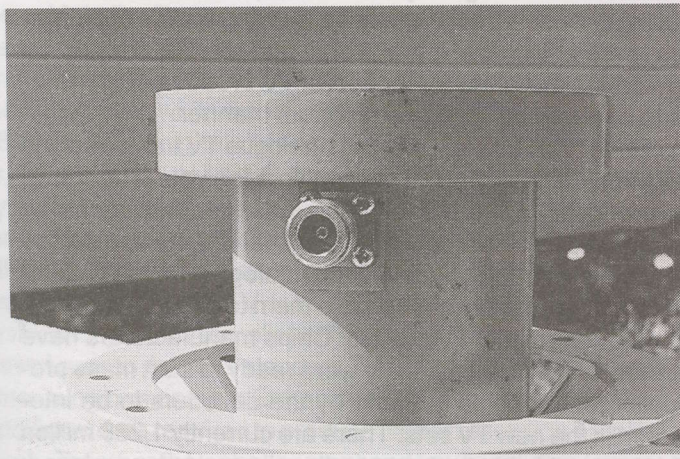
Older laws (such as Australia) leave many opportunities for entrepreneurs to "make a buck" by applying copyright in a form that satisfies their commercial aims. It is *not* illegal, for example, for someone in the privacy of their own home to "break" Irdeto or another CA system. It *is* illegal (under existing copyright and fair trade legislation) to *commercialise* on technology developed to penetrate a CA system. And that includes becoming a supplier of "piracy" (non-authorised) cards for a pay TV service. It is one thing to "*play*" and quite something else to "*play for pay*."

After You Get There - Then What?

The Necessary Parts to Receive Indovision S-Band

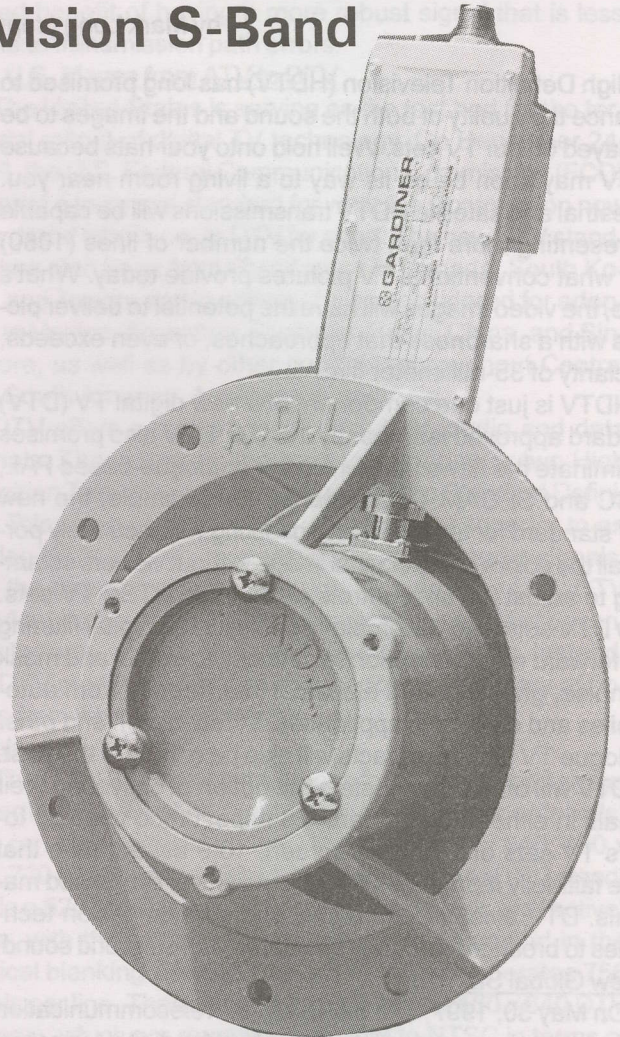
Cakrawarta S-band signals from 107.1E have now been measured by several dozen SatFACTS readers spread from western Australia to New Caledonia and New Zealand. The 3m dish line appears at this point to enter western Australia near Carnarvon and go eastward south of Oodnadatta (northern South Australia), off the Australian coast near Newcastle (NSW) and east as far as the Auckland (NZ) region. Signals in Brisbane and New Caledonia are in the under 2m region, possibly as low as 1.2m in New Caledonia.

Four non-DVB-Compliant bouquets on vertical transponders 2.536, 2.566, 2.586 and 2.656 have been



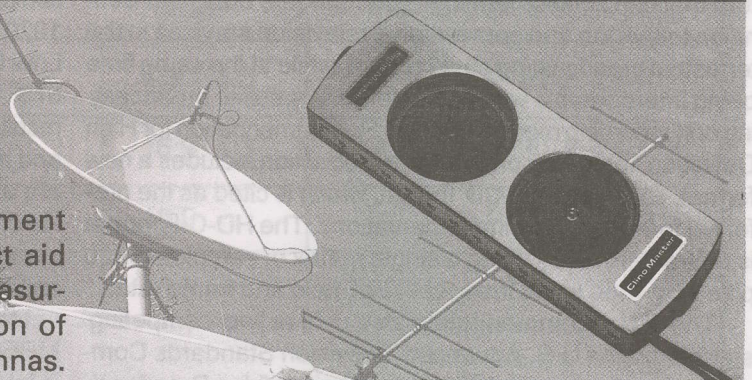
reported. Tests with Pace DVS-211 IRDs equipped with valid (C-band) Indovision smart cards lock and load but fail to produce programming indicating commercial use of this satellite has not yet begun.

The parts. S-band LNBS are available from Gardiner ("S-band LNB, extended frequency") while single polarity S-band feeds are from ADL (ARS-1); both through Sciteq at tel 61-8-9306-3737. The feed and LNB mate through a male-female type N fitting and the feed is closed-one-end with a probe offset from the closed end. Reports to SF, please.



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On the Road to High Definition Television

by Mark Long (copyright 1998 MLE INC.)

High Definition Television (HDTV) has long promised to enhance the quality of both the sound and the images to be displayed on our TV sets. Well hold onto your hats because HDTV may soon be on its way to a living room near you. Terrestrial and satellite HDTV transmissions will be capable of presenting more than twice the number of lines (1080) over what conventional TV pictures provide today. What's more, the video images will have the potential to deliver pictures with a sharpness that approaches, or even exceeds, the clarity of 35-millimeter film.

HDTV is just one component of a new digital TV (DTV) standard approved last year by the ITU. DTV also promises to eliminate the flaws inherent in the analogue-based PAL, NTSC and SECAM TV standards. For example, the new DTV standard for terrestrial broadcasting will accurately portray all the colors of the original image without viewers scrambling to adjust the tint controls on their old NTSC TV sets. New DTV sets also will employ sophisticated digital filtering and forward error correction techniques to detect and mask out noise, ghosting, and electrical interference from automobiles and electronic appliances. Video "crawl" and other analogue TV picture artifacts will also be a thing of the past.

DTV will offer broadcasters the option of delivering their signals in either the standard 4:3 aspect ratio used by today's TV sets or in a wide-screen, 16:9 aspect ratio that more faithfully reproduces the dimensions of film-based materials. DTV also will use digital audio transmission techniques to broadcast programs in stereo with surround sound.

A New Global Standard

On May 30, 1997, The International Telecommunication Union agreed on a new global standard for digital terrestrial television broadcasting (DTTB) that promises to deliver end-to-end digital TV with high-definition quality, and also unify television broadcasting systems worldwide. The ITU also unanimously agreed on the convergence toward a single HDTV production standard based on a High Definition Common Image Format (HD-CIF). This has given equipment manufacturers the go ahead to start delivering TV sets to anywhere in the world, thus providing economies of scale never available before, as well as worldwide portability for consumers and vendors.

DTTB represents the construction of a digital architecture that can simultaneously accommodate both high-definition television and conventional television services in the terrestrial broadcasting environment, while at the same time being interoperable with cable delivery, satellite broadcasting and recording media. The new Recommendation for High Definition Television programme production includes a new format, called the HD-CIF format, which is cited as the preferred format for new implementations. The HD-CIF format is characterized by using a single matrix of samples (1920 pixels by 1080 lines) irrespective of field and frame rate.

The ITU recommendation also unifies two 'competing' standards: the U.S. Advanced Television Standards Committee proposal and the European Digital Video Broadcast-

ing proposal. Under the ITU Recommendation, the two systems will form a single compatible system that can be implemented on a global basis within the practical physical limitations of the current terrestrial TV channel assignment environment. Moreover, the new digital system will support multi-programme transmissions in existing channels through the use of digital video compression technology.

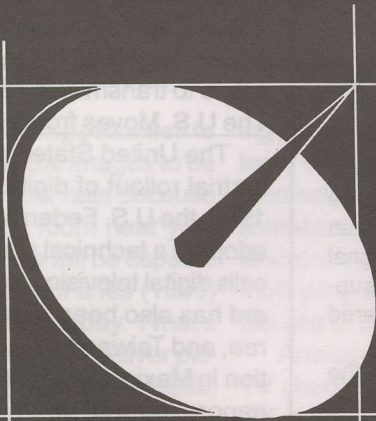
Analogue-based terrestrial TV systems leave adjacent TV channels unoccupied to prevent interference between TV stations operating within the same general broadcast area. It has been determined, however, that the new digital ATV services could occupy these unused channels without causing interference to existing analogue TV stations. The good news was that national telecommunication authorities will not need to assign any channel frequencies before introducing DTV services, thereby conserving scarce spectrum resources. What's more, total use of the frequency spectrums assigned for terrestrial TV broadcasting worldwide by finally be used in an efficient manner.

Under the ITU plan, existing analogue TV transmissions will eventually be phased out (within a ten year time-frame as proposed in the US, or within a longer time-frame as envisioned for Europe). As terrestrial TV transmissions change from analogue to digital, analogue TV sets will be fitted with set-top boxes to enable them to decode and process the new digital TV signals. Chips manufacturers have already announced that they were ready to start mass production of the chips required by the decoders to be integrated in the new TV sets. There are currently 1,288 million TV sets worldwide that eventually will need to be replaced. This is a huge market as well as a golden opportunity for those who work in the consumer electronics industry.

MPEG-2 Profiles, Levels and Layers

At the heart of the ITU's new DTTB recommendations is the MPEG-2 compression standard. MPEG-2 is actually a family of systems, with each system having an arranged degree of commonality and compatibility. MPEG-2 supports four different levels: High, High-1440, Main and Low Level. The design for each level, which is shown in the table presented on the following page, supports a variety of pixel arrays and frame rates.

The High and High-1440 Level can support high definition (HDTV) and advanced definition TV (ADTV) pictures with 1920 x 1080 and 960 x 576 pixel arrays, while the Main and Low Level can support standard TV pixel arrays of 720 x 576 or 352 x 288. All but one Level supports two spatial resolution layers, respectively called the Enhancement Layer and the Base Layer. All digital bitstreams and set-top boxes are also classified according to video frame rate, either 25 Hz or 30 Hz, depending on the accepted standard in each country of operation. Set-top boxes with dual frame rate capabilities are also possible. While digital bitstreams are set for one of the two frame rates, it also is possible for an MPEG-2 transport stream to carry programme material that is intended for more than one type of IRD.



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9. Displays Local Time on front panel, when it is on stand-by mode
10. Displaying signal level to setup the satellite antenna with ease
11. Power recovery function
12. 64-Steps Volume control
13. Powerful editing facilities (PIDs, IV or Radio Channel, Channel Name, Satellite Name/transponders)
14. TELETXT function (Your TV needs teletext for this)
15. Favorite channel function (Mixed with Digital & Analogue)
16. SCPC/MCPC receivable from C/Ku- Band satellites
17. Capable of receiving unencrypted free digital programs
18. User friendly OSG menu with full function
19. IR remote control
20. Last channel memory function
21. Variable aspect ratio (4:3, 16:9) with Pan & Scan
22. EPG for on screen channel information
23. Parental lock / Installation Lock / Set Lock
24. Multi-Lingual function according to the satellite and program provider
25. Total 2,900 Channels programmable (TV:1,500 CH & Radio:1,400 CH)
26. DiSEqC 1.1
27. Mechanical Polarizer (Skew) Control for each Satellite
28. Channel Storing for Multi-Satellite
29. Satellites: up to 50 satellites, 999 Transponders
30. Built-in Positioner (High Power Azimuth control (36 Vdc,5A))

Electric Specifications (Digital Section)

- | | |
|--------------------------|--|
| 1. Tuner & Channel | 1 x F type with Loophthrough |
| Input Connector | 1 x F type 75 Ohm, to connect an |
| Output Connector | |
| analogue receiver | |
| Frequency Range | 950 MHz to 2150 MHz |
| 75 Ohm | |
| Input Impedance | 75 Ohm |
| Signal Level | -25 to -70 dbm |
| IF Frequency | 480 MHz |
| IF Bandwidth | 55MHz |
| LNB Power & Polarization | Vertical +13.5V+14.5V |
| Horizontal | +17.5V+18.5V |
| 22 KHz tone | Frequency 22KHz + 2KHz |
| | Amplitude 0.6Vp-p + 0.2 Vp-p |
| Demodulation | QPSK |
| Input Symbol Rate | 2 - 45 Msps |
| FEC Decoder | Convolutional Code Rate
1/2, 2/3, 3/4, 5/6, and 7/8 with constraint
Length K=7 |
| 2. MPEG Transport Stream | AV Decoding |
| Transport Stream | MPEG-2 ISO/EC 13818
Transport Stream Specification
MPEG-2 MP @ ML
15Mbit/S Max. |
| Profile & Level | 4:3, 16:9 with Pan & Scan |
| Input Data Rate | 720 x 576(PAL), 720 x 480(NTSC) |
| Aspect Ratio | MPEG-1 Audio Layer 1, 2, Musicam
Stereo, Dual Channel, Joint Stereo. |
| Video Resolution | |
| Audio Decoding | |
| Audio Mode | |
| Mono | |
| Sampling Rate | 32, 44.1 and 48KHz |
| 3. Memory | |
| Flash Memory | up to 2 Mbytes |
| Program DRAM | up to 2 Mbytes |
| EEPROM | 16 Kbytes |
| 4. AV & Data In/Out | |
| SCART | TV x 1, VCR x 1, Decoder x 1 |
| Q/12V Out | RCA x 1 |
| C/VBS Video Out | RCA x 1 |
| S-VHS Out | S-VHS x 1 |
| Analog Audio Out | RCA x 2 (L-CH x 1, R-CH x 1)
Resolution 16bit DAC
Output Level 2Vrms Max.
Volume & Mute Control |



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SATECH

Satellite Communication Technology Pty. Ltd.

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33

NER SATELLITE RECEIVER

Features and Specifications

Data Interface	RS232C, BAUD Rate 38400, 9Pin D-SUB
5. RF-Modulator	
RF-Connect	75Ohm, IEC169-2, Male/Female
Frequency	47MHz to 860MHz
Output Channel	CH21 - 69
TV Standard	PAL D/K, PAL B/G, PAL 1
6. Power Supply	
AC Power Switch	Push lock type (toggle)
Input Voltage	C90-240V, 50/60Hz (receiver & Postoner)
Type	Linear PWM
Power Consumption	230W Max (Below 9W Max for standby mode)
Protection	Separate Internal Fuse and Chassis Grounding the Input shall have lightning or electric shock protection.
7. Physical Specification	
Size(W x H x D)	370mm x 60mm x 280mm
Weight	about 3 Kg
8. Environment	
Operating Temperature	=5 oC ~ +40 oC
Storage Temperature	-40 oC ~ +65 oC
9. Positioner	
Satellite Position	50
Azimuth & Skew Control	6 Push terminal (M1, M2, M pulse, +5Vdc, GND, Skew)
Output Power	36VDC, %A max (10minute max, 50%)(SMPS)
Sensor Type	Reed or Hal Effect Switch

Feature for Analog Section

1. 700 Programmable Channels
2. 2 IF Input(900-2159MHz) /2 Bandwidths(18/27MHz)
3. 32 Step Low Threshold Extension (3dB)
4. Audio Mono / Stereo Selectable
5. 64-Steps Volume Control
6. C/Ku band(Invert/Normal Video format) selectable
7. 4 Video Level Control
8. 4 Decoder mode
9. GUI Menu (Superimposed with Digital Graphic OSG menu and Background live picture)
10. Powerful editing facilities (Channel Name, Satellite Name)

Feature for Analog Section continued

12. Mechanical Polarizer (Skew) and DISEqC LNB
13. RS232C port for additional information service and updating IRD control software
14. 4 digit 7 segment LEDs on front panel display channel information
15. Power recovery function
16. Favorite channel function(Mixed with Digital & Analog)
17. User friendly OSG menu with full function
18. IR remote control
19. Last channel memory function
20. Parental lock
21. DISEqC 1.1
22. Built-in Positioner (High Poer Azimuth control(36Vdc, 5A)

Electric Specifications (Analog Section)

1. RF	
Input Frequency Range	900MHz to 2150MHz
Input Impedance	75 Ohms
IF Bandwidth	18MHz/27MHz
IF Frequency	479.5 MHz
Input Signal Level	-60 to -30dBm
Threshold	6dB Typ. (3dB : low threshold mode, 32 Steps)
2. Audio	
Subcarrier Tuning Range	5.0 to 9.0MHz
De-Emphasis	J-17/50uS/75uS/Adaptive(Panda-compatible)
IF Bandwidth	130KHz/150KHz/230KHz
Audio Frequency Response	20Hz to 15KHz
Output Impedance	600 Ohms
Output Level	2.0 Vrms Max
3. Video	
Format	Invert/Normal (C/Ku)
De-Emphasis	Selectable Video Output
Output Impedance	CCR, Rec 405-1, 625 Lines
Frequency Response	75 Ohms
Output Level	50Hz to 5.0MHz
4. Decoder	1 Vp-p Nominal
Format	
Base Band	
De-Emphasized, Undamped, Un-Filtered	
De-Emphasized, Undamped, Filtered	
De-Emphasized, Clamped, Un-Filtered	
Output Impedance	75 Ohms
Output Level	1 Vp-p Nominal

URGENT!

Installers required for
Australia wide
Ku Band Project
Must be fully
experienced and have
own field strength meter
and equipment all
regional and city areas
required.

FAX DETAILS to
Leon Senior at SATECH
03 9553 3393

acteristics of NTSC, PAL and SECAM, while the 1080 x 1920 array is the "HDTV" (high definition television) format.

Field and Frame Rates

Field rates of 60, 30 and 24 fields per second are available. The 60 and 30 fields per second best accommodate video source material using interlace scanning, while the rate of 24 frames per second is advantageous for the transmission of all film-based source materials using progressive scanning. Media resources that use progressive scanning, such as film-based materials, differ from video resources using interlace scanning in that each line of an image is presented in sequence.

Video Compression System

DTV uses the MPEG-2 specification as the basis of its own compression system. DTV takes advantage of the layered structure of MPEG-2. One layer can transport an STV signal to less-expensive DTV sets, while at the same time additional layers can transport signal enhancements that will allow more expensive ADTV or HDTV sets to display higher-resolution images from the same digital TV broadcast. MPEG-2 data packets also provide for the transmission of virtually any combination of video, audio and data information. One major difference between an MPEG-2 DVB-compliant signal and a DTV signal is that the former uses a modified version of MUSICAM for the creation of CD-quality digital audio while DTV will use the 5.1 channel Dolby AC-3 surround sound system.

The Road Ahead

DTV manufacturers are now marketing digital set-top boxes that will permit a terrestrially transmitted DTV signal to be displayed by any analogue TV set. A variety of DTV sets also are appearing in the marketplace, offering the satellite service provider with an opportunity to sell and install DTV sets along with satellite receiving hardware. The new DTV sets featuring a 16:9 aspect ratio will also compel the digital DTH service providers to begin offering ADTV and HDTV broadcasts. The advanced capabilities of DTV will give terrestrial TV broadcasters and cable TV systems worldwide the opportunity to more effectively compete with digital DTH and digital cable TV service providers. The availability of the new DTV sets in the marketplace will also allow some high-power DBS operators to begin broadcasting movies in a high definition, wide-screen format as early as 1999.

The old Chinese curse "May you live in interesting times" in this case actually should be regarded as a blessing in disguise. The transition to digital television in the satellite, cable and terrestrial broadcast environments will provide all of us with new opportunities and greater freedom of choice as we enter the first decade of the new millennium.

Mark Long is the author of *The World of Satellite TV* and the compiler of the *EURO-Asia/Pacific Satellite Library on CD-ROM*. He can be reached via his web site at <http://www.mlesat.com> on the world-wide web.

SPRSCS '99 in New Zealand - Details in November SatFACTS!

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HSS-200R Commercial MPEG 2 IRD -19 inch rack mount
HSS-680A Digital/Analog MPEG 2 IRD - soon to be released

We also supply the following quality products

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Praxis 9800ADP Digital/Analog IRD with positioner
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KTI satellite dishes from 2.3 - 3.7 metres
Huge range of feedhorns and LNB/LNBFs
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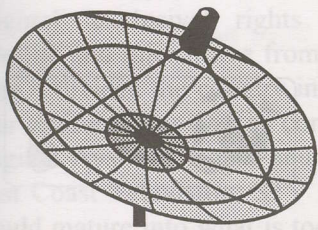
SPACE Pacific in partnership with world technology leader Mark Long makes it possible for you to become proficient in the exciting new world of satellite and satellite-digital communications. Two SPACE / Mark Long home study courses are available with certification available at the end of a completed course.

Join the ranks of satellite professionals with SPACE + Mark Long Help!

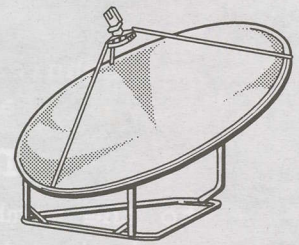
TWO OPTIONS!

- #1 - Attend South Pacific Region Satellite & Cable Show in New Zealand in March to complete the course with Mark Long as a tutor; or,
- #2 - Do it all by mail / email!

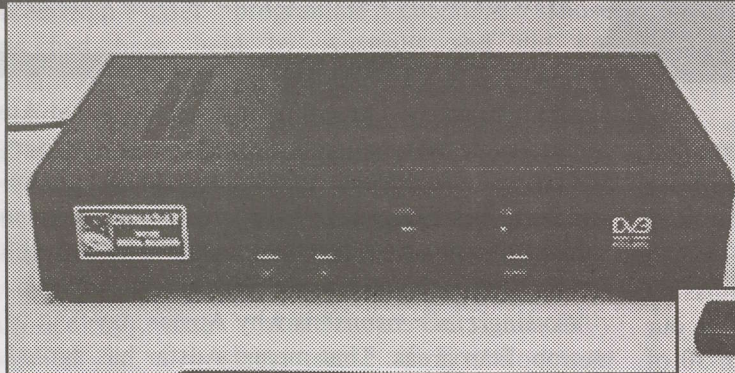
Details? Complete SPACE information request card on page 34 here.



AV-COMM SATELLITE TV EQUIPMENT



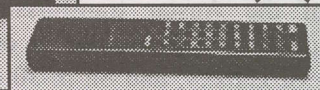
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Cat # R3100

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FEATURES

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- ◆ Downlink signal margin indicator
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- ◆ Channel "edit" facility
- ◆ 0-12V output for dish selection
- ◆ S-VHS video output
- ◆ Auto FEC detect

DYNALINK MANUAL TUNED RECEIVER R1100

SPECIFICATIONS

- ◆ 950 - 2050MHz IF Input range
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- ◆ 14/18V LNB switching
- ◆ 18/27MHz IF Bandwidth.

Ideal for band scanning, channel monitoring, or as the heart of any home satellite receiving system.



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advisory

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to the membership from your
industry trade association

SPACE Pacific

Satellite
Programme
Access
Committee



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

"For commercial reasons ..."

There is a belief, totally false, that Australian Government regulations somehow prevent Austar from serving DTH viewers in Sydney, or that Foxtel does not have a license to serve DTH subscribers on its own (without being a part of the Austar transmission stream). SatFACTS first dealt with this issue in our June report on the demise of Galaxy, and on p. 30 of July published excerpts from a letter signed by an official of the Department of Communications and The

Arts. There are no Government restrictions and Austar would find no regulatory opposition to serving ex-Galaxy subscribers in Sydney or Canberra or Melbourne if they chose to do so. A late September letter from the same Government source (below) restates that policy position.

"Commercial reasons" is why Austar stays out of the metropolitan areas. That means Austar has agreed, by contract or otherwise, not to "invade" the larger Australian markets. It has done so because of Foxtel.

Latest Letter Clarifying Pay TV "Areas" in Australia

(Background: Letter written in response to query to Department of Communications and the Arts complaining about letter writer's inability to sign up for a pay-TV service after the close-down of Galaxy.) "I sympathise with your frustration at not being able to subscribe immediately to another pay TV service following the termination of Galaxy. However, this has been the outcome of commercial factors and not the result of Government broadcasting policy or regulatory arrangements. There are now three major pay TV operators offering services in Australia - Austar Entertainment Pty Ltd, Optus Vision and Foxtel. **For commercial reasons**, Austar is confining its operations to regional areas of South Australia, the Northern Territory, Queensland, New South Wales, Victoria and Tasmania. The pay TV licences held by all of the existing operators are national licences and entitle them to deliver pay TV service anywhere in Australia. There are no impediments to prevent new operators obtaining pay TV licences, which are readily available from the Australian Broadcasting Authority upon payment of a small administrative fee. The areas in which any of the existing pay TV operators or any new operators offer a service is a matter for commercial judgement. You may be assured there are no restrictions in the Broadcasting Services Act 1992 which prevents a pay TV licensee from offering a service anywhere in Australia. The range of programming offered by pay TV operators is also a matter for their commercial judgement. The Government is not able to direct these operators to include channels, such as an Australian news channel, in their programming line-up."

(signed) Beverly Hart, Assistant Secretary, Licensed Broadcasting Branch,
Licensed Broadcasting and Regional Telecommunication Division

MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer."

All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) each summer in New Zealand. Members also participate in policy creation forums, have correspondence training courses available. To find out more, contact (fax) 64-9-406-1083 or use information request card, page 34, this issue of SatFACTS.

Page space within SatFACTS is donated each month to the trade association without cost by the publisher.

It was only in 1994 that Australis acquired the original "exclusive" rights to deliver pay TV via satellite and microwave from the Government. At that time it divided the country into 4 "franchises" to cover four regions. This was a "commercial decision" by the original Australis Board and out of that came Galaxy, East Coast Television, STV and CTV. The latter two would mature into what is today Austar. When Galaxy experienced financial meltdown, Austar needed the agreement of Foxtel to continue carrying a number of sourced-from-Foxtel programme channels. Those rights had been held by Australis and did not automatically go to Austar with the collapse of Galaxy.

Foxtel agreed to relicense Austar for these programme channels but Austar had to agree to something as well; *to stay out* of the ex-Galaxy portions of Australia. In effect, Foxtel forced Austar to limit their own growth to regions it was already serving if Austar wanted continued access to programming controlled by Foxtel. Austar can be significantly "punished" in a business sense if Foxtel detects wholesale violation of this agreement. Each of the "Austar regions" is clearly delineated by a set of maps and that is why we have people living virtually next door to one another where one has Austar service and the next house up the street is denied access to Austar. Austar would very much like to accept any customer anywhere but it needs continued access to programming controlled by Foxtel more than it needs a few thousand new subscribers.

Foxtel acquired access to the Galaxy subscriber base by purchasing from the financial referees the Galaxy IRDs as installed at ex-Galaxy homes. That was a very public, very visible action on the part of Foxtel. Totally invisible, not seen by the public, were the pressures Foxtel placed on Austar to create for Foxtel the *exclusive* right to serve these ex-Galaxy homes. Without continued distribution rights for Fox Sports 1 and 2, Showtime, Encore, TV1 and others - Austar knew it would be in big trouble. It had to agree to the Foxtel demands if it wanted to stay in business.

Meanwhile there is Optus. In theory, Optus has a programming line-up that is competitive to Foxtel. They have their own sports, movies, and a start at other programming channels. No doubt Optus did its best to talk Austar into abandoning the Foxtel line-up in favour of a wholesale switch to Optus supplied programming. To Austar management, totally dumping Foxtel for what many in the market perceive to be a less popular Optus line-up, was not a sound business decision. Moreover, the agreement between Austar and Foxtel cuts *both* ways. In return for staying out of ex-Galaxy metropolitan regions, Austar gets continued access to Foxtel programming. And - and, Foxtel has *apparently* agreed to stay out of Austar regions. For now. Or until PAS-8 flies and Foxtel goes there. Or Murdoch changes his mind. Whichever comes first.

CTD REPORTS: RECORD 7 HOURS OF VIDEO ON HARD DRIVES COSTING US\$500!

Three new start-up USA firms are introducing hard drives that record video (and audio) from terrestrial, satellite or cable sources through an in-built tuner. Initial models will store 7 hours of video with the added benefit that once the recording starts, playback can begin "behind" the record point by seconds, minutes or hours.

Models available as early as first quarter 1999 will handle up to 40 hours of record time with multiple playback pickups to stagger-start playout analogue video streams.

The wonderful world of delayed playback television is entering an entirely new era offering flexibility and low cost reproduction. And no more video heads to wear out!

EACH ISSUE OF Coop's Technology Digest points you at dozens of exciting, brand new technology business opportunities.

To put your business on the cutting edge of new technological products enabling you to be first in your region with the latest in hardware and software, you need the

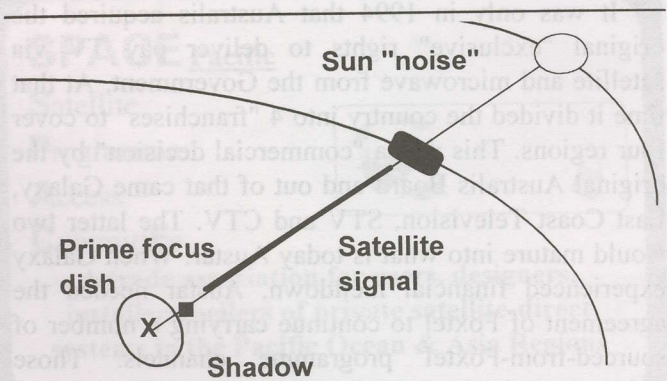
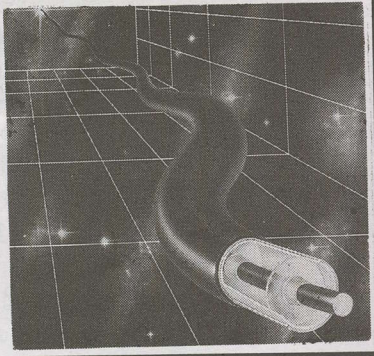
'CTD ADVANTAGE!'

If it's new and can make you money -
it is ALWAYS in CTD first!

How about the new Camcorder that sees through people's clothing to display their anatomical features? Not the outlines - the full features? The wags are calling it "Naked-Cam" (David Letterman - eat your heart out!)

All of this and much-much more in CTD for
September 30th (see order form page 33)

The CABLE Connection



Understanding Solar Outages

For two periods each year, satellite reception (S, C and Ku band) is interrupted by a force of nature which we cannot magically repair or fix. We learn to tolerate the signal outages when they occur, and attempt to explain to our satellite using customers that this is simply a side effect of the satellite geometry.

Our sun is a huge furnace with temperatures far exceeding anything we experience on earth. An exploding nuclear device creates temperatures less than one millionth of those routinely created just below the solar surface.

Here is an experiment you can do at home. Take your spectrum analyser and connect a one metre length of RG6 to the input connector. Tune the analyser to the region of 100 megahertz and connect a 50 to 75 ohm carbon (not wire wound) resistor between the RG6 centre conductor and the shield on the cable. Turn on the analyser and using the most sensitive settings measure the "noise" from the resistor terminated length of RG6. If your analyser is of reasonable quality, you will "see" a slight difference in the analyser's baseline display between the terminated cable connected and nothing connected to the input connector.

With the input terminated through a resistor, take a match or lighter and "heat" the terminating resistor. Setting it on fire is not good but raising the temperature to 50C would be illustrative. Keep an eye on the

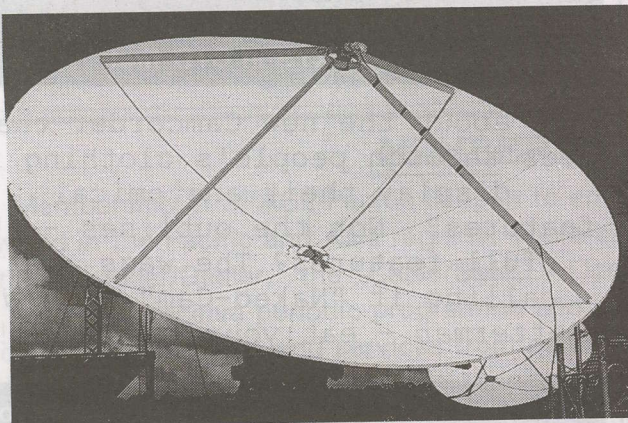
spectrum analyser baseline display as the resistor heats up. The noise floor will rise upwards indicating that a "hot resistor" creates more noise than a room temperature termination.

Now imagine how much higher the baseline noise floor might climb if the "temperature" of the resistor was one million degrees.

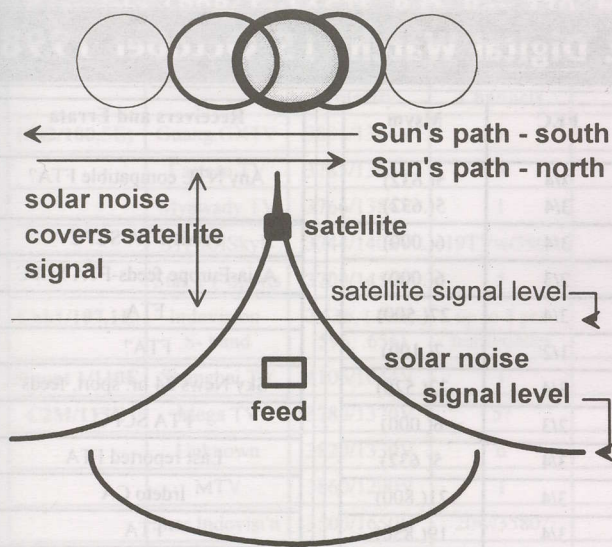
Heat is noise and the biggest heat source in the neighbourhood is our sun. The sun throws off huge amounts of heat created "noise" in the form of radio waves that sweep through our solar system and beyond with the speed of light.

If you deliberately chose to point your prime focus dish at the sun, two things happen. The noise coming from the sun is received by the dish, sent through the LNB to the downline and to your satellite receiver. And, the LNB risks getting very warm because sun's light rays are also hitting the dish and focusing back towards the LNB (just as a magnifying glass creates a pinpoint of light sufficient to set a piece of paper on fire). We can't do much about the noise originating at the sun and invading our receiver; we can paint the dish surface to greatly reduce its reflective qualities for sun light thereby ensuring the LNB does not melt.

Twice each year, for a period of a week or so, the sun's pathway across the sky takes it close to the same arc path as the geostationary satellites. This simply means that when your dish points at a satellite above the



When the sun is directly "behind" the geostationary satellite, the prime focus feedhorn casts a shadow into the centre of the dish (left). When the sun goes further west, the prime focus feed shadow shifts left (east in the example on right, above) although still cutting across the centre line of the dish.



equator, it is *also* going to point at the sun. There will be one day when the satellite dish pointing at the satellite points squarely at the sun's centre (give or take a few tenths of a degree). On days either side of that "solar alignment" date, the pathway of the sun will be just above or just below the geostationary arc and you will have some - but not all - of the solar noise entering the dish system. Solar noise is a bit like suddenly getting a 2000 degree K LNB!

The magic dates vary with your location on earth. If you are directly on the equator (i.e., your dish points straight upward), the maximum solar noise date will coincide with the spring and fall solstice (the date the sun "crosses the equator"). If you are south of the equator, your outage dates will be ahead of the solstice in the spring and after the solstice dates in the fall. North of the equator, after the solstice dates in the fall and ahead of the solstice dates in the spring.

Since the sun's pathway across the sky mimics the geostationary belt, the sun aligns behind satellites to your east in the morning local time, with satellites due north (or south) of you around midday and for satellites to the west, in the afternoon hours.

The amount of solar noise is a function of satellite downlink frequency (S is the worst, C is next, Ku is least effected), size (gain, beamwidth pattern) of the dish, how closely the solar alignment approximates the geostationary belt for your location, and the "solar cycle" condition of the sun. A 30m dish has the same problem as a 1m dish, but typically for a shorter period of time because of tighter beamwidth of the antenna. The smaller the dish, the broader the beamwidth and consequently the sun's noise is picked up while the sun is still several degrees away from being precisely aligned behind the satellite.

This is a grin and bear it situation. Knowing approximately when it will happen each year will at least allow you to not panic when it does happen. It is not the end of the earth or satellite reception!

THE SEPTEMBER 30TH EDITION OF
Coop's Technology Digest
 TELLS YOU ABOUT US\$100 SONAR LCD
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Month in and month out, people learn about brand new consumer electronics products **FIRST** in **Coop's Technology Digest**. That's how they get the jump on competition - by becoming agents, distributors or importers for **HOT** new products before the products are generally known.

If being **FIRST** is important to you, if beating the competition with new products is a part of your business, a subscription to CTD is your very best guarantee of being in business and profitable in 1999!

SUBSCRIPTION FORM - page 33

WHO READS SatFACTS???

- ✓ **People** who design and manufacture satellite TV reception equipment
- ✓ **People** who sell, install and maintain satellite receiving systems including cable TV and SMATV
- ✓ **People** who own and use satellite receiving systems
- ✓ **People** who create programming and operate satellites for home and commercial reception
- ✓ **AND - Arthur C. Clarke** - the "father" of geostationary satellites!

Advertising in SatFACTS reaches thousands of tuned-in professionals in 49 countries (including China and Russia!). Full advertising rate sheet from 64-9-406-0651 or fax 64-9-406-1083.

SatFACTS October 1998 ♦ page 23

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 October 1998

BIRD	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
I703/57E	Sky News	4187/963R 4140/1010R	1 1	3/4 3/4	5(.632) 5(.632)
	CNBC	4018/1132L	1	3/4	6(.000)
	CNBC	3795/1355L	1	2/3	6(.000)
I704/66E	TV5	4055/1095R	4	3/4	27(.500)
	Indian Bqt.	4068/1082L	2(?)	1/2	7(.100)
	Sky News +	3805/1345R	4	3/4	22(.520)
PAS4/68.5E	CNBC	3795/1355L	1	2/3	6(.000)
	ART/BBC	3980/1170H	2	3/4	5(.632)
	TFC+	3743/1407H	up to 6	3/4	21(.800)
Ap2/76E	CCTV	3716/1434H	up to 6	3/4	19(.850)
	Reuters	3636/1514H	1	3/4	5(.632)
	TVB 8	3680/1470H	2?	3/4	13(.240)
	HMark/Kermit	3720/1430H	4	3/4	19(.510)
	Plus 21/Adult	3787/1362H	1	3/4	6(.110)
	Disney	3880/1270H	3	5/6	28(.125)
Them3/78.5E	AXN	3920/1230H	up to 8	7/8	28(.340)
	UTV	3920/1230H	6	3/4	26(.662)
	UTV/MCOT	3880/1270H	8	3/4	27(.500)
	Reuters	3636/1514H	1	3/4	5(.632)
	Thai 5 Bqt	3600/1550H	up to 8	3/4	26(.662)
	Measat 1/91.5	India Bouquet	12.284.346V	10+	7/8
As2/100.5E	Chinese Tests	12.295.329H	1TV each	2/3, 1/2	6(.103/930)
	Laos TV	4143/1007H	1TV	2/3	2(.889)
#1	Euro Bouquet	4000/1150H	6TV, 12r	3/4	28(.125)
	Hubei/HBTV	3854/1296H	1	3/4	4(.418)
	Hunan/SRTC	3847/1303H	1	3/4	4(.418)
	Guand./GDTV	3840/1310H	1	3/4	4(.418)
	Inn Mongolia Zizhiqu	3828/1322H	2	3/4	4(.418)
	APT V London	3800/1350H	1	3/4	5(.631)
	BBC Radio	3793/1357H			
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)
	WTN London	3786/1364H	1	3/4	5(.631)
	WTN/Reuters	3775/1375H	1	3/4	5(.631)
	WTN Moscow	3770/1380H	1	3/4	5(.632)
	Liaoning/Svc2	3734/1416H	1	3/4	4(.418)
	Jiangxi/JXTV	3727/1423H	1	3/4	4(.418)
	Fujian/SETV	3720/1430H	1	3/4	4(.418)
	Quinghai TV	3713/1437H	1	3/4	4(.418)
Henan/Main	3706/1444H	1	3/4	4(.418)	
As2/100.5E	Sky Racing	4020/1135V	3	1/2	18(.000)
	EMTV	4006/1144V	1TV, 2radio	3/4	5(.632)
	KIBC	3940/1210V	1TV, 4 data	2/3	26(.655)
	STAR/ISkyB	3900/1250V	19TVw/3744	7/8	26(.845)
	BSkyB	3865/1285V	8+	7/8	26(.845)
	HeiLongJiang	3834/1316V	1	3/4	4(.418)
	JSTV	3827/1323V	1	3/4	4(.418)
Shaanxi/QQQ	3813/1337V	1	3/4	4(.418)	

Receivers and Errata

Any NTL compatible FTA?
Feeds-FTA SCPC
Asia-Europe feeds-FTA SCPC
FTA
FTA?
Sky News 24 hr. sport. feeds
FTA SCPC
Last reported FTA
Irdeto CA
FTA
FTA SCPC - May be inactive
PowVu CA
PowVu (typ CA)
Was to be PowVu CA: not active?
PowVu CA
Occ service. some FTA. test?
Irdeto CA - some FTA
Irdeto CA - some FTA
FTA SCPC
FTA
Philips CA - some FTA
FTA (mainland only beam)
FTA
FTA
FTA SCPC
FTA SCPC
FTA SCPC
FTA - #1 Chinese. #2 Mongolian
FTA SCPC
Custom IRD by RNET Ltd
Mostly CA SCPC
Some FTA SCPC
Some FTA SCPC
Some FTA SCPC
FTA SCPC
FTA SCPC
FTA SCPC
FTA SCPC
FTA SCPC
FTA SCPC
NDS DVS211 CA (ch.3. occ. FTA)
PowVu CA-very poor signal level
FTA I video ch; ZakNet data CA
NDS CA (Pace DVS211)
NDS CA (Pace DVS211)
FTA SCPC
FTA SCPC
FTA SCPC

BIRD	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(As2/100.5E)	Guang.GXTV	3806/1344V	1	3/4	4(.418)
	Eastern TV	3785/1365V	5	3/4	18(.000)
	Myawady TV	3766/1384V	1	7/8	5(.080)
	STAR/ISkyB	3744/1406V	19TVw/3900	7/8	26(.845)
	Star TV Sports	3700/1450V	5	3/4	27(.500)
Cak1/107.1E	Indovision S- band	2.536, (.566, .596, .656)	up to 8 per transponder	5/6	20(.000)
Sinoat 1/110E	Shanghai TV	4106/1044V	1	2/3	6(.200)
C2M/113E	Mega TV	3780/1370V	5?	3/4	27(.500)
	Unknown	3820/1330V	6	3/4	26(.661)
	MTV	3860/1290V	1	3/4	6(.198)
	Star Indovision	3500/1650H	20w/3580?	7/8	26(.850)
	Unknown	3762/1288H	up to 5?	3/4	12(.857)
	Unknown	3970/1180H	2	2/3	6(.620)
	SCTV SNG	4080/1070H	1	3/4	6(.160/.248)
Them 1/120E	ITV Thailand	3760/1390V	up to 8		
	Thail. terrest.	4120/1030V	up to 6	2/3	27(.500)
API/138E	Reuters	3732/1418V	1	3/4	5(.632)
	CNNI + Cart.	3980/1170V	2+	3/4	26(.000)
Optus B3/156	Aurora	12.595V	10+, 9 radio	3/4	30(.000)
	Aurora	12.407V	10+, 9 radio	2/3	30(.000)
	Optus Vision	12.438(.626) H	8TV	3/4	29(.473)
	Austar/Foxtel	12.438(.626, .688)	20TV, 11 radio	3/4	29(.473)
Optus B1/160	Aurora test	12.377H	5+	2/3	30(.000)
	Sky NZ test	12.391(.418)V	7 + 7	3/4	22(.500)
PAS-2 169E	GWN Perth	12.265V	6TV, 7 radio	1/2	16(.200)
	Telstra Bend.	12.300V	2	1/2	21(.997)
	IHUG (NZ)	12.408V	0	3/4	5(.333)
	Unknown	12.448H	unknown	3/4	20(.555)
	ABC Interchange	12.629, (.638, .646)V	1 TV each	3/4	6(.980)
	Mediasat	12.655V	1TV	1/2 & 3/4	6(.610)
	(#2)	HK PowVu	4148/1002V	up to 8	2/3
(#3)	NBC HK	4093/1057V	5 typical	3/4	29(.473)
	JET Singapore	3962/1188V	2	1/2	13(.740)
	ESPN USA	3860/1290V	7TV, 2 data	7/7	26(.470)
(#4)	ART America	3778/1372V	1 or 8 TV	2/3 7/8	6(.618) 23(.695)
	Service 1	3761/1389V	1	3/4	6(.620)
(#5)	CCTV PowVu	3716/1434V	4 typical	3/4	19(.850)
	TCS-Singap.	4183/967H	2	1/2	6(.620)
	ITJ-Jap.Tel.	4174/976H	1	3/4	5(.632)
(#6)	ART/RAI	4151/999H	3TV	3/4	5(.632)
	Feeds	4138/1012H	1	3/4	6(.620)
(#7)	NHK Joho	4035/1115H	5TV, 1 radio	3/4	26(.470)
	Network 10	3966/1184H	1	2/3	6(.248)
	PAS-2 feeds	3940/1210H	2 (NTSC)	2/3 2/3	6(.620) 7(.498)
(#8)	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)

Receivers & Errata
FTA SCPC
PowVu CA -#5 FTA: off-air?
FTA SCPC - Hard to load!
NDS CA (Pace DVS211)
NDS CA (Pace DVS211???)
RCA/Thompson IRD. may not have programming on stream
FTA SCPC
Unknown CA, may not be active
CA, may not be commercial
FTA? May have been test
Pace (DVS211+Thomson) CA
sometimes CA, may be test
FTA, occ. tests
FTA, occasional feeds/links
unknown-reported FTA
unknown-reported FTA
FTA SCPC
CNN (only) FTA?
CA, \$50 smart card required
CA, \$50 smart card required
Pgm chs mixed within Austar bqt. CA: sold separate from Austar
DGT400 CA except #12 and 24
CA, may be inactive
NDS CA, tests 12.391 primary
PowVu CA (D9234)
PowVu typ. CA (D9223 only)
Internet data: some video tests
No service table: may be data only
format PowVu, nominally FTA: recent changes
FTA, occasional service, feeds
PowVu, mostly CA
Philips mux format FTA
PowVu CA
PowVu CA: avoid #8.9 w/9223!
testing with SCPC FTA, occ. tests of MCPC 8 pgm channels
occ feeds, FTA SCPC
FTA (# pgm chs varies)
PowVu FTA MCPC
occ feeds, FTA SCPC
FTA MCPC, 2 chs, weak signal
FTA SCPC
1 CA (D9234), 4 FTA
FTA, occ. feeds from USA
FTA (NBA basketball, NTSC)
Some CA, some FTA (most NTSC)

SatFACTS Digital Watch: Supplemental Reference Data / October 1998

PAS-2/169E	Disney	3804/1346H	3	5/6	21(.093)
	Discovery Sing	3776/1374H	8	3/4	21(.093)
	BBC +	3743.5/1407H	4+	3/4	21(.800)
	Satcom 1-6	3743/1407H	6	7/8	19(.465)
1702/177E	AFRTS	4177/973L	8TV, 12r.+	3/4	26(.694)
	Thai Bouquet	12.6150H	3TV	1/2	17(.800)
1701/180E	TVNZ Gennet	4195/955R	1 (CA)	3/4	5(.632)
		4186/964R	BBC/Gennet	3/4	5(.632)
		4178/972R	1 (CA)	3/4	5(.632)
		4170/980R	APTV-Tokyo	3/4	5(.632)
		4120/1030R	1	3/4	5(.632)
(#9)	RFO-Canal+	4095/1055R	up to 7TV, 5 r.	3/4	27(.500)
	SPN Nauru	4081/1069R	1	3/4	4(.730)
	Baccarat	4028/1122R	1	3/4	2(.702)
	NZ Prime TV	4024/1126L	1	2/3	6(.876)
	TVNZ TL	3854/1293R	1	3/4	5(.632)
	10 Australia	3765/1385R	6	7/8	29(.900)

PowVu (D9234) CA
PowVu (D9234) CA
BBC Ch. 3 FTA; PowVu CA
PowVu(D9234) CA
PowVu (D9234) CA
FTA, replaced Space TV
DMV/NTL CA, all channels occ. use, FTA irregular around special event coverage
<was MTV Europe>
Canal + (2), rest FTA
FTA SCPC; weak signal
FTA SCPC; inactive?
PowVu CA; network feeds
SCPC mixed FTA, CA feeds
PowVu CA; #5 occ FTA

Bouquets: MCPC (multiple [program] channels per carrier) MPEG-2 content frequently changes. Primary FTA (free to air) MCPC bouquets are as follows: 1) European Bouquet: (1) **Deutsche Welle**, (2) **MCM**, (3) **RAI International**, (4) **RTVE** (Spain), (5) **TV5 Paris** + up to 13 radio (some stereo); 2) Hong Kong PowVu: (5) **Ad Hoc NTSC feeds**, (6) **Ad Hoc PAL feeds**; (3) **NBC HK** (Hong Kong): (1) **CNBC Asia**, (2) **CNBC Australia**, (3) **National Geographic** [English], (4) **NBC feeds**, (5) **National Geographic** [subtitled Taiwan]; (4) **ART America** [testing SCPC; follows MCPC line-up] (1) **ART America**, (2) **ART-4 Movies**, (3) **LBC America**, (4) **RAI Int. America**, (5) **LBC Australia**, (6) **ART Australia**, (7) **RAI Int. Australia**, (8) **MCM** - note: no guarantees this MCPC group will remain FTA after testing; (5) CCTV PowVu: (1) **CCTV4**, (2) **CCTV3**, (3) **CCTV 9**, (4) **test bars**; (6) ART/RAI: (1) ad-hoc [infrequent] use, (2) **AAR/ART**, (3) **RAI International** (with live soccer feeds); (7) **NHK JoHo**: (1) **NTSC Japanese**, (2) **NTSC English**, (3) **PAL Japanese**, (4) **PAL English**, (5) **NHK Radio**, (6) **NHK Premium**; (8) Cal PowVu: (1) **CMT [NTSC]**, (2) **Ad-hoc [NTSC]**, (3) **ART**, (4) **EWTV** + Global Catholic Radio, (5) **BBC World [NTSC - to Oct. 31]**, (6) **Bloomberg Financial [NTSC]**, (7) **Golf Channel [NTSC]**, (8) **Animal Planet**; (9) RFO-Canal+: (1) **Canal+ [Polynesia]**, (2) **Canal+ [New Caledonia]**, (3) **Saudi TV**, (4) **Abu Dhabi TV**, (7) **TOM1**, (10) **TOM2**, (13) **TOM3** + radio on 5.6,8,9,11,12,14,15. Note: There are more than 35 SCPC FTA digital services listed on these pages in addition to MCPC here.

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

AV-COMM R3100. FTA, excellent sensitivity (reviewed SF May 1998). Av-Comm Pty Ltd., tel 61-2-9949-7417

Grundig DTR1100. Mfg by Panasat S. Africa, similar to Panasat 630; out of production, Irdeto capable (see AV-Comm. above)

Hyundai-TV/Com. HSS-100B/G (Pacific) and HSS-100C (China) FTA. Versions 2.25/2.26 good performers, 3.11 currently offered and those with Nokia tuners good performers. Version 5.0 not so good. SATECH ([V2.26] 61-3-9553-3399), Skandia ([V3.11] 61-3-9819-2466); Skyvision Australia ([V3.11, Nokia] 61-2-6292-5850).

MediaStar D7. FTA, preloaded with known services, exc. software (review SF July 1998). MediaStar Comm. Int. (61-2-9618-5777)

Nokia "d-box" (V1.7X). European, FTA, typically German menu, capable of "Dr. Overflow" Internet updates. Caution on this one!

Nokia 2000S (Asia/Pacific). Released Oct. 1998; equipped with CAM/PCMCLIA slot, capable of Irdeto, others (factory will NOT supply CAMs at this time); no Asia-Pacific sources known at this time (but readily available through European sources).

Nokia 9200/9500/9600/9800. FTA, does PowVu poorly, but has significant Internet software support. Ultimate play-around hobby machine but not consumer friendly. Original V1.63 had unique ability to search entire satellite to locate and list all SCPC/MCPC services; latest (V5.X software) versions compatible with Dr. Overflow software from Internet. CI (common interface) versions available in Europe, do not presently allow Irdeto however. No Pacific/Asia support; help from Av-Comm (61-2-9949-7417).

PACE DVS-211. NDS CA only (no FTA); Sky Racing (As2), Indovision, others. (Sky Racing - Bob Pankhurst 61-2-9451-0888)

PACE DGT400. Original Galaxy (now Foxtel Sat/Austar) IRD, Irdeto, FTA with difficulty. (Foxtel Australia 1300-360818).

PACE DVR500. Original NBC affiliate IRD; FTA or Irdeto (w/CAM). Similar to DGT400, more reliable. No sources.

PACE "World Box." (DSR-620) Created for NDS non-DVB compliant MPEG-2, including Sky NZ. Info. ++49-211-526-9833.

Panasat 520/630/635. MCPC FTA, Irdeto capable. Out of production; spares from UEC (fax ++27-31-593-370, Russell Futter).

Panasonic TU-DS10. FTA, Irdeto CA. (see SF Aug. 1998). Aurora, Optus DTH. (Antares 61-7-3205-7574; Evcom 61-2-9316-5055).

Phoenix 222. FTA, PowVu. Exceptional graphics, ease of use. (SATECH 61-3-9553-3399)

Phoenix 333. FTA MPEG-2, analogue, positioner. Available late '98. (SATECH 61-3-9553-3399).

PowerCom. FTA, PowVu, exc. sensitivity. (NetSat 61-2-9687-9903)

PowerVu /PowVu D9223, 9225, 9234). Non DVB compliant proprietary format capable MPEG-2 FTA with optional software. 9234 sold for GWN and NHK Joho PAS-2, EMTV As2. CA access; others for various CA services. (Scientific Atlanta 61-2-9452-3388)

Praxis DigiMaster 9600 MKII. FTA, PowVu + analogue. (Skyvision Australia 61-2-6292-5850)

Praxis 9800 ADP. FTA, PowVu, analogue, positioner. (Skyvision Australia 61-2-6292-5850)

Prosat 2102S. FTA, NTSC + PAL, SCART + RCA. (Sciteq 61-8-9306-3737)

SatCruiser DSR-101. FTA, PowVu, NTSC + PAL. (Skyvision Australia 61-2-6292-5850)

SK888. (aka DigiSkan from Sun Moon Star). FTA MCPC, Irdeto CAM capable. (Skandia 61-3-9819-2466)

UEC 642. FTA, Irdeto built-in, for Aurora + Optus DTH. (645 rack mount industrial version) (Nationwide 61-7-3252-2947)

UEC 660. Designed to Optus specs, includes twin-card reader (1 smart, 1 credit) for Optus DTH. (Nationwide 61-7-3252-2947)

YURI HSS-100C. FTA, rebadged Hyundai V.2.27 software custom to Australia (Nationwide 61-7-3252-2947)

IRD Play toys:

MK12 smart card reader, writer. Software not readily available, not recommended. (V.K. Radio Services vkradio@tbsa.com.au)

SatFACTS Pacific/Asian ANALOGUE Watch: 15 October 1998

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BIRD / Location	RF/IF & Polarity	Service	Errata
2DT/55E	3820/1330L	DD1	
1703/57E	3755/1395R	Sun Music	
	3798/1352R	RTNC	
	3980/1170R	AsiaNet	
	4055/1095R	WorldNet	VOA subcar.
	4125/1025R	TVi	
	4175/975L	Muslim	
1704/66E	3765/1385R	Tests	
	4015/1135L	Mongolia	(Secam)
PAS4/68.5E	3743/1407V	RTPi	
	3840/1310V	Home Ch.	(may be off)
	3785/1365H	CNBC	
	3864/1286V	BBC World	
	3910/1240H	Sony TV	Hindi
	3907/1243V	Maharishi	
	4034/1116V	Doordan	
	4085/1065H	CNNI	
	4110/1040H	TNT/Cartoon	
	4113/1037V	Series Ch.	
	4185/965H	MTV	
PAS7/68.5E	3470/1680V	Test Signal	
Ap2R/76E	3760/1390V	TVB-8 Promo	Inactive?
Thaic3/78.E	3871/1279H	TVT	
	3760/1390V	Army TV	
	3690/1460V	MRTV	
	3685/1465H	Mynamar	
	3649/1501H	Tests	
	3640/1510V	RAJ-TV	
	3536/1614V	Punjabi TV	
	3520/1630H	Tests	
	3476/1674H	ATN	
Exp. 6/80E	3672/1478L	TK Rossija	(north only)
	3875/1275L	VTV4+	(north only)
	3925/1225L	ACT/TB3	(north only)
	4125/1025L	Russia 3	(north only)
ChiStr1/87.5	3875/1275H?	Beijing TV	
CIS S6/90E	3675/1475R	RTR1	
	3875/1275R	Orbita I	
	3916/1234R	RTR II	
	3935/1215R	Orbita II	
MeSat1/91.5	3710/1440H	VTV 1,2,4	

MeSat-1/91.5E	3710/1440H	VTV 1,2, 4	
	3880/1270H	RTM-1	
Insat2B/93.5E	4163/987H	India Metro	
	4128/1022V	Ind. National	
	4070/1080H	India DD9	
	4080/1070V	DD7 (Tamil)	
	3970/1180V	DD9 (kan.)	
	3882/1268V	India DD1	
	3840/1310V	India DD	
	3762/1388V	India DD4	
CIS-S12/96.5E	3675/1475R	Test Card	
	3825/1325R	Madagascar +	
	3875/1275R	Test Card	
AsSat2/100.5E	3642/1508H	ERTU Egypt	
	3660/1490V	Test Card	
	3680/1470H	Feeds/Iran	
	3860/1290V	Feeds	
	3885/1265H	WorldNet	VOA Subcar.
	3960/1190H	CCTV4	
	3980/1170V	RTPi	Radio Subcar.
CIS S21/103E	3675/1475R	RTR	
	3875/1275R	Vrk.Apt	
PalB2R/108E	4000/1150H	TVRI	
PalC2/113E	4183/967V	TPI	
	4160/990H	(France) TV5	
	4140/1010V	Brunei. feeds	
	4120/1030H	MTV Asia	
	4080/1070H	Herbalife	(2100 HKT)
	4060/1090V	TV Indosiar	
	4040/1110H	CNBC	
	4020/1130V	ANteve	
	3960/190H	SCTV	
	3900/1250V	Malaysia TV3	
	3880/1270H	Aust. ATN7	
	3840/1310H	TVRI	
	3800/1350H	Gujarati +	
	4042/1408V	RCTI	English subcar
AsSat-G/122E	3675/1475L	Moscow 6	Very powerful
JcSat3/128E	4080/1070V	Test Card	Covers S. Pac.
	3980/1170H	Test Card	
Ap1A/134E	3820/1330H	CETV.SD	

October Alert

Fate of Foxtel Sat hangs on successful launch in November PAS-8 to 166E; watch for media reports of launch results. Closely check for signs of SinoSat 1 at 110.5E both Vt and Hz (see initial SCPC listing p. 25). PAS-7 test carriers are below 3.7 in C-band, Vt and Hz. 87.5 (ChinaStar 1) and 88E continues to be 'messy'.

UPCOMING SATELLITE LAUNCHES

PAS-8 to 166E - "early November" (C + Ku)
 JcSat 6 to 154E - delayed to mid-January (Ku)
 ChinaSat 8 - Jan ('99) by Long March launcher
 InSat 2E to 83E - Delayed to "early '99"
 Gorizont 33 - to unknown location January
 AsiaSat 3S to 105.5E - March 1 (C + Ku)
 Orion 3 to 139E - delayed to March 8 (C+Ku)
 Intelsat K to 95E - March (HP Ku)

53.2	55	57	66	68.8	76	78.5	80	87.5	88	93.5	96.5	100.4	103	105.5	107.1	108	110	13	120	122
S27	2DT	1703	1704	PAS4 PAS7	Ap2	Th3	Ex2	Cs1	St1	Me1	In2b	As2	S21	As1 (As3)	Ct1	B2R	Ss1	C2	Th1/ 2	As-G
C	C	C	C	C	C	C	C	C,Ku	C	C,Ku	C	C,Ku	C	C	"S"	C	C,Ku	C,Ku	C	C

	128	134	138	(139)	140	145	146	148	151	152	156	160	161	(166)	169	174	177	180	177	148
	Jc3	Ap1a	Ap1	Or3	S7	S16	Ag2	Me2	C1	A3	B3	B1	Mb1	PAS8	PAS2	I801	I702	I701	IF3	Es4
	C,Ku	C	C	C,Ku	C	C	C,Ku	C,Ku	C	Ku	Ku	Ku	C	C,Ku	C,Ku	C	C,Ku	C	C,Ku	Ku

Ap1A/134E	3900/1250V	CETV2	
	3980/1170V	CETV1	
Ap1/138E	4160/990H	CCTV7	
S7/140E	3675/1475R	Test Card	mod. inclined
S16/145E	3675/1475R	Test Card	high inclined
	3875/1275R	Feeds, tests	high inclined
Ag2/146E	3787/1363H	GMA	poor s. eqtor
Me2/148E	4080/1070H	test card	occ. use
C1/150E	4160/990H	RCTI	tests/entire sat inactive?
PAS2/169E	4060/1090V	NHK	interim svc
	4000/1150V	CNNI	1/2 Tr format
	3780/1370V	Feeds-Napa	
1802/174E	4166/984R	Feeds	
	4177/973R	Feeds	
1702/177E	4166/984R	Feeds	/KBS Korea
	4187/963R	Feeds	Feeds
1701/180E	3810/1340R	Feeds	
	3841/1309L	RFO	East beam
	3845/1305R	Feeds	inc. USA
	3930/1220R	Feeds	Typ. encrypt.
	3975/1175R	Feeds	
	4060/1090L	Feeds	
	4130/1020L	Feeds	
1513/177W	4187/963R	Feeds	occ. use
	4166/984R	Feeds	occ. use

Optus B3 at 156E / Ku only

12.688/1388H	Austar MPEG	Irdeto CA IRD	list. p. 18 Sept
12.658/1358V	ABC WA	BMAC RABS	until 03/99
12.626/1326H	Austar MPEG	Irdeto CA IRD	list. p. 18 Sept
12.595/1295V	Aurora MPEG	Irdeto CA IRD	RABS. card req.
12.533/1233V	Net 9, Sky	typ. B-MAC	interchange
12.530/1230V	Feeds	typ. B-MAC	interchange
12.470/1170V	(School TV)	analogue	limited hours
12.438/1138H	Austar MPEG	Irdeto CA IRD	list.p. 18 Sept
12.407/1107V	Aurora MPEG	Irdeto CA IRD	RABS. card req.
12.340/1040H	Imparja	BMAC RABS	until 12/98?

Optus B1 at 160E / Ku only

12.730/1430H	RHEF, NZ feeds	typ FTA anal.	occ. use
12.677/1377H	QSTV	BMAC RABS	until 03/99?
12.670/1379V	SE ABC	BMAC RABS	until 03/99?
12.644/1344V	SE ABC	BMAC RABS	until 03/99?
12.639/1339H	NE SBS	BMAC RABS	until 03/99?
12.613/1313H	NE ABC	BMAC RABS	until 03-99?
12.596/1296V	Sky Racing	BMAC	
12.576/1276H	ABC Radio	digital	
12.570/1270V	OmniCast		FM/FM
12.547/1247H	ABC feeds	typ. analogue	occ use
12.545/1245V	Sky NZ Sport	Vidicrypt	temp to 01/99?
12.520/1220H	Net 9 feeds	typ. BMAC	
12.518/1218V	Sky NZ "1"	Vidicrypt	temp to 01/99?
12.482/1182V	Net 10 feeds	typ. E-PAL	
12.480/1180H	Net 9 feeds	typ E-PAL	
12.455/1155V	Net 10 feeds	typ. analogue	
12.455/1145V	QTQ9		
12.448/1148H	Herbalife	10-12UTC	audio 7.56
12.418/1118V	Trackside NZ	FTA analogue	NZ beam: temp
12.391/1091V	Sky NZ test	NDS MPEG	Pace DSR-620
12.376/1076H	Aurora tests	MPEG-2	CA. inactive?

Oddball Formats

PAS-4/68.8	3785/1365V	Discov. India	rptd. BMAC
PAS-4/68.8	3860/1290H	ESPN Indian	rptd. BMAC
Ap2/76E	3960/1190H	HBO Asia	GI Digiciph2
C2/113E	3930/1220H	Fil. Peo. Net	GI 1.5 MPEG
PAS2/169E	3836/1314H	ABS/CBN	GI 1.5 MPEG
PAS2/169E	3989/1161V	Fox/Prime	Sa1.5MPEG

Using these charts: Microwave signals transmitted down to earth by satellite are intercepted by a parabolic reflector, redirected to a smaller "feed" antenna where they are frequency shifted (down converted) to a lower intermediate frequency (IF) for carriage to the actual receiver (IRD). Some receivers display downlink frequencies at their original microwave (i.e., 3720) while others display the receiver IF (i.e., 1430). Our charts list both for ease of use. C-band IFs are calculated by taking 5150 (local oscillator or LOF) and subtracting the C-band microwave frequency (i.e., 5150 - 3720 = 1430). Ku band IFs are found by taking microwave frequency and subtracting 11,300 (LOF); i.e., 12,655 - 11,300 = 1,355. LOF is marked on most LNBS; typically 5,150 for C-band, 11,300 for Ku (note: check Local oscillator frequency - LOF - on unfamiliar Ku LNB/LNBF products; may not be 11,300!).

WITH THE OBSERVERS

Tests, however brief, caught by an alert observer and reported to SatFACTS. Testing of digital links may or may not be a forerunner to new permanent services on a satellite. The list of those observed and reported during the past 30 days is extensive.

Satellite/ Polarity	Frequency	Msym	FEC	Errata
ApStar 1A Vt	3(.731)			NingXia TV
ApStar 1A Vt	3(.769)	6(.930)	1/3	Gansu TV
ApStar 1A Vt	3(.779)			Chongqing TV
Intelsat 701 RHC	3(.825)	18(.000)	3/4	Sport feeds
Intelsat 704 RHC	3(.805)	22(.520)	3/4	4 chs, sports
PAS-2 Hz	12(.437)	Unknown	Unknown	Internet?
PAS-2 Hz	12(.448)	20(.555)	3/4	No ID
PAS-2 Vt	12(.655)	6(.620)	1/2 & 3/4	sport, Irish TV, etc.
Palapa C2M Hz	3(.760)	12(.860)	3/4	typically 2 TV
Palapa C2M Hz	3(.970)	6(.620)	2/3	

ChinaStar 1 (87.5E). Try 3875/1275 for Beijing TV.

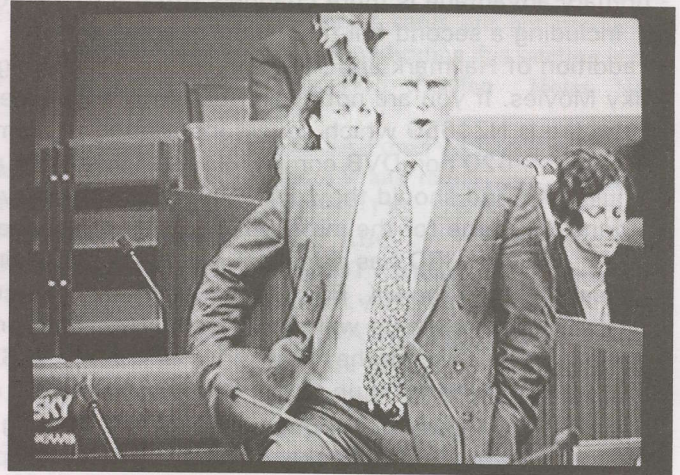
SinoSat 1 (110.5E). Try SCPC 4106Vt, Msym 6.620, FEC 2/3 for Shanghai TV with two video and radio channels.

SPACE TV Systems failure (Intelsat 702, 12.612Hz) has been followed by start-up of new Thai bouquet found on same satellite and Australia beam at 12.650Hz with Msym 17.800, FEC of 1/2. Typically 3 video channel "spaces" load, one active as Thai TV5, another with occasional Thai TV feeds. (Joe Fulop, Vic. and others)

BBC-TV, mainstay on California bouquet of PAS-2 PowerVu, will shut down October 31 on that bouquet. Replacement is found at (PAS-2) 3743.5/1406.5Vt; Msym

AT PRESS DEADLINE

HBO's Asian service (Palapa C2, 4000/1150Hz) is now turned off; service had activated GI Digicipher 2 feed on Ap2R (3960) in September. Watch for what may show upon this "hot" transponder. C2 MPEG-2 tests on 3760Hz are active at press time with Indosiar and CNNI on board.



Neutral node - Australian Senator Richard Alston, Minister of Communications & The Arts prior to Australian national election, explains communications issue to members of Parliament.

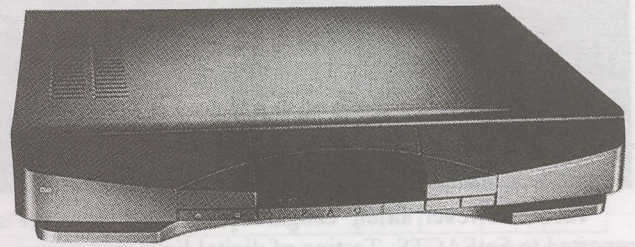
Ascending node - Geoff Dargie of Nationwide Antenna Systems (left) chats at SPRSCS '98 with Selwyn Cathcart (Telsat Communications).



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 November 15th issue: November 4 by mail (use form appearing page 34), or 5PM NZST November 5th if by fax to 64-9-406-1083.

Drums are beating for Murdoch digital rollouts

Three significant Murdoch orchestrated next-generation digital satellite TV service operations are rolling out to homes near and far from you. Nearest to home, Sky New Zealand's digital unveiling involves payment of NZ\$495 if you are an existing terrestrial Sky customer and wish to convert to digital. The primary advantage is more channels (from 5 to 17-20) including a second full-time sport channel and the addition of Hallmark and TNT movies to the existing Sky Movies. If you are not a Sky terrestrial subscriber,



New Zealand's PACE DSR-620

the fee is NZ\$650 which covers installation of a small dish system (typically 76cm or smaller) including a Pace DSR-620 non-DVB compatible IRD (illustrated above). As in Australia, the customer owns none of the equipment and should they disconnect from the service, it all comes back out again (at Sky's expense). The monthly charge for the initial 17 channels of service is NZ\$61.93 (approximately US\$32 per month). Each IRD has a modem and is telephone-line connected at the time of installation.

Meanwhile, in the UK, BSkyB's existing analogue customers are being charged Sterling 160 to convert to digital; new customers will pay Sterling 200. Both prices are subsidised by a combination of News Corp and the EC; BSkyB claims the "real" price of the IRD is Sterling 400. Pace is one of four IRD suppliers to BSkyB.

In the months leading up to the October 1st rollout of BSkyB "digital," merchandisers in the UK have been discounting analogue reception packages to Sterling 149.99 - provided the buyer *also* subscribed to one of the many analogue Sky packages (starting at 11.99 per month) for a minimum guaranteed subscription of 12 months. The combined cost of the subscription and the equipment was Sterling 304.79. There is a minor

flap over fine print in customer digital agreements. They must, for example, agree to leave their IRD connected to a telephone line (through a modem in the IRD). If the IRD is *"wilfully and continually disconnected"* from the telephone line, BSkyB has the "legal right" to charge the customer the difference between what they paid for the IRD (either Sterling 160 or 200) and the unsubsidised amount (400). Why should they care? BSkyB's subsidy plan involves the ability to remotely "poll" each subscriber location at random times to determine (through the modem and IRD) what programming is being watched; or has been watched. Information about viewing habits is commercially valuable and will ultimately lead to changes in programming schedules and advertising "loads" placed on various channels. BSkyB digital subscribers are being offered as few as 13 channels (including free to air BBC and independent terrestrial services) for Sterling 6.99 per month up to 60 channels for 29.99 monthly.

A third (South American) News Corp service is also rolling out at this time. It is utilising the same Pace designed IRD as New Zealand although there are software and on screen language variations between the two. The UK IRD is considered top-end and includes digital data stream flow-through (in an IEEE 1394 connection) to directly drive the latest digital version TV receivers. Neither the NZ nor South American versions allow the digital data stream to flow through; the incoming digital data stream is converted back to analogue output at the IRD which simply means the full benefits of digital are lost to the viewer. Sky NZ's IRD does have component (S-VHS) output however which is considered a better way of feeding a TV set - if it happens to have its own S-VHS input socket.

The most dramatic difference between the UK and New Zealand rollout is inclusion in the UK of the full locally available terrestrial TV channel programming within the satellite package. Negotiations in New Zealand to include Television New Zealand and TV3 services in the Sky bouquet collapsed in August leaving New Zealand viewers who had hoped to have digital-quality terrestrial reception as a part of their reception packages without a service.

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Free to Air Bonus "Wildcard" for October

Tony Drexel (*Free to Air Satellite Service*, SA) suggests Network 10 LA feeds 3765/1385 RHC on Intelsat 701 (180E). Plug-in Msym 29.900 and FEC 7/8 for various USA network feeds including the "new" Rosanne Show and Oprah same day feeds (latter M-F USA time, +/- 0800 UTC), programme channel 5. Additional occasional Net 10 feeds (from Los Angeles) are seen on PAS-2 3966/1184Hz (6.248, 2/3). (Note: Send your scheduled or occasional "Wildcard" feeds to SatFACTS for sharing here.)

21.800, FEC 3/4. BBC is on programme channel 3; CA on ch. 1, Filipino ABS/CBN ch. 2, tests ch. 4 (**David Leach**, NSW).

Changes in PAS-2 normally CA secure Imparja/ABC service feeds found on 12.300Hz. New digital parameters are 21.996/22.000 and 1/2 with additional channel loading reported. Imparja was FTA during transition around 1 October for a few days. (**Robin Colquhoun**, Auckland)

WTN Hong Kong news feeds As2 (3775Hz) have been replaced (perhaps temporarily) with Reuters Singapore.

Sport feeds to Sky NZ in FTA analogue are reported on Optus B1, 12.390Vt with audio on 6.6 and 7.2 (**Robert Hepple**, Whakatane, NZ).

CNBC Asia, previously reported on I704 (66E) on 3795LHC with feeds only, now appears to be the full CNBC schedule (Msym 6.000, FEC 2/3).

Austar/Foxtel's 12.564 transponder (B3, Hz) has shut down in favour of reactivating ex-Galaxy 12.438 (Hz).

Subject to change. Cakrawarta S-band channel line-up in NDS non-DVB compliant MPEG-2 is reported as follows: 2.536Vt - TVRI, SCTV, Anteve, Test Channel, RCTI, Indosiar, TPI, Mosaic 2; 2.566Vt - HBO, Cinemax + 2 radio stations; 2.586Vt - Hallmark, CMT, BBC World, TNT/Cartoon, ESPN, CNN International; 2.656Vt - Bloomberg, Star Movies, [V] International, NHK, Films

Indonesia, Star Sports, Star Movies. Pace DVS-211 IRDs equipped with C-band 'OK' smart cards are not producing video here (only channel loading) indicating this satellite is not yet ready for commercial service. (**Steffen Holzt**, New Caledonia)

Revised channel loading on SA PowerVu PAS-2 Ku RABS service on 12.265Vt. Mixed TV and radio service channels now align as: ABC-TV, SBS-TV, GWN-TV (+ radio 3GWN-M, 4WAFM-M+6PR), ABC-TV + Radio Regional, GWN-TV Mono WAFM, GWN-TV Mono & Red FM. ABC Fine Music, ABC Radio National, ABC-TV + Radio Regional 1 - BSR's only, GWN-TVM + WAFM, 6PR Radio, Download Channel, GWN Link Control. (**Stu McLeod**, NZ)

BBC occasional feeds are reported on PAS-4 4155/995Vt. Eastern TV (Taiwan) C-band package on AsiaSat 2 3785/1365Vt (PowerVu) is reported to be migrating to As2 Ku at 12.244Hz. Programme channel 4 has been FTA on C-band.

Herbalife for Australia and NZ reported functional 1000-1200UTC on B1 12.448Hz in PAL analogue; audio 7.56 in English.

Punjabi World test card reported Thaicom 3 (78.5E) on 3536/1614Vt, PAL, audio 6.6.

GWN competitor WIN will be on Aurora by March 1999. PAS-7 tests (68.5E) spotted on 3470/1680V.



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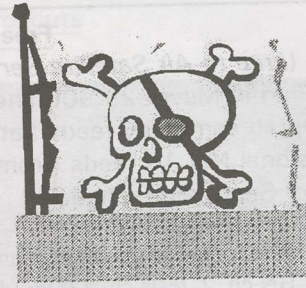
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AT

Sign-off



The Adrenaline Rush of Piracy

Reports that a Victoria firm was actually importing a device that promises to "read and write smart cards" or IRD located "PIC chips" sent the telephones, fax machines and email links into overdrive early in October. It seems the Victoria dealer put together a two page outline of what a device called the "MK12 Programmer" supposedly does for Europeans and sent a *single* copy of the two pages to an acquaintance in Melbourne. Within hours those two pages were showing up on fax machines from Perth to the central Pacific, each copy apparently spawning a dozen or more copies.

What is it about "beating the system" that causes normally sane and sensible people to shift into overdrive? Most of these people pay their taxes, wait for the green light to cross the street and do not consciously drive faster than the posted speed limit. But dangle the opportunity before them to "beat the pay TV system" and they turn into Mr. Hyde.

There is a belief, totally incorrect as best we can determine, that it is now possible in Australia to obtain a "reworked Galaxy/Austar/Foxtel smart card" which has the following qualities:

- 1) You will never have to pay for pay-TV again, and,
- 2) The pay-TV operators cannot turn you off.

Two pages of literature created to promote the MK12 programmer strongly hints that if you spend A\$250 for this device, you can merrily rip off pay TV programming for the rest of your life. The lure of getting pay-TV without paying is apparently a powerful magnet.

Here is the reality. The MK12 (and two other smart card reader/writer devices from Europe) is a computer buff's toy. It *alone* will not allow you to create even a single not-for-pay (NFP) smart card. The MK12 is a circuit board that is capable of revising the information stored on a smart card or a programmable integrated chip (PIC). The MK12 plugs into a slot on your PC. One set of instructions says:

"What you do is program the PIC chip with the blocker codes using your PC and the PIP02 program and then place the programmed PIC chip onto the MK12 in PIC socket 1. You then insert the MK12 device into the card slot of say the satellite decoder and the satellite (smart) card into the MK12 black smart card slot. What happens then is the PIC chip filters all of the good signals and sends this to the smart card in the MK12 black slot (SC1), but any bad signals (switch off signals) it makes sure the smart card does not get these."

Before the MK12 can do anything (other than invalidate your smart card totally), the user needs software. MK12 literature claims, "*a variety of programs can be supplied as shareware for educational purposes only.*" Here is where the reality sets in. Shareware. Shareware created for the express purpose of turning an unauthorised pay-TV smart card into a clandestine smart card that operates outside of the pay-TV data stream such that once it begins working, it cannot be turned off

DPSC +1 Cards
ARTWORK on www.multipage.net/multi/cards.htm
says it all

by ECM (electronic counter measures) instigated by the pay-TV programmer. Is there really such shareware?

Web sites (see above) housed in Europe (Germany, Netherlands, Denmark) offer Irdeto protected system piracy cards. The current list includes cards for DFI (Germany), Multi Channels South Africa and Multi-Channels Middle East, Multi Channels Hellas (Greece), Tele piu and Stream (Italy). The seller calls these "unofficial cards" and their web site notes, "*Their popularity comes from the fact that broadcasters do not allow official subscriptions outside of a predefined area. Yes, unofficial cards can be switched off (when) broadcasters change decryption codes. When this occurs, the card may stop working. (name of Dutch company operating web site) will provide an updated card provided the codes are available. There is however no 100% guarantee that this will be the case.*"

About owning a programmer and making your own cards, the site says, "*You can programme a PIC card and the software is in the public domain. Please note that software is available only for PIC 16C84 based cards, other card software is not publicly available.*"

Contrary to this statement, the MK12 literature claims "*it can also read and write a PIC 16F84 and 12C508 chip.*" Perhaps the MK12 will handle these PIC versions but if the European web site is correct, lacking "publicly available software" what results can you expect if you don't have the software?

This is a very grubby business. Opportunists, some perhaps well meaning in Europe, are trying to make a buck by selling the *expectation* that with their hardware and some "public domain software" you can beat the pay-TV collection system. That cards are being created and sold in Europe for Irdeto protected pay-TV packages is obvious; the web site says so. But it also says the cards can fall over dead without warning and the card sellers cannot guarantee a replacement card when that happens.

A recent Internet satellite user group posting carried the following message from an Australian:

"Wanted - 30 or more ex-Galaxy cards for my private collection. The cards must not be working at this time. Contact (name of group participant)."

A card 'collection'? Of course not. The guy was looking for old cards he could turn back 'on' using clever software and a card reader/writer. Human nature being what it is, it is not illogical to believe European technology that resides below the surface at the multipage.net web site cited above will find its way into Australia. But it won't be supported by public domain software and \$250 card manipulators. SatFACTS suggests you find something safer to do with your spare time.

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OBSERVER REPORTING FORM - Due November 5, 1998

- NEW programming sources seen since October 1st: _____
- Changes (signal level, transponder, programming content) in pre-existing programming sources since October 1st: _____
- OTHER (including changes in your receiving system): _____

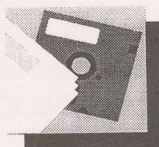
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Make/size dish _____ LNB _____ Receiver _____
Your email address _____ if you have one!

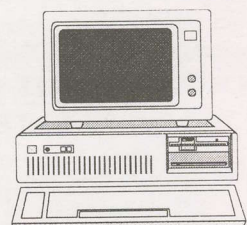
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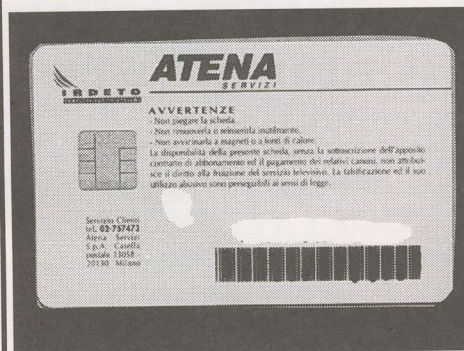
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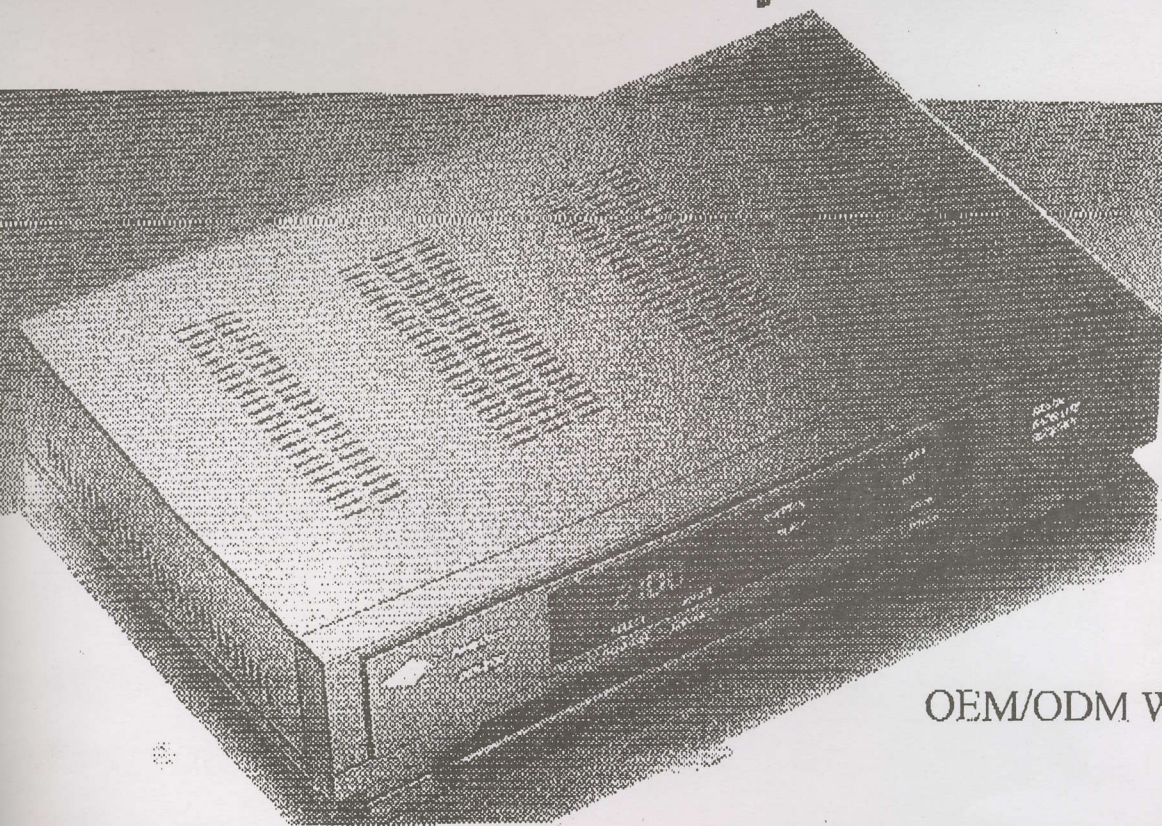
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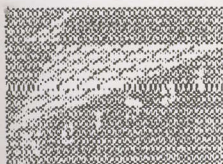
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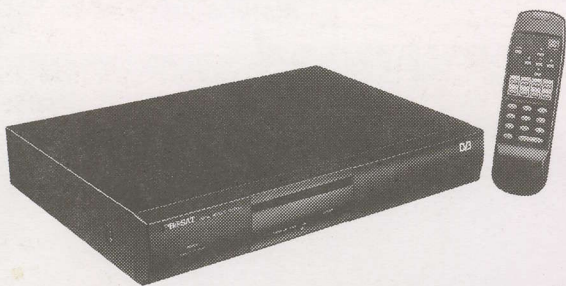
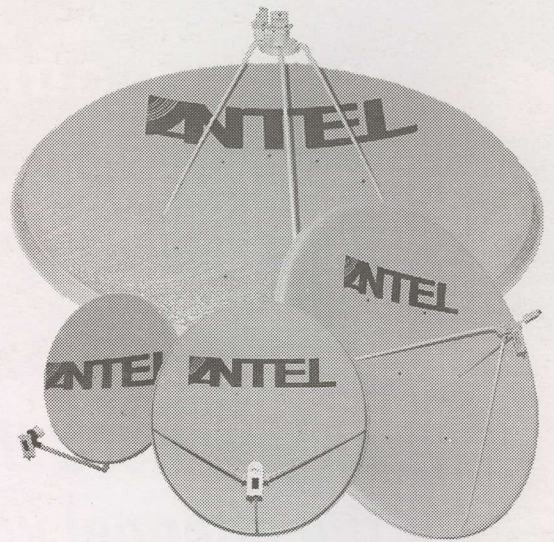
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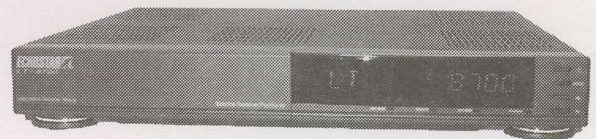
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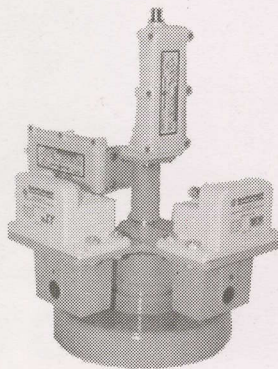


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