

Bob Cooper's

JULY 15 2000

SatFACTS



MONTHLY

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

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**Vol. 6 ♦ No. 71
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(updated July 15, 2000)

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Shows 9905, 9906, 9907, 9908 & 9909

The television programme - the latest releases (as broadcast Sundays on Mediasat). As above. Show 9905: Robin Colquhoun and the Dr Overflow software for the Nokia; Show 9906: How the uplink works - possibly the best programme topic ever created. Show 9907: Part two of uplink. Show 9908: Instructor Mark Long's "Digital Basics." Show 9909: Mark Long's "Installation Basics" with emphasis on Ku service. Shows 9905, 6, 7 & 8 now being shipped. \$60, no SPACE discount.

World Sat TV '92

Close out - a few copies remaining! All of the basic fundamentals are here, at a price that is too good to be true. Hey - the quantity is very limited (LtdQty) and we need to clear out the shelf space. \$10 and if you are a SPACE Member, it comes down 30% to \$7! Having a complete satellite TV reference book doesn't get any cheaper than this.

TB 9404 DTH Systems

Direct to Home: Satellite System Installation Techniques. There are many-many NEW people getting into home satellite system installation. And we receive several calls each day asking us to point them at a "basic tutorial" that will explain how a home dish system works, how you install it for proper performance. This is it. Without question, the very best *quick* tutorial on what a home dish system is, how it works, where the problems develop. If you are new to the DTH field, buy this and commit it to memory. Very slight New Zealand bias, not enough to hurt its value world-wide. And if you are looking into multi-set installations such as motels and hotels and condominiums, also order TB 9405 'SMATV Systems' (below); the pair make it painfully clear where mistakes are commonly made). Also see SatFACTS October, November, December 1999 - for RF Distribution System articles. TB9404 originally prepared by Coop for an Asian DTH technology conference, LtdQty \$10 (SPACE discount).

TB 9405 SMATV Systems

Satellite to room - Commercial SMATV (Satellite) Dish Installations. The easy part is the satellite dish or dishes. The difficult challenge is getting all of those signals - including the terrestrials - balanced and into every room and each TV outlet at the proper level. If you plan to do multiple-outlet systems, start here with this Coop written tutorial. LtdQty and only \$10 per copy while they last! (SPACE discount)

Nelson Parabolic Manual

The Nelson Parabolic TVRO Manual. If you are the type of person who wants to build your own dish (up to 3.7m in size), or, you simply want to understand why some dishes work better than others, this step-by-step "how to build a dish" manual is the "Bible" of an industry. Nelson Ethier was a perfectionist and brilliant with hand tools. It shows here - the ultimate backyard project! Half original price at \$15, LtdQty, SPACE discount applies.

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

Please send the following:

SPACE Pacific Report - 9901-9904/ \$55 (no discount); Shows 9905-9908/ \$60 (no discount); Package deal - 9901-9907 (2 tapes)/ \$105 (no discount); World Sat TV-'92/\$10; TB 9404 - DTH Systems/\$10; TB 9405 - SMATV Systems/\$10; Nelson Parabolic TVRO Manual/\$15. Total of order - \$_____ . If current SPACE member, multiply by 0.7 (70%) and

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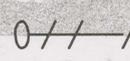
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SPACE Pacific Terrestrial TV Reference Materials



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

**TB
9301**

Tech Bulletin 9301. Co-Channel & Antenna Phasing. How to grow a single antenna (Yagi, broadband antenna) into a complex array to greatly increase gain, sharpen receiving pattern to eliminate co (same) channel interference. Totally hands-on, very practical, up-to-date. Go from novice to professional!

**TB
9302**

Tech Bulletin 9302. Weak-Signal Reception Techniques. If one cut-to-channel (Yagi) antenna won't do the job, will 2, 4 or 8??? How about 16? Stacking antennas, mating with carefully selected masthead amps, is an art. This explains how to do it for professional results up to 300 km from TV stations.

**TB
9303**

Tech Bulletin 9303. UHF - The Frontier. Using parabolic style antennas surfaced with low-cost poultry mesh, build UHF dishes up to 40 feet in size to extend UHF off-air reception out to 300 km. And - learn the tricks to "squirt" signals from a hilltop to a valley below using low-cost receiving equipment.

**TB
9304**

Tech Bulletin 9304. Beating Noise Interference & Combining Cross-Pole Signals. When TV and FM signals are weak, man-made interference from appliances, power lines can kill reception. Step-by-step instruction for identifying, locating, fixing noise sources + unique method of combining cross-pole TV signals.

**TB
9305**

Tech Bulletin 9305. Cable Television - Fact & Fiction. The story of how a cable TV system is designed, built, operated. The perfect "So this is how it works!" report. Who knows - you might even like the concept so well you take out a mortgage on your home and wire your town!

**Lost
Art**

Lost Art of Rhombic Antennas - 27 dB of gain VHF & UHF. Everything you need to know to build the most sensitive VHF-UHF receiving antenna ever created. Rhombics are used for virtually all long haul military circuits. Includes super-Rhombic LaPorte design. 300 km? A piece of cake!

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20 to 40' Poultry Mesh (Chicken Wire) Parabolics. Complete instructions to build UHF-TV off-air reception antenna system combines low cost reflector materials with Redwood or other durable "struts." 20 to 25 dB of gain, out to 300 km UHF reception. A backyard project with earnings potential.

**Half-
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World-Famous Frias Half-Bolic Reflector. Amazing design allows simultaneous reception over sizeable arc of transmission locations. City grade (80 dBuV) reception from distances of 280 km on VHF (45 MHz) through UHF (900 MHz). This is huge, but easily the best all-around deep-deep fringe antenna system.

NOTE!

NEW to ABA Terrestrial TV Blackspots? Order TB9301/9302/9303/9304/9305 "Special Package" below (\$40) to quick cram ALL of the problems associated with "ABA Proof" of Blackspots!

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- TB9301/9302/9303/9304/9305 - \$40 -or- Rhombic/ 20-40' Dishes/ Half Bolics - \$50 -or- TB9301/9302/9303/9304/9305 + Rhombic/20-40' Dishes/Half Bolics - \$80.

Total of order - \$ _____; If current SPACE member, multiply total by 0.7 to obtain discount price (NOTE: No discount applies SPACE Pacific Report video) - new discount total \$ _____ . I wish to pay this by Cheque (enclosed) VISA Mastercard

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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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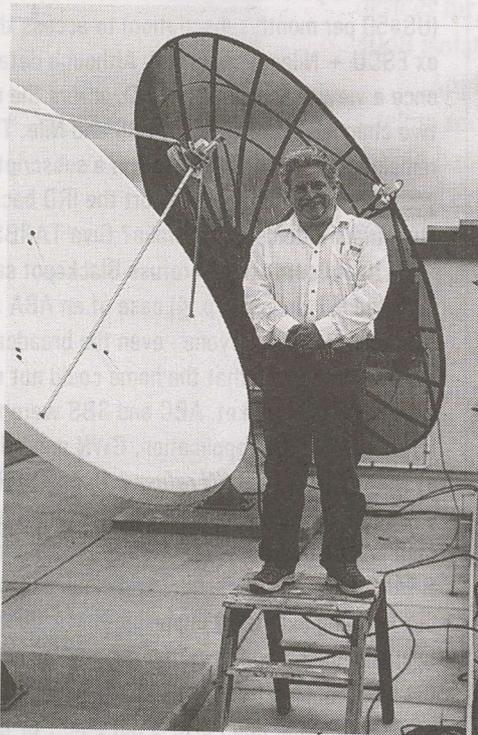
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COOP'S COMMENT

It is pretty amazing when you stop to think about it. Less than five air hours from my home, I am standing on top of a roof in a suburb of Melbourne (Australia) with a man who teaches satellite and communications technology to anyone who is anxious to become a better trained, qualified installer of telecommunications systems. Keith Gledhill of Box Hill Institute first attended SPRSCS here in New Zealand and suggested that we consider their facility



Keith Gledhill with some of his rooftop antennas at Box Hill Institute

that to the folks who boarded trains at 2AM in NSW to make the trip or drove 13 hours from Sydney hauling truck loads of equipment for display. Or those who flew in from New Zealand, China, even Fiji and Perth.

We can of course do better. SPRSCS began in 1994 in New Zealand, is now certainly on the faster track to a much bigger conference in 2001. Our industry is leading edge technology with an increasing impact on consumers who little realise the importance of the rapid pace of change underway. We heard many constructive suggestions aimed at 2001's show in the closing hours - and welcome additional feedback as well.

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At Sign-Off (What is your name worth?) -p. 32

-ON THE COVER-

Getting your hands dirty at SPRSCS 2000; Joseph Bonavia (Ikusi) demonstrates how digital BER readings are done during antenna-lot presentation (p. 8).



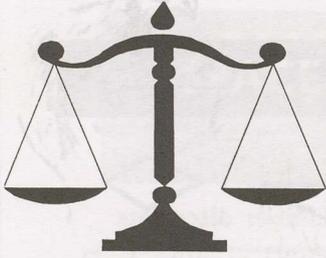
July 15, 2000

for a future conference. At the time, Box Hill Institute was in the process of moving to a new purpose-designed complex and all of the on-paper drawings and photos suggested this place would be a winner.

Indeed it is. Several years back, SPRSCS was held annually at the University of Auckland and attracted a few hundred attendees. Box Hill is a level of magnitude superior to Auckland, and more important, in a city area of more than 2.3 million and easily reached from anywhere in the South Pacific.

The good news first. SPRSCS 2001 is tentatively scheduled for September 2001 at Box Hill - again. Using an educational facility such as this, we work around their normal teaching periods and schedule our use during a natural school break period. And September will provide longer days and warmer weather.

The bad news? With an official registration count of 185, we could have easily handled twice as many - although lecture theatres were close to filled for the major presentations. Shame on those who didn't make an effort to attend, shame on those who soothed their conscience by suggesting it was "a Victoria show." Tell

**Fiji One**

"Can't let this one pass by. SatFACTS report in June issue (p. 10) regarding Speight take over of Fiji government. *'The (foreign) journalists abandoned Suva, in haste, leaving behind a vacuum of honest reporting.'* This hardly describes the excellent work local media have been doing here during the coup - let alone the sterling efforts of the dedicated staff of Fiji TV."

Ken Clark, Fiji TV, Suva

In a coup situation, the local journalists have the advantage - they live there full-time, know who to contact, what to ask. Fly away journalists do a quick 30 minute cram course with those local journalists after stepping off their air conditioned jet, but depend upon the locals to do the hard work. The fly away guys and gals are typically paid hundreds of thousands per year, the locals work for scale wages. The fly aways go international, or world wide, the locals often provide the visitors with news tape they can't collect on their own. Our reference to "a vacuum" was not directed at Fijian journalists - rather at the inability of these fly aways to do a credible reporting job while housed 50 miles away from Suva in a 5* tourist hotel. For a more complete treatment of what happened to Fiji's journalists in this coup, see Coop's Technology Digest for July 19.

Fiji Two

"After attending SPRSCS 2000, I am back in Fiji in one piece. The show was fantastic and I enjoyed it very much. It was like a dream to see all of those digital channels received on small dishes. Perhaps someday Fiji and the Pacific will have similar programming choices available! Until next year in Melbourne, we can but dream."

Kamlesh Parmar, Suva, Fiji

To get Kamlesh 'out' of Fiji to attend, SPACE had to create a 'special invitation letter' for Fijian and Australian authorities. He was finally told a 7 day Visa would be granted but he would not be allowed to leave until the coup hostages were released. Alas, he 'got out' and enriched the conference with his presence.

Germany

"After reading the article describing SPRSCS 2000, I can tell you it was a good feeling to see all of those known-to-me names from friends in the Pacific Ocean Region. We will miss this show but can hope for the future."

Johannes J. Firsbach, Deutsche Welle, Cologne
DW has been a strong supporter of SPACE and during past shows transported men and equipment to Auckland to display the latest European technology. We can but hope that in 2001 they will return.

Power hungry

"Did you know that digital set top boxes on average consume 130 kilowatts of AC power per year while standard TVs use 120 kWh/year?"

Arnold Swengt, Surrey, UK
Toasty.

**PROGRAMMER
PROGRAMMING
PROMOTION****UPDATE**

July 15, 2000

TARBS. Only available in Australia, only on PAS-8 Ku, only from TARBS (61-2-9776-2000) - correct? *Wrong.* If, for example, you live in Thailand, it is possible to purchase a TARBS decoder (dealer cost US\$350) and a smart card (US\$50 per month subscription) to access the TARBS AsiaSat 2 bouquet (yes - the ex ESCU + Nilesat channels). Although details are lacking, we have verified that once a viewer acquires this IRD, enters the new (C-band) frequency and symbol rate, two channels come up FTA; ESC and Nile. Then for US\$50 a month, access to the remainder of the As2 bouquet on a subscription. But you must convince TARBS that you will not somehow re-import the IRD back into Australia! Have Egyptian customers outside of Australia? Give TARBS a call!

TV broadcasters can refuse Blackspot service. That's the bottom line. We reported (SF June 15, p. 4) case of an ABA approved Blackspot DTH application in suburban Perth. Everyone - even the broadcasters - agreed the applicant was so shielded by terrain that the home could not receive the terrestrial TV stations covering Perth market. ABC and SBS were turned on at time of install, seven weeks later with grant of application, GWN and WIN would be asked to activate the home system. WIN did - *GWN refused.* During SPRSCS ABA session, Michael Barry explained that broadcasters with commercial sporting event coverage contracts can (and will) deny service because of provisions in their contracts. Years ago, during B-MAC analogue days, bars and clubs delighted in getting access to locally blacked out sporting events by importing B-MAC hardware. Situation in Perth is that GWN has been called on the carpet for not "policing" where its approved satellite viewers are located. Live football coverage on GWN has been an "attractive target" for out of market viewers, and Perth is not a part of the GWN authorised service region (only those portions of Western Australia beyond the Perth terrestrial TV coverage boundaries). So here is a quandary: "*Accurately describe*" the applicant's location and if it falls inside the Perth terrestrial TV coverage zone, no GWN. Or "*fudge*" the location to satisfy the viewer's expectations and risk losing your own credibility with the ABA - when caught (see letter, p. 4).

Line on a South African web site. "You know you are in South Africa when you can't make a phone call because the copper cables have been stolen, and, it is where a murderer gets a 2 year sentence *while a TV pirate viewer gets 6 months.*"

SABe on AsiaSat 3 (3742Vt, Sr 3.300, 3/4) is all Hindi FTA from Sri Adhikari Brothers Television Network. Ekushey TV (ETV) on As3 (3.749Vt, Sr 4.340, 3/4) is 12 hours per day from Dhaka, Bangladesh including sport, movies, news, drama - the first from that country, using PowerVu to feed terrestrial TV transmitters.

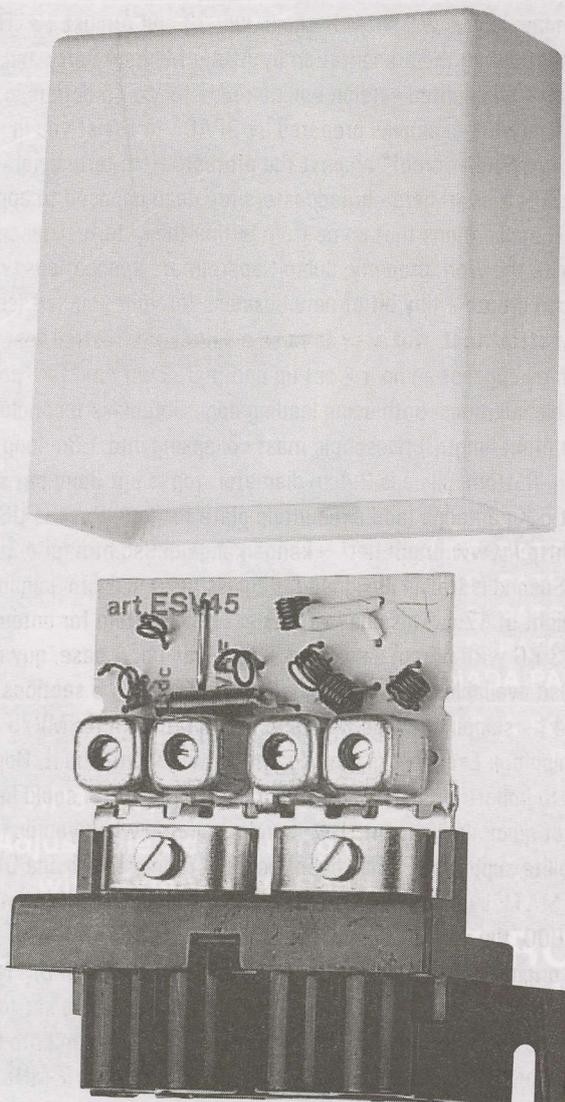
Olympic coverage coming. Add a short term lease by China Central TV (CCTV for AsiaSat 2 covering mid-September through October Olympic period. Also on As2, EBU's three transponders feeding (digital) coverage back to Europe (reported testing 3686Vt and 3704Vt).

CD quality radio service from AsiaStar at 105E now operating; 1473RHC and 1475L. In theory, if you had a suitable L-band feed on your dish followed by a very modest LNA (that is "A" for amplifier), driving a Nokia or other IRD capable of SCPC data rates (Sr 1.840 and FEC 1/2), you'd have reception. Audio PIDs are 1200 - 1207 on 1473, 521, 1026, 1027 on 1475 with many more to come. Reports to skyking@clear.net.nz.

SPRSCS 2001? September with dates to be announced - plan *now* to attend!

We Have Ways to Make You Mix

Separating or mixing the different TV bands has never been so easy
Enables mixing of satellite receivers and VCR's with off-air TV and more
High performance thanks to shielded terminals and use of SMD components



The ESV45 product family are three port mixing devices for VHF, band 4 and band 5, with better than 30dB isolation for a 1dB insertion loss.

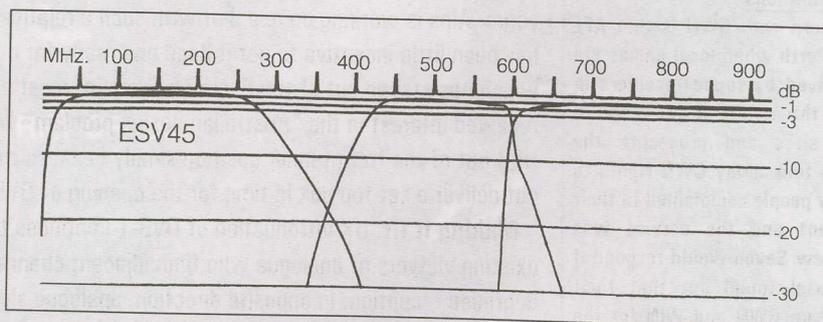
Application is quite flexible. For example, the satellite receiver can be placed in band 5, with off-air UHF in band 4, or vice versa. Variations providing different cross-over points between bands 4 and 5 are: ESV45S, ESV45/50 and ESV45/57. Details appear in Lacey's catalogue 102.

The ESV45 product family can also be used back to front to separate signals already combined with practically no impediment to performance, and is commonly used to mix antennas of differing channel groupings into the one TV distribution system. The weatherproof masthead housing can be used outdoors or in, and even has provision for screwing to a vertical surface.

Two steps are required to build a multi channel TV distribution system. The first is to build a channel plan, ideally with two vacant channels between each channel used. The second is to balance the signal levels. Off-air signal levels should be near to the $\sim 70\text{dB}\mu\text{V}$ level you can expect from most receiver internal modulators.

With some careful system design there isn't much you can't do. We help professionals design their way through these sorts of problems daily!

The frequency response (below) might explain better to the technically minded just what they do.



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103E

"Report on SF web site that Russian Express 6 is moving to 103E to replace Gorizont 25/S21 there suggests interference to AsiaSat 3 and 2 could be different with newer satellite. Already, TV/FM carriers appear on AsiaSat 3S transponder 4V as well as 6V and 7H. Because Russian birds are circular, doesn't make much difference whether you are on Vt or Hz on either side of them. What I would expect is that Express 6, with better station keeping than replaced aged inclined orbit bird, will create less interference, especially to smaller (cable headend) dishes on Asian mainland."

BG, Hong Kong

Thankfully, the inclined orbit Gorizonts and their Stationar cousins are nearing the end of their useful life and will during next few years be retired from service.

As they wander in figure 8 orbit pattern, especially when sandwiched between two popular satellites such as As2 at 100.5E and As3S at 105.5E, they do get into boresight pattern for dishes 3m and under.

Surplus 4.5m dishes

"Have stored in warehouse quantity 4 Patriot 4.5m commercial dishes at US\$4,000 each. Anyone interested?"

Steffen Holtz, antenne-cal@canl.nc, Noumea

Someone sent us a photo of this model dish being used for uplink transmit to Intelsat 1701 on C-band. Which makes the price extremely interesting!

Foxtel said -

"Be the Austar man, not the AustStudMan; Don't allow the customer to read your tarot cards, they may want a bit extra."

Tahiti Ku service

"TNTV (11.070Vt, Sr 30.000, 3/4) on 180E now has 9 channels: (1) LCI, (2) Infosport, (3) M6 Music, (4) Teletoon, (5) M6, (7) Escales-like Discovery, (8) Cinestar 1, (9) Cinfaz plus 3 radio stations, (1) Comedy, (2) Nostalgia and (3) Europe 2. Both TV and radio are CA using ViaAccess. A 0.9m offset works OK but with frequent rains a 1.2m dish is a better choice. Service had scheduled launch of June 28th at around 10.000 CFP (US\$80) per month payable a year in advance. They will provide the equipment for the service but the user has to arrange his/her own installation."

Grant Waldref, Tahiti

So, another exciting opportunity for installers - hop a plane to Papeete and don't forget your crimping tool!

GWN and no Perth installations

"Seven's main concern with GWN is that AFL games blacked out in Perth when local games are being played are received by rogue receivers in pubs and hotels. They threatened at one stage to go to those rogue sites and prosecute the Publicans. Seven even took away GWN rights to show live games, many people complained to their members in Parliament and the service was reinstated. I wonder how Seven would respond if people who have Foxtel found out that their receiver can also pick up GWN and WIN for the price of an Aurora card! Unfortunately this is a very sore point with Seven. Competitor WIN is forced to delay cricket games (on tape) because 9 insists this be so."

LA on outskirts of Perth

HARDWARE EQUIPMENT PARTS

UPDATE

July 15, 2000

ABA session at SPRSCS. "By itself, worth the cost of attending" was typical feedback we received. SPACE videotaped the session, ran it on Mediasat 0200UTC and 0700UTC Sunday July 2, will show it again July 23 and August 13. This is "raw tape" exactly as shot during the presentation by ABA's Michael Barry and Ray Treloar; an edited and augmented version will be ready for air sometime in late September with paperwork examples prepared by SPACE to assist you in making your own applications "bullet proof" against the protests from terrestrial broadcasters. There is a 'war' here - broadcasters are dead-opposed to approval of any Blackspot DTH applications that come from within their "terrestrial coverage patch." But if you do the work properly, submit appropriate applications, we *can* win this one and you can create a tidy bit of new business for your yourself (see p. 6)!

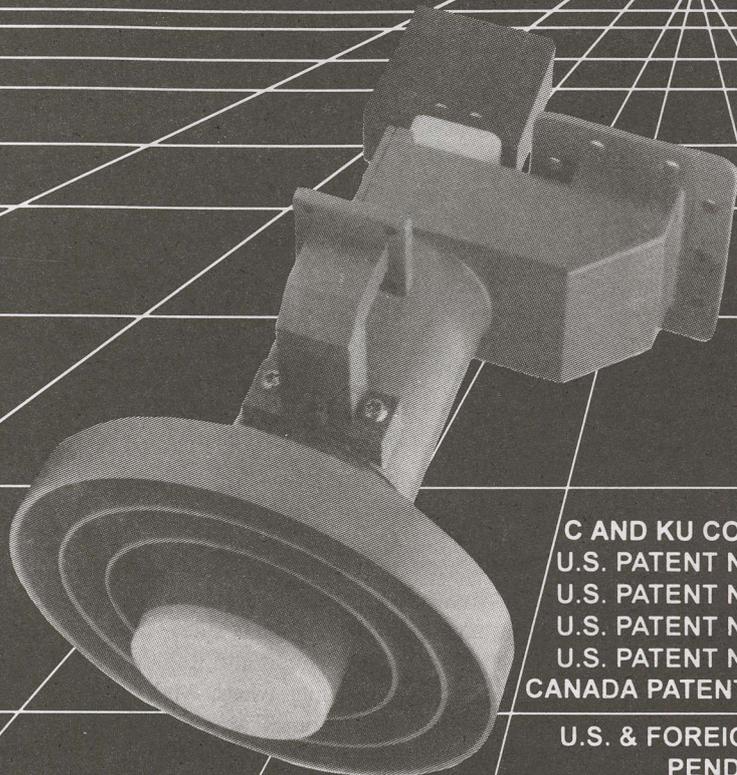
ABA 10m terrestrial test. Not easy to raise a suitable terrestrial test antenna to required height; some suggest an hour+ set up and tear down time for "portable" masts. Two possible solutions, both using leading edge fibreglass technology. First is German built 10m (right length!) telescopic mast collapsing into 1.3m long package weighing just 1 Kg. Bottom piece is 2.4cm diameter, top is but 3mm but strong enough to support 5 Kg antenna (add a mounting plate for top). Price is US\$99 + shipping through <http://www.bright.net/~kanga/kanga/dk9sq.htm> (or e-mail dk9sq@qsl.net). Second is Italian designed fibreglass mast in 1.5m joinable sections with maximum height of 12m. This one is stronger (12 KG rating for antennas), each section weighs 1.3 KG with 60mm diameters all the way up. A base, guy rings and accessories are also available. Two standard lengths - MV75 is 5 sections (7.5m height) at US\$114 (+ shipping) while K12 is extension to 12m for MV75 basic mast (US\$119.20 + shipping). Excellent graphics at <http://www.antenna.it>. Opportunity here for someone to import or design a 10m fold over version that could be attached to van roof rack for quick deployment. *Yes* - send us photos when you do it!

Box oops. Satellite supplier UEC has been the front runner to provide DVB-T set-top boxes for MATV systems in Australia - until recently. Discussed at length during SPRSCS 2000, the very real challenge of where SMATV QAM and MATV DVB-T boxes will originate - *who* will be the supplier(s). Existing COFDM MATV boxes for Europe are designed around 8 MHz wide UHF channels while the set-top boxes for Australia will have to be 7 MHz channel width boxes that operate in both band III (VHF) and bands IV and V (UHF). The missing ingredient has been a 7 MHz bandpass RF (channel selection) tuner, which will be unique to Australia for at least a few years. Alps is working on one, but with such a relatively small market initially, there has been little incentive to get it done and ready for market anytime soon. Nokia, which has stayed out of the Pacific market for most digital TV products, is showing renewed interest in the "Australian design problem" which many believe will push UEC out of the front runner position simply because they have not and perhaps will not deliver a set-top box in time for the opening of DVB-T in Australia.

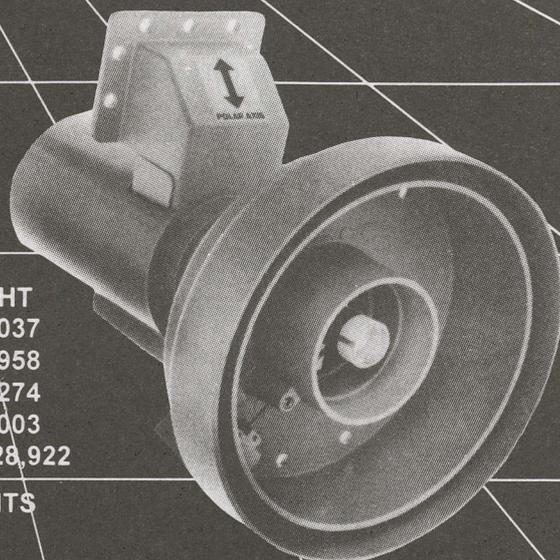
Making it fit. UK introduction of DVB-T continues to be thorny problem for existing viewers of analogue who find adjacent channel digital signals create degraded reception. In opposite direction, analogue signals on adjacent channels reduce service area of DVB-T because TV sets have difficult time eliminating adjacent channel analogue services. UK is now reducing lower vestigial sideband bandwidth on terrestrial analogue transmitters from 1.25 to 0.75 MHz (called PAL-I-1) hoping DVB-T operating one channel lower than analogue will benefit. But at a price - as lower sideband vestigial signal also contributes to teletext and video definition of analogue signal.

ADL[®]

BECAUSE PERFORMANCE IS ALWAYS YOUR FIRST PRIORITY



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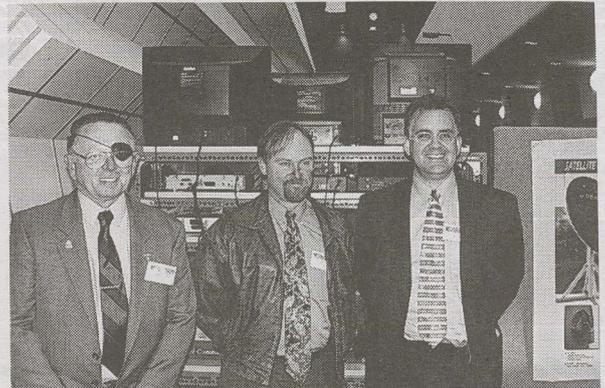
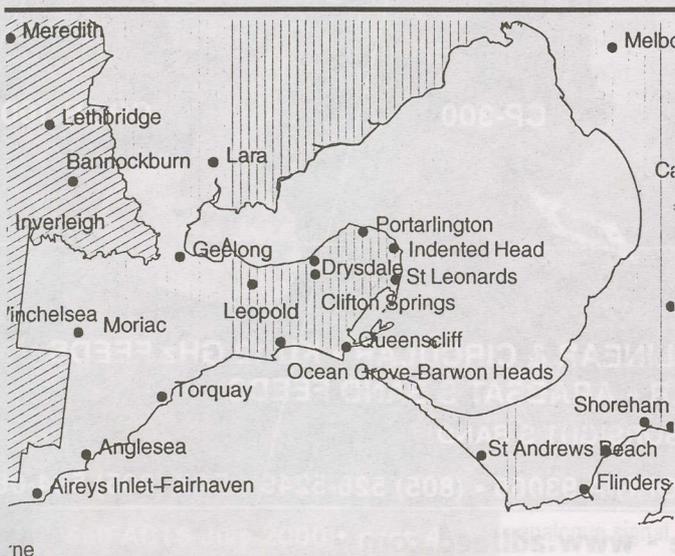
ABA Reps at SPRSCS Explain Fine Points of Blackspot Rules

Michael Barry and Ray Treloar's appearance at the Melbourne SPRSCS gathering was with a certain amount of trepidation. *"They are concerned they will be attacked, verbally, by people who have more anger than common sense"* warned SPACE member Brian Watson of Western Video Pty Ltd. Watson had made a trip from his home base in Kings Meadows, Tasmania to Canberra to personally pursue the formal invitation issued by SPACE.

The fears of being attacked, verbally or otherwise, proved groundless. *"These are good people with serious, honest concerns about why the (Blackspot approval) system has not worked as they had expected"* reflected Barry after holding down the presentation lectern for 60 minutes and then supporting a Watson led question and answer session for another 45 minutes. *"We probably could have stayed there all day answering questions."*

For most, ABA created maps showing where a potential Blackspot home could be located and not have to even apply for ABA approval were a revelation. A dealer working in south-western Victoria noted, *"I have been afraid of the application process, did not understand the paperwork, and now I see on the map that five homes that have approached me for service can have Imparja and Central 7 without even a need for paperwork."* A full set of maps covering Victoria, New South Wales and much of Queensland were handed out after the session. Unfortunately for readers of SatFACTS, the maps are physically large and use various colours to depict the actual plotted coverage regions of TV broadcasters. The colours will not reproduce properly here although the maps are available upon e-mail request (Michael Barry as Michael.Barry@aba.gov.au).

Smaller scale, area maps are also available for Brisbane, Melbourne and Sydney and we show a small portion of the Melbourne version below. The left hand side shows a portion of the projected coverage area from Regional Victoria TV while the central and right hand portion is Melbourne's region.



Brian Watson of Western Video Pty Ltd (left) arranged ABA presentation featuring Michael Barry (centre) and Ray Treloar (Senior Engineer, Television Planning).

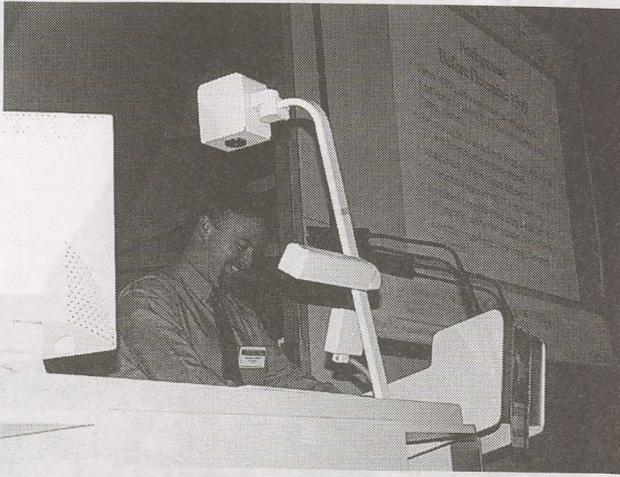
Note the region between Geelong and Inverleigh or Moriac and Winchelsea as examples (left hand side). In both areas, once out of the Melbourne district and into Regional coverage, we have significant house counts where Melbourne is the distant "forbidden fruit" and homes are supposed to have service from Regional Victoria transmitters. In most cases they do not, and depend upon fringe area reception from Melbourne.

In effect, the viewers try for Melbourne because (a) it is the "big city," (b) the VHF channels from Melbourne are far easier received than the UHF transmitters used by Regional. What the installer needs to "prove" here is that Regional is not available, not that Melbourne is inadequate (that is accepted by the planners). Therefore any home inside of Regional territory, unable to receive Regional transmissions and now relying upon distant Melbourne services, is a candidate for satellite reception. You don't have to *prove* the inadequacy of Melbourne, only the lack of Regional transmission service. In any ABA mapped area where big-city VHF and regional VHF or UHF services meet, you have a business opportunity to provide satellite reception systems.

The applications

In the first week after the Blackspot programme was announced, the ABA fielded more than 800 telephone calls. Some mis-reporting appeared in regional newspapers causing people to believe they had to but contact the ABA to receive a "free satellite dish." Not true, of course.

But the larger problem since the late January announcement has been funding and manpower. *"The ABA was delegated with the DTH approval function but given no new funds to carry out the mandate"* reported Barry. The administrative staff (until very recently, only 3 people) has been shifted to DTH from other areas Barry terms "high priority" including the underway transition to digital terrestrial broadcasting. *"Our largest challenge internally has been a lack of engineering*



ABA's Michael Barry was concerned about the audience reaction - he need not have been.

resources," nodding towards his presentation partner Ray Treloar. "It is very difficult for us to administer a complex technical issue without adequate engineering support."

The legislation authorising DTH to Blackspots allowed terrestrial broadcasters to appeal to the Administrative Appeals Tribunal (AAT) against the ABA process, but not against individual approvals. Predictably, the terrestrial broadcasters attacked the system, threatening to tie up approvals until they got their way.

Barry. "A compromise was reached to head-off a direct AAT appeal. We agreed to share individual application information with the Chief Engineer for the terrestrial broadcasters, granting one week to review the information and register objections."

Does that mean that terrestrial broadcasters now have the ability to stop approvals?

"Not directly. If they find inaccuracies in the installer details, they have the right to challenge. If the installer has done his measurements properly, using a ten metre high test antenna, and come up with a P2 or P1 measurement, the broadcaster can't do much. If the PQ rating says 3 or better, there has to be something other than not enough signal to explain the reason for the application."

Generally, if a test antenna without a masthead amplifier shows under 45-50 microvolts, it works out that ABA approval should be granted. A ninety microvolt signal would suggest sufficient signal such that a masthead amp would make the home aerial system work. Unless. "Unless there is strong interference, multipath ghosting" explained Ray Treloar. The assumption is that terrestrial Chief Engineers are familiar "with their own patch" and if a particular site's measurements don't conform to what they believe to be accurate, they want to know why. "This is a new science for many installers and there is a learning curve here" points out Treloar. "First, you have to use a (signal level) meter with sufficient accuracy to have repeatable readings. The antenna used should be appropriate for the channels to be received. A portable 10m fold-up antenna pole should be used to ensure the tests if repeated at the same location can be duplicated in procedure. A dedicated 10-15m length of standard (RG6) coax line should run from the antenna to the meter and the installer should use the same line for each test." Where the TV station engineers are "catching" installers is in their procedures and skill levels.

A natural antagonism

"When you propose to bring in (distant) satellite services to inside of their paper coverage areas, you are basically asking them for their permission to 'remove a home' from their coverage." TV stations are paid advertising based upon the number of potential homes in their viewing area'. Each home inside of that area which the ABA approves for 'distant' satellite service is *one less* the TV broadcaster can be paid to serve. "You are threatening their very financial foundation every time you file a request for a site inside of their 'patch' " notes Barry.

"Broadcast engineers have the right, and on behalf of their employer the obligation, to verify the inadequacy of their coverage. Indirectly, your application attacks their own position with their employer. Here the broadcaster has been told he reaches or covers a certain area, based upon the skills of the engineering department. Now along you come with evidence their coverage is not what they had claimed. That hurts, and there is a natural antagonism there."

But broadcasters can only stop an application if the measurements can be shown to be defective whether by a lack of skills on the part of the installer or an attempt to circumvent the system safe guards. "Each application may be checked by up to 3 broadcasters (for 7, 9 and 10). Any one of these, or all three, may contact you as an installer and ask questions about the measurements you have submitted. That is their right and you should be prepared for that to happen."

Suppose one station (out of 3) has a PQ3 signal but the other two are PQ2 or worse? "You may find yourself getting approval for (for example) *Imparja* but not *Central 7*" responds Barry. "Remember - ABC and SBS are automatic, as are all of the radio services and no tests are required for sites that only wish these services." Simply install the equipment and get it turned on.

"I recommend the installer make up a sheet that identifies the antenna used, the length and type of cable from antenna to meter, the make, model of the meter. A clever person could simply leave blanks to be filled in, even include a photo of the test installation system on the sheet as 'visual proof' of the work that has been done" suggests Treloar. "For example, specify the antenna make and model and the manufacturer's claimed gain on the sheet. Then show 15 meters of cable and show the dB loss in that length to the meter for each channel measured. Finally, depict the meter on the sheet and fill in the peak readings for each channel." Bottom line? Expect a 'challenge' from the broadcaster and be prepared to defend your measurements.

"Broadcast engineers talk to one another about your applications. They share information because each one has to defend why your measurements will cause their employer to 'lose' a viewing home."

Tips

Applications without Statutory Declaration or improperly completed (not signed by a Justice of the Peace or equivalent) are now automatically returned to the installer. All applications should show an actual physical address (even better - use a GPS receiver to show exact co-ordinates). For fastest service, fax applications to (02) 6253-3277. In the "Description of Reception in words," spell out what you see. Examples? "Transmitter on the other side of Mt Bothersome," or, "multipath ghosting from surrounding buildings, rocks." Resources: <http://www.aba.gov.au/> and, <http://www.dcita.gov.au/>. More? See p. 4, here.

They came, they absorbed, they went home

Accolades to "hands-on" trade conference

The South Pacific Region Satellite & Cable Show conference is history but as we comment on page 1, 2001 is likely to be held again at the Box Hill Institute with Sydney pencilled in for 2002.

The SPRSCS format differs markedly from other "trade shows." There are very few "suits" but that does not necessarily mean people who attend are slobs - rather it reflects upon the informal, get-your-hands-dirty approach. A few who wore suits the first day found something less formal for days two and three.

Trade booths are equally informal - a variation of "table top displays" one might find at a classy swap meet. This allows new entrepreneurs with limited budgets to appear with their products and not feel intimidated by the larger firms who often arrive with truck loads of equipment and multi-giga-buck professionally built displays. It is quite amazing what happens when the exhibitors tone down their product show cases - suddenly everyone relaxes and feels "at home" surrounded as we all are by the tools of our chosen trade.

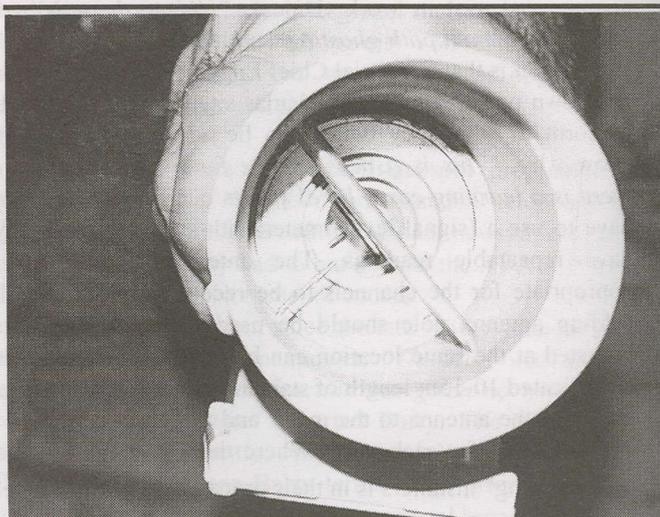
SPRSCS has always been known for new technology, leading edge innovations - concepts so new there are no established rules yet in place. Joseph Bonavia from Ikusi was scheduled to talk for 45 minutes about test equipment measurement techniques but interaction with his nearly filled lecture theatre audience quickly led away from measurements to the challenges coming with terrestrial digital TV (DVB-T). Joseph is well qualified to cover this topic since he represents a line of European bred equipment which has pioneered apartment house, condo and motel/hotel distribution of DVB-T as well as satellite MPEG-2 signals direct to the viewing location without changing away from the incoming digital format. One hour into Joseph's session it quickly became apparent that he was not going to get back to measurements anytime soon so SPACE did what it does very well - immediately scheduled a second follow-up session for Saturday morning out at the satellite dish antenna lot where Bonavia and competitor Lacey's Australia would demonstrate their satellite analogue and digital measurement tools to a

One interesting if not tested at SPRSCS innovation from SVEC; an LNBf for C & Ku bands. The twin LNB portions are "flat packed" in the housing while the (f) portion is a series of stair stepped horns with the smaller Ku mouth at the bottom end.



Although SVEC has an office in Victoria, they came from Chengdu, Peoples Republic of China to show off their latest antenna, LNB(f) and IRD technology.

intrigued crowd of attendees. SPACE also arranged for outdoor videotaping of the two back to back sessions and viewers of SPACE Pacific Report will see both in the spring on Mediasat.



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Common Interface Standard (CI)	NA	•	NA
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On board Dish Positioner (Medium Duty)	NA	NA	•
Motorized Feed horn Support (Polorotor)	NA	NA	•
32 Step Threshold Extension-Analog	NA	NA	•
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Auto Channel Search-Analog	NA	NA	•
Asia/Pacific Digital / Analog Channels Pre-Programmed	•	•	•
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Eric Fien of Broadnet International (left) was co-show-master of ceremonies. Jim Cotterill of Skyvision Australia works on his display dish.

The antenna lot was a busy place with attendees hauling test equipment and trial-under-fire LNB and LNB(f) products outside to "have a go" by checking performance. If you wanted to see which LNB was "best," simply pick up a handful from the exhibitor tables and head out into the antenna lot with a test instrument to check it out.

There was a continuous stream of checking things out both in the exhibit area, inside the lecture theatre and ad-hoc whenever the opportunity presented itself. Some accolades. "Best satellite picture award?" Surprise here - on a BoomerangTV service IRD displaying ESPN through a 45cm dish! Absolute broadcast quality which caused many to ask,

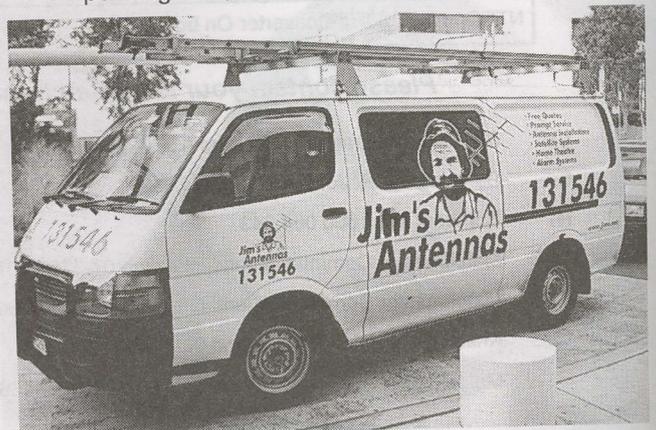
"Why does ESPN look so much better on Boomerang than through Optus B3?" Answer. Boomerang uplinks all five channels (including ESPN) directly to PAS-8 from west coast of the USA - one or two less satellite hops, one or two less "video processing centres" for the channels to pass through. "Worst looking video through a satellite system?" Answer. Pick virtually any one of the TARBS channels. Low grade, corrupted video that has been processed one stage beyond the limits. By the way - installer John Vandeven (NSW) did some pretty amazing things with dishes 45cm and smaller through Box Hill Institute plate glass windows proving that even with rain falling a carefully installed very-small-dish will work inside (BoomerangTV, TARBS and Foxtel-Austar).

One of the more important sessions was run by Garry Cratt of Av-Comm Pty Ltd Sydney with the on-stage assistance of Philip Ingegneri of Kristal Electronics (Queensland). Here was the concept. Everyone who sells or services satellite receivers has his or her own complaints about how receivers are designed and work. Garry claims to have done his own testing of "more than 90 different IRDs" over the past few years; Philip is no stranger to new designs either. What they built, live on stage with the video cameras recording their every word, was a list of approximately 20 "features" that installers attending wanted to see improved, or taken out, of the "next generation" of receivers. In effect, instant feed back for the receiver designers. Should receivers have (four digit) menu access numbers? Should digital channels memorised be kept separate in their own list away from analogues (for those receivers with both in one unit)? Should polarisation skew control be optional or part of the basic package? Some of what was said, not yet edited for eventual TV presentation, appeared on SPACE Pacific Report (Mediasat) July 2 and will reappear July 23 and August 13.

More importantly - copies of this conference session are being prepared on VHS tape to be sent to all known digital (and analogue) receiver manufacturers in Asia with our hope they will pay close attention to what the dealers and installers say here about the next generation features IRDs should have. If you are a manufacturer reading this, to be sure that a copy of this VHS tape reaches your hands, send us your complete mailing address (skyking@clear.net.nz) and a tape copy will be posted airmail. Not many of us have the opportunity to create "direct messages" to IRD suppliers and hopefully this approach will result in better products, sooner. We'll have a point by point discussion of the recommendations in the August SatFACTS.



We found a variety of installer work vehicles in the parking lot (John Vandeven, NSW left).





Autosat Australia Pty Ltd had a variety of receivers including the Benjamin DB-6600CI on display. Well, not for long - by the end of the Saturday exhibition day, their show inventory was essentially sold out! SatFACTS will review the Benjamin receiver in our August issue.

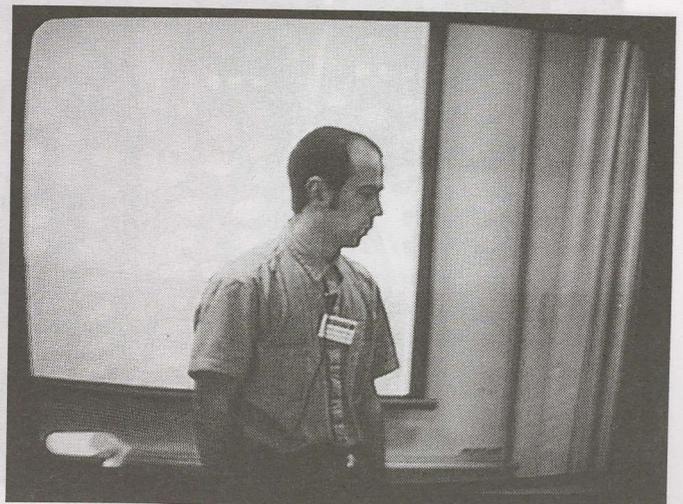
The direction our industry is taking was a source for several conference sessions. "Who can you trust?" on Friday afternoon brought out some very important points about the dealer/installer to distributor relationship. A major concern voiced involves the perception that distributors may not always share the technical problems with their dealers. Most dealers in this occasionally emotional session suggested distributors experiencing problems with hardware (or IRD software) should be more willing to "level with" the dealers. "We are the front line, we have to face the consumer and when they withhold information from us, we look bad to our customers." One suggestion made - that the SatFACTS web site (<http://www.satfacts.kwikkopy.co.nz>) set aside space where brief descriptions of problems with digital IRDs could be posted (with the reporter's full name, address and e-mail address) as a way of allowing those with similar or identical problems to share possible "fixes." This is already up and operating.

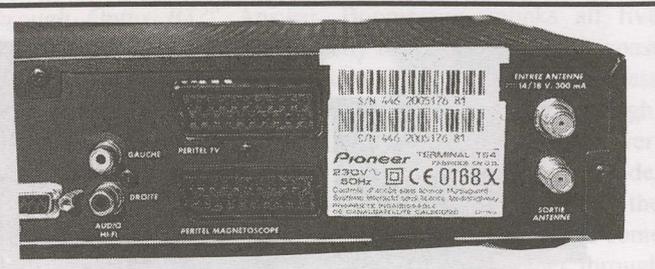
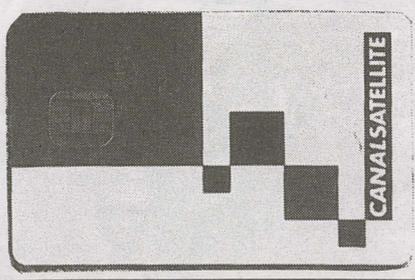
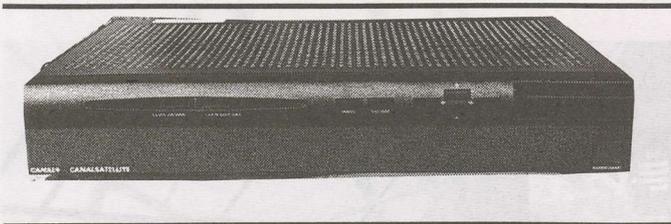
Another problem discussed at length was the rapid changes in receiver models and the concern that when a distributor changes models or brands, the selling dealer can be left with inadequate (or no) technical backup for units in the field that develop problems. "Perhaps we need the kind of in field service manuals which the television receiver industry produces" was one suggestion. "When is the last time - if ever - you actually saw a schematic diagram of a satellite receiver?" asked several. "Perhaps the distributors are at fault here - by not insisting that before they will handle a product, they be given full servicing information including schematic diagrams and parts lists. If we had those basic tools, then

somebody could sort out the solutions to equipment break down and we would not be left stranded with 'last month's models' and no service help" was another suggestion.

The Saturday morning "Naughty Nokia" session played to a full house as Victoria installer Patrick Middleton (Advanced Circuit Technology) carefully explained the many little known capabilities of the Nokia 9500 series IRDs. Patrick's primary credentials were an enquiring mind and an appetite for knowing all there is to know about products. Using a 45cm dish pointed at PAS-8 he displayed the IPDVB2000 software

ONE of the boys. Patrick Middleton, installer from Geelong, Victoria, stepped up to explain the many "Naughty Nokia" tricks available to enthusiasts.





Canal+ clearly works in Australia (with a modest size dish) as well as New Zealand (with a not-so-modest size dish). The 17 channel service includes the full range of pay-TV programming, mostly French but with some English services (TCM [movies], Euro News, occasional others). The Adult "XXL" channel is French (below).

that allows the Nokia to tap into Internet feeds. He did *not* display any *content* so those who were concerned their e-mail text might be shown in public had no reason to be nervous. But the hundreds of kilo-bit-per-second IHUG data rates clearly was filling up Patrick's PC hard drive in record time with hundreds of files per minute threatening to overload the PC.

Services. The new "NOW TV" service launched June 29th, drew impressive remarks from attendees for their "virtual reality" graphics and extraordinary video quality (see p. 29). It seemed like there was at least one receiver in attendance for virtually every known CA service capable of being received in Melbourne (see p. 20, as well). The French Canal+ service on a 90cm dish was impressive (although a 1.2m would be a better commercial choice), through Intelsat I701 Ku. The Pioneer sourced Canal+ IRD requires some skills to operate if you do not read French (all instructions and menus are in French only) but surprise - you *can* get PAL (as opposed to SECAM) video out of it through the menu. One attendee from Queensland talked privately of having done "more than 800 installs for the "Space TV" / "C Net Taiwan" 11 channel



package on Palapa C2M. "This has been a low profile service sold primarily through Taiwanese origin émigrés who want 'home town TV'." A typical install uses dishes in the 1.8m range.

Tony Drexel of Free to Air Satellite (South Australia) provided an interesting example of how a one or two man operation can build a commercially successful C-band DTH service catering almost exclusively to viewers interested in AsiaSat 2, 3 and Thaicom 2/3 ethnic programming packages. After hundreds of installations, Drexel finds "Your clients are the best promotion of all. Do a thorough, honest job, be available to help them through the system learning phase, provide them with complete written instructions, and don't rush the job. Every customer I have has found me at least one additional customer and although we advertise quite heavily, the truth is most of the new sales are to people who recommend us because they are already satisfied customers." An interview with Tony will appear on SPACE Pacific Report sometime in the spring.

Most expect that SPRSCS 2001 will be bigger, better, and even more hands on. With the launch of DVB-T scheduled for early in 2001 in Australia, for many it will be a welcome opportunity to compare the technical problems of terrestrial digital with the now well known challenges of satellite digital. For many, the start-up of DVB-T will be a new business opportunity to be followed and with the increasing consolidation of the satellite system installation business into a few dominant players, "staying independent" and continuing to be "your own boss" is becoming more challenging by the week (see p. 32). The old Chinese adage, *May you live in interesting times*, is upon us - like it or not.

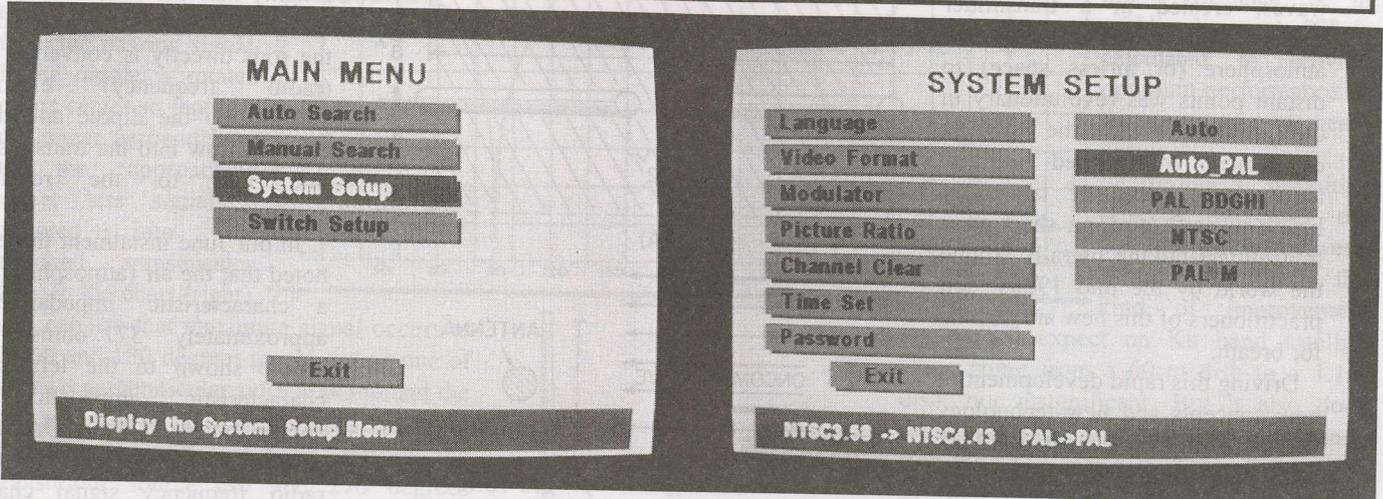
UEC's problems are not limited to power supplies.

Foxtel installer found three South African "MultiChoice" handhelds in five IRDs opened in sequence (proper Foxtel remote still in bag). IRD software was, however, Foxtel, not MultiChoice.

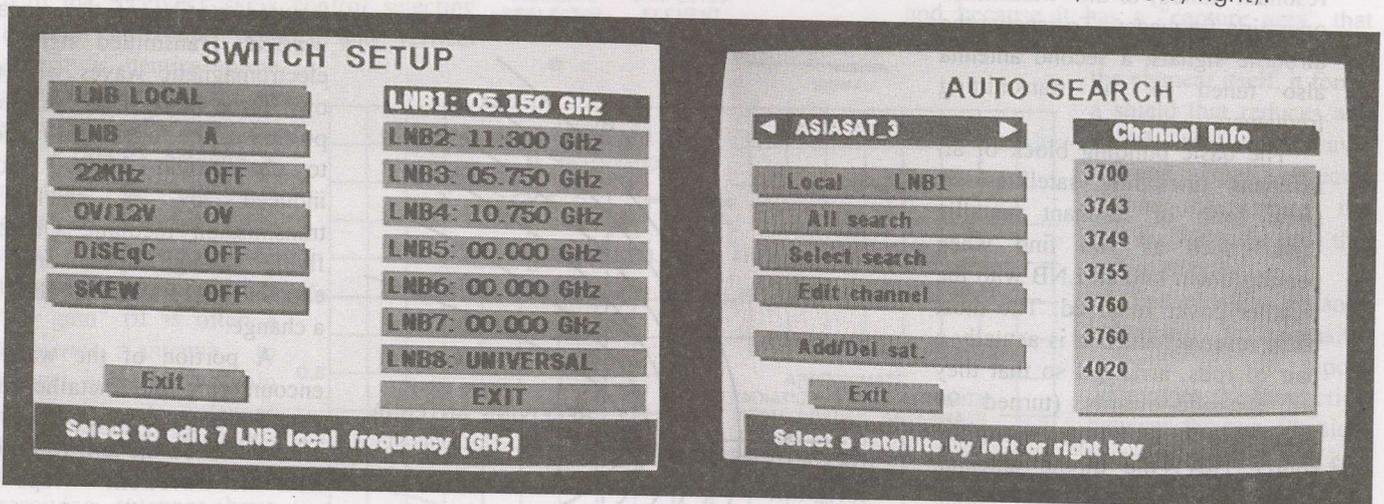


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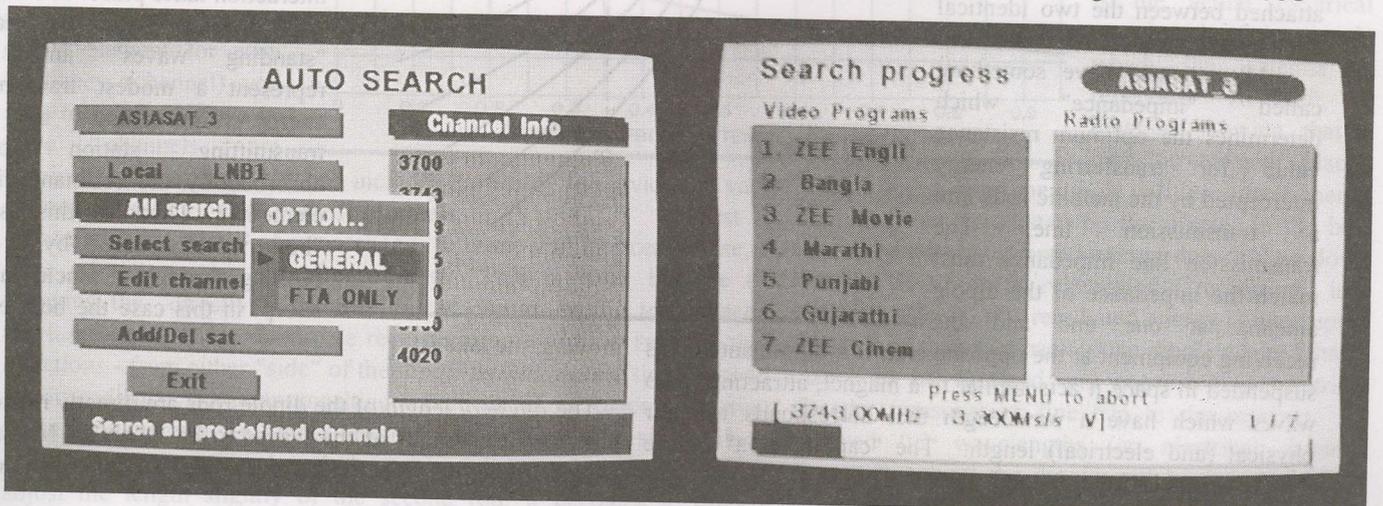
Our printer made a total mess of the June issue photographs and in particular our report on the performance of the OPAC / MediaStar D7.5 IRD with on screen photos on page 7 came out badly. We have extended our apology to MediaStar, and reprint those photos here in what we trust will be a more printing-friendly display! After 70 issues of SatFACTS, this is the first time this has happened.



Start with the "Main Menu" (left), proceed to "System Setup" (right). At this point you have the receiver, through sub-menus, pointed in the correct direction. Now, select "Switch setup" for LNB parameters (below, left) and either a full pre-loaded set of transponders or one-only ("Auto Search," below, right).



Now select the level of search you wish conducted (everything in memory, just one specific frequency) plus whether you want to load both FTA and CA (below, left); and the result (below, right) on Zee As3S



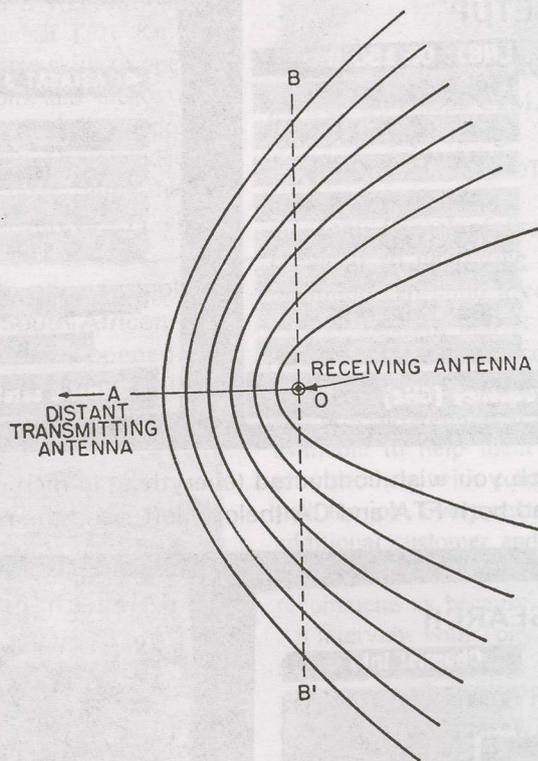
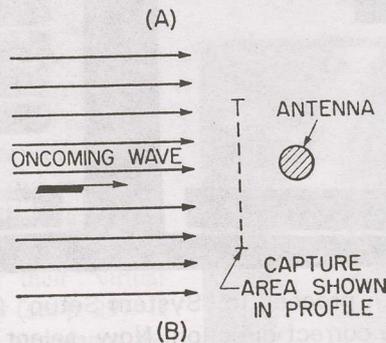
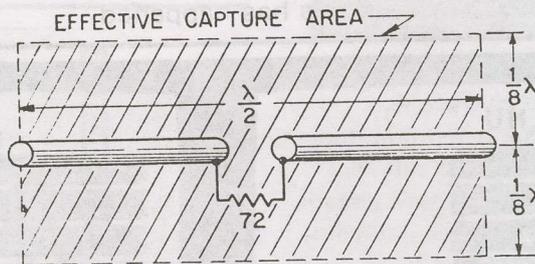
THE DIPOLE: Driven element link to receiving system

The concept that electromagnetic waves, created in a transmitter device, will travel through the atmosphere (or airless space) to distant points was revolutionary in the 1890s. From the earliest experiments that carried "signals" across ten metres of laboratory bench to earth girdling short-wave transmitters talking literally around the world by the mid 1920s left practitioners of this new art gasping for breath.

Driving this rapid development of new concepts and new technology was a branch of science that did not even exist before the turn of the century; *antenna system design*. To "launch" signals into the air required an antenna that was resonant (tuned) to the transmitter operating frequency. To receive the airborne signals, a second antenna also tuned to the transmitting frequency.

The basic building block of all antennas (including satellites) is some form of resonant metallic "rod," such as you find when peering down into an LNB with the weather cover removed. The most basic resonant antenna is actually a pair of rods, arranged so that they are flat-side-towards (turned 90 degrees away from) the transmitter source. This is the "dipole" antenna, with two quarter wavelength identical elements suspended such that a transmission line can be attached between the two identical 1/4 wavelength sections.

All antennas have something called "impedance" which determines the optimum resistance value for transferring energy intercepted by the metallic rods into a transmission line. The transmission line impedance must match the impedance of the dipole antenna at one end and the receiving equipment at the opposite end. If a dipole antenna is



approximately 1/8th wavelength - roughly half the length of the 1/4 wavelength rods. Energy striking the rods directly is converted into (radio frequency) electrical currents by the dipole and those currents flow into the transmission line and to the receiving equipment.

In our June instalment three, we noted that the air (atmosphere) has a "characteristic impedance" of approximately 377 ohms. The dipole shown to the left has a characteristic impedance of approximately 72 ohms. One of the rules of physics says that when a radio frequency signal changes transmission medium (it is flying through the air, then suddenly encounters a metallic rod), the forward motion of the signal is *warped*. Transmitted signals are electromagnetic waves with their own force fields. The "magnetic" portion of the force field responds to changes in forward motion induced by a change in transmission medium. Obviously flying through space and then encountering a metallic rod is such a change.

A portion of the wavefront encountering the metallic dipole slows down at the instant of encounter. To the left, you can see how the wavefront "wraps itself around" the metallic rods created a secondary force field where this interaction takes place. The curved "C" shaped lines are called "standing waves" and they represent a modest transfer of energy originating at the transmitting station being absorbed by the resonant dipole elements. Think of this as the "bow wave" created by a boat pushing through a placid lake - except in this case the boat is not

moving, the lake is!

The *physical* length of the dipole rods are directly related to the *electrical* length of the waves to be received. Maximum energy is coupled from these waves only when physical equals

electrical. This is called "resonance," the frequency where the antenna performs best.

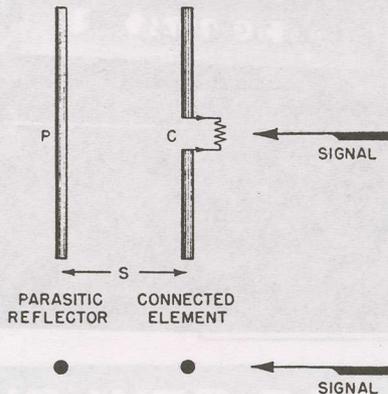
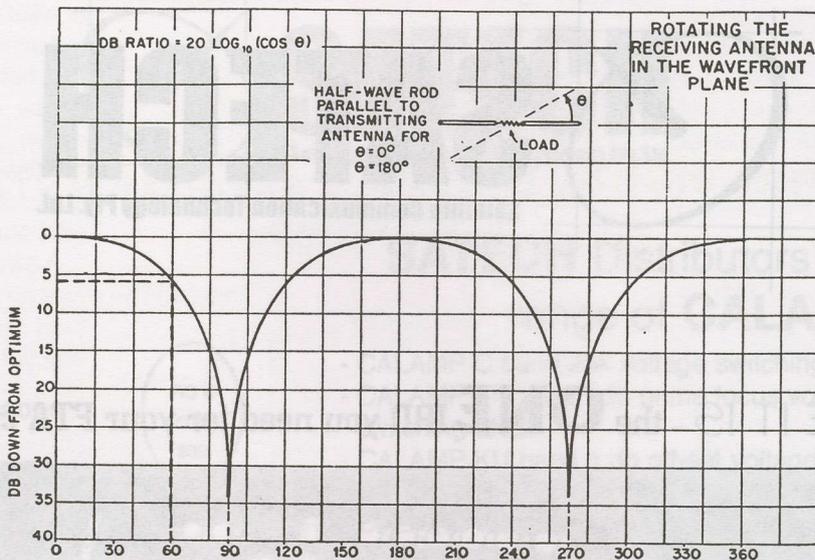
The dipole functions by laying perpendicular to the approaching wave and any deviation from this alignment reduces the currents extracted from the passing signal. If the dipole is rotated on its center so that it is no longer perpendicular to the approaching wave, less signal is coupled into the attached transmission line. In the chart (right),

you can see that maximum signal occurs at 0/360 and 180 degrees (representing one of the two perpendicular sides at 0/360 and the opposite side at 180). By rotating the dipole so that the ends point toward the transmitter source (90 and 270 degrees along bottom of chart), the amount of energy extracted goes down by 33 to 35 dB. In your satellite antenna, rotating the probe with the receiver's skew control selecting between horizontal polarity and vertical polarity is identical to the action described here with a terrestrial antenna.

A dipole antenna is adequate for reception only in strong signal areas, close to the transmitter. A dipole has "no gain" (it is often a reference antenna to gauge how much gain more elaborate antennas possess) and for this reason more complex receiving antennas have been designed. In most terrestrial TV (and FM) antennas, there is a single dipole element for each frequency (channel) you wish to receive. If two or more channels are

required, some how the antenna includes the ability to provide separate dipoles for each of these channels.

Increasing the "gain" of an antenna is to cause it to intercept more of the passing wavefront energy. This is done by changing the "directivity pattern" of the dipole. In the top chart, we can see that the dipole receives equally well in two directions - from either "side" of the dipole as long as one side is perpendicular to the approaching wavefront. If we place a second rod behind the dipole (behind means the dipole sits between the second rod and the transmitting station), and adjust the length slightly of the second rod, it becomes a

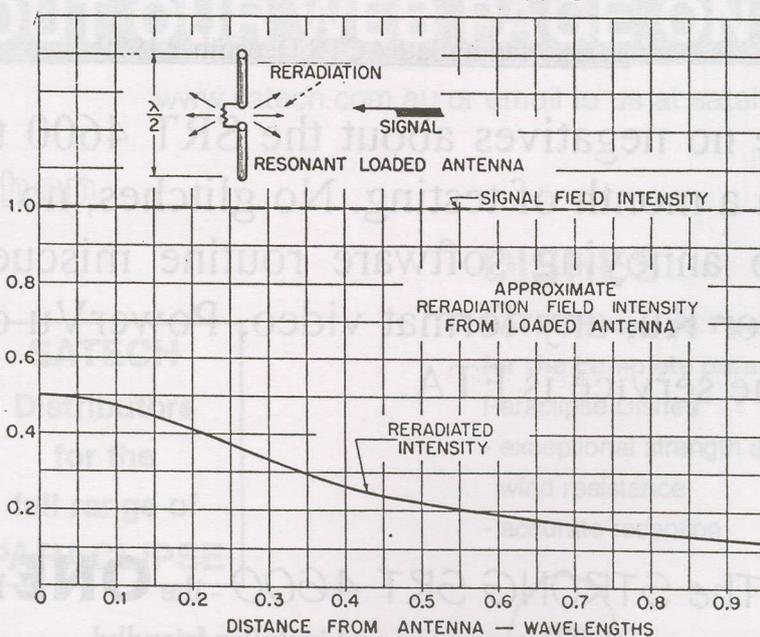


you would expect on Ku band satellite when going from a 60cm dish to a 1.1m dish; not insignificant. But it also does something else, often of greater importance than the additional gain. The reflector acts as a shield or block to protect the dipole from unwanted signals arriving through the "back" of the antenna.

Because it is 5% longer than the dipole, and because it has a "capture area" that extends 1/8th wavelength above and below

the element itself, it forms a shield that reduces any signals that must travel through the reflector before they reach the dipole. We'll see how this works, shortly.

The physical distance between parasitic reflector and the dipole determines the interaction between the two. Physical means a distance you can measure with a tape measure or ruler, but the root of the measurement is the actual electrical wavelength of the signals which the antenna is receiving. At left, a diagram showing that a parasitic element placed



at varying "S" spacings from the dipole will encounter energy first received and then reradiated by the dipole. In the best case, 50% of all dipole intercepted energy does not go down the transmission line - it is relaunched ("reradiated" into space). However, some of this reradiated energy is intercepted by the reflector, and then sent back to the dipole where it has a second chance to be captured and converted to electrical currents for the transmission line trip to the receiver. A reflector placed 0.2 wavelengths (an electrical distance converted to "S") behind the dipole will be overwhelmed by 40% of the reradiated energy, half (50%) of which will then be

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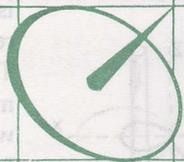
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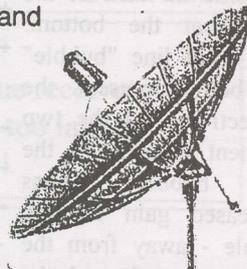
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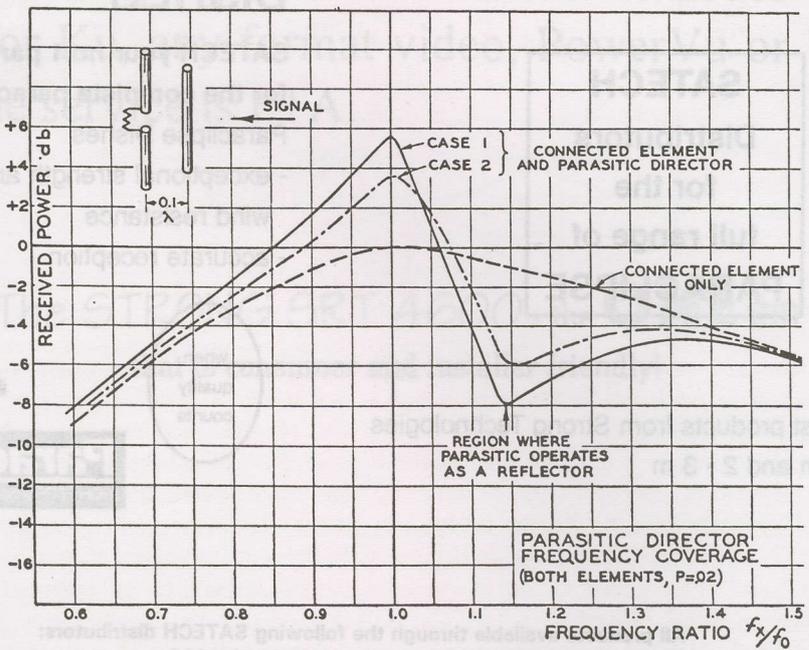
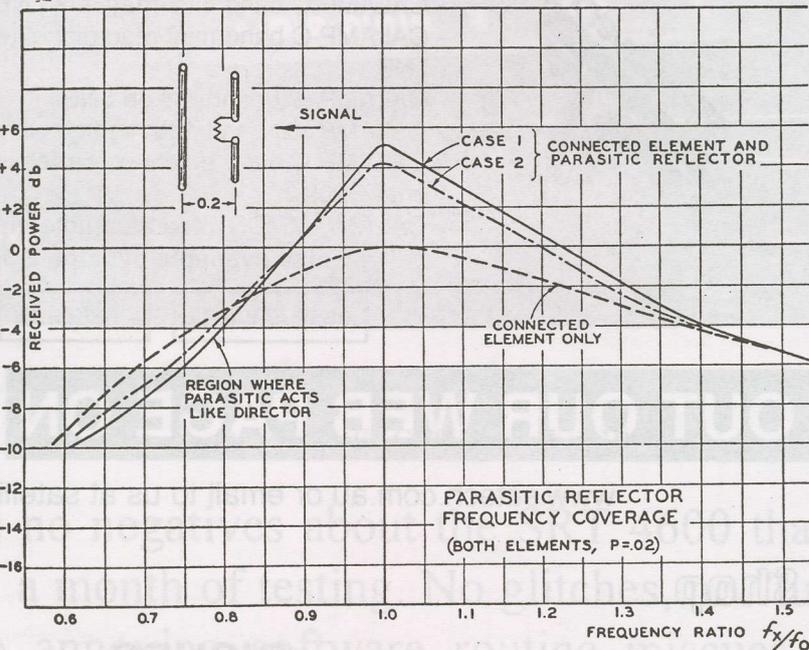
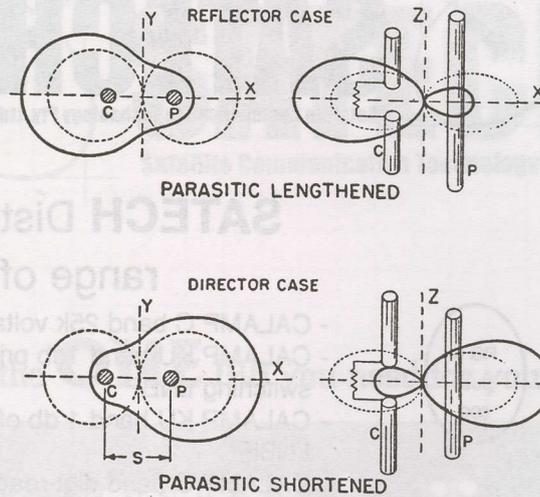
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sent back to the dipole for a second try. By varying the "S" distance between reflector and dipole, and fine tuning the physical (electrical) length of the parasitic reflector, different design objectives are possible with the two element antenna.

Another form of two element antenna is a dipole plus a *director*. Where the reflector sits "behind" the dipole and is typically 5% longer than the dipole, an alternate design places a 5% shorter parasitic element in front of the dipole. This is called a "director" and it acts similar to a lens on a camera. The director is *in front*, ahead of the dipole in the signal chain, and it "sees" the signal a tiny fraction of a second *before* the dipole. By being (typically) 5% shorter than the dipole, it does not "block" the dipole from the signal - rather it "focuses" the incoming energy to the dipole by modifying the magnetic portion of the wavefront before the dipole gets it. Think of this as a purposeful slowing down of the wave so that the dipole has a better chance of capturing the energy. The diagram at the top of this page shows both possibilities - a reflector with a longer parasitic behind the dipole at the top, a director with a shortened parasitic in front of the dipole at the bottom. The solid line "bubble" on both represent the "directivity" of the two element antennas - the big bubble means increased gain for the dipole - away from the reflector, or, through the director (+5 dB typical).

Alas, there is no "free lunch" here. The middle diagram illustrates. When a dipole is used alone, it has a frequency bandwidth where it



is what happens when a 5% longer reflector is placed behind the dipole. The bottom line shows "1.0" which means this is the *one* frequency where the dipole by itself is "resonant." The gain of the stand alone dipole at 1.0 is shown as "0" (dB) along the left hand edge.

Adding the reflector increases the gain (+5 [dB] region along left hand edge) but *also* causes the original dipole to have less gain from 0.85 and lower in frequency as well as 1.4 and above. Translation? If the original dipole was designed for 100 MHz, and a parasitic reflector was added, for all frequencies below 85 MHz and above 140 MHz *after* the reflector was added, there will be less gain than with the dipole without the reflector. In effect, the reflector reduces the effective "bandwidth" of the antenna. Note that at around 0.8 (80 MHz in our example), the parasitic element that was designed to be a reflector at frequency 1.0 (100 MHz) *now* becomes a director - simply because what is physically the correct length to be a reflector at one frequency (100 MHz) will become a director for a lower frequency (80 MHz).

There is a worse case for directors, as shown in the bottom diagram. Here, if F is 100 MHz at dipole resonance, there is a very sharp and rapid dip in antenna performance at 1.05 F (105 MHz) when a director is added. Why? Because at 105 MHz, what was a director at 100 MHz has now become a reflector and as such it blocks or shields the dipole greatly reducing the antenna's performance for all frequencies between F 1.05 and F1.4. Can you

functions with reasonable results. Look for the dashed line combine reflector and director elements for even greater gain? In part 5, here.

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Another side of SPRSCS

For all of the good vibrations originating at SPRSCS 2000, there was at least one offsetting bad one which will be a permanent memory with us for some time.

During the Thursday and Friday sessions, in and out of lecture theatres, in the exhibit areas, we did not hear even a single reference to scam-cards or devices that will allow a user to watch pay-TV without paying. If there was interest in such products or technology, it was well hidden.

We had been on site Saturday morning - the open day that allowed anyone with an interest in satellite TV to attend without charge - only moments when approached by a new face, not part of the registered Thursday-Friday throng. "When you get a few minutes, I'd like to show you something" he said. It would be several hours before time allowed for a wandering walk to the parking lot where my host had snaked a long power extension cord out of Box Hill Institute to a waiting dark coloured van.

As he opened the back doors I was greeted by piles of Austar installation materials and a small two shelf bench filled with satellite and PC hardware. He flipped on the 14" TV and there was one of the Foxtel pay services. He handed me a remote control for the IRD and suggested I run through the channels. All of the Foxtel and Austar services, the just launched announcements for the two new Optus - C7 Olympic channels coming in September, even the foreign language channels which are normally available only by selective subscription.

Sitting to the left of the TV, a very badly worn laptop PC with a constantly changing line by line update of the addressing and encryption software routines. "What am I really looking at?" we asked.

"Pay TV without paying" was the quick response. "When they shut down the card business back in March, I found software on Internet from Europe that allows this PC to

emulate the routines. There is no smart card in the receiver, only a connection between the PC RS232 and the IRD 232 ports. This was originally a DGT400, and on Internet I found instructions for cutting a trace or two on the 232 connections inside the receiver so the CAM thinks it has a real card inserted and that the card is authorised for everything any of the bouquets transmit."

Impressive if of questionable legality. "No, I don't sell this knowledge, don't share it. The law says I can do this as long as there is no commercial activity underway. There is not."

Still, it does require a full-time PC connected. "I found this laptop for \$10 at a swap meet. All of the software fits with room to spare on a standard 1.5 Mb disc."

But the system probably faults frequently? "I've been running this at home since April and only twice have I had to reboot the PC."

Surely this is unusual? "When they clamped down on piracy that followed the Rolf Deubel school of technology, most of the skilled people simply left the highly visible Thoxic.com world and went off to a new layer that is far better hidden from the programmers."

Is this the ultimate in hacker technology? "Not at all. Two new areas are being perfected. One is called 'Free Cam' and believe it or not, a modified CAM without a card makes the receiver think it has an authorised card in it. It just came out in Europe and I expect Free Cam to take over the 'emu' (PC emulator) approach very quickly. And cloned cards - one authorised by the programmer master card, duplicated onto additional cards which are not themselves authorised. If you'd like to see that work, I can arrange a demonstration here in Melbourne on Sunday."

Good grief. Just when we thought the programmers had regained control of their product.

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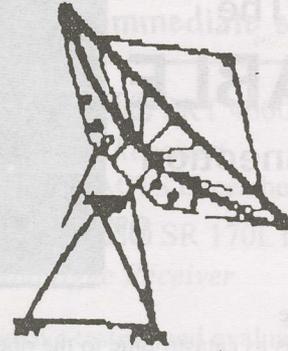
All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) each year (**September 2001 in Melbourne**). Members also participate in policy creation forums, have correspondence training courses available and their support makes possible the TV show SPACE Pacific Report. To find out more, contact (fax) 64-9-406-1083 or use information request card, page 34, this issue of SatFACTS. Page space within SatFACTS is donated each month to the trade association without cost by the publisher.

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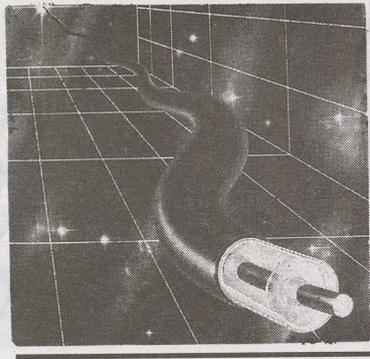
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LNB	13V/ current mA	15V/ current mA	18V/ current mA	Status of LNB
Gardiner 0.8 dB Ku	138 mA	142 mA	142 mA	OK
Gardiner 0.6 dB Ku	166 mA	172 mA	180 mA	bad
Taiwan 0.7 dB Ku	140 mA	142 mA	142 mA	OK
Taiwan 0.8 dB Ku	138 mA	140 mA	140 mA	OK

LNB failure

Nothing is as catastrophic to the operation of a C or Ku band TVRO/DTH receiving system as the failure of the LNB. With LNB prices at an all time low, they have essentially become "throw away" items and are seldom repaired when they break.

And they do "break," usually at the least opportune point in time under the most difficult of replacement conditions. There are steps you can take to forewarn of a possible failure and a quick description of what they are and how they function might better help you understand the nature of failures.

The Low Noise Block (downconverter) does several separate things:

- 1) It has two or more stages of FET/HMET family transistor RF (radio frequency) amplification;
- 2) A mixer stage;
- 3) A LO (local oscillator) stage
- 4) Two or more stages of L-band (IF or intermediate frequency) amplifier stages
- 5) A power rationing/distribution network to ensure that each stage receives the correct operating voltage, typically using zener diode devices to step down and regulate the operating voltage as required.

More complex LNBS have two (or more) LO stages for switching through widely varying Ku-band input frequency groups. The diagram below is a "basic" LNB.

The incoming satellite signal must be amplified to a useful level. And this must be done with GaAs-FET or HMET transistor devices which have exceptionally low internal noise figures. The much touted noise figure (Ku) or degrees Kelvin noise temperature (C) reading of a particular LNB is established by the RF (input, radio frequency) amplifier stages. Most RF stages require between 10 and 12 volts to operate properly. The 13 volt input from the receiver, fed up through the RG6 or other downlead, goes through a step-down voltage regulator before being applied to the amplifier stages. If the voltage regulation device fails (not uncommon), the RF stages receive too much voltage and their noise figure / temperature

increases dramatically. At the same time, the total current used by the LNB typically goes up.

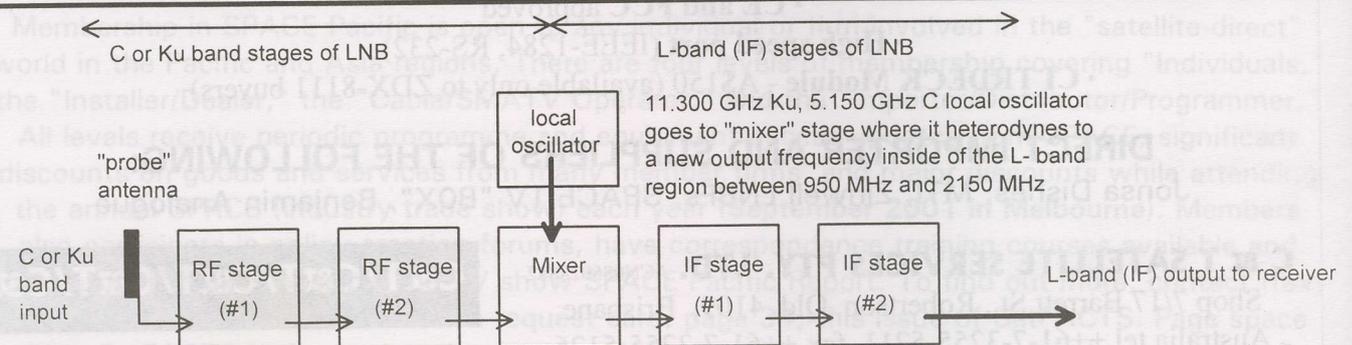
If you have appropriate test equipment, when installing a new LNB, measure the current drawn by the LNB and record it in a safe place. In the table above, you can see readings we took on four Ku LNBS using a Promax MC 944 meter. The Promax allows selection of the LNB voltage (13, 15, 18 - push button 8) and gives a reading of the current being drawn at each voltage (button 7). One of the four LNBS was bad, no longer operating. Note that for all but the Gardiner 0.6 dB noise figure unit, the current draw remains virtually the same whether the operating voltage is 13, 15 or 18 volts. But the "bad" LNB starts off with an excessively high current drain (when it was not broken, it had readings similar to the Gardiner 0.8 dB unit on the line above) which increases each time the voltage is increased.

All stages in the LNB are supposed to be voltage regulated. That means that whether the LNB is shot with 13 volts, 15 or 18, the internal voltage regulators should not allow the increased voltage (15 or 18) to reach the stages. A dramatic increase in operating current (power consumed by the total LNB) when you step up to 15 or 18 volts is a sign of a failed regulator.

Even a 13 volt stage in the LNB, regulated to operate at 10, 11 or 12, will have new "problems" if it suddenly finds 13 volts where previously the voltage was lower. We are talking about some very narrow "optimum operating voltage windows" here!

By recording the current drain when the unit is new, you can reference that number if forced to trouble shoot the dish system. Any change upward suggests a failure related to the powering circuitry of the LNB. A *reduction* in current says one or more stages has simply failed "open" (no longer consuming power - indicating a transistor device failure).

Following the RF amplifier is a stage called a mixer which receives amplified RF signals from one side and a special signal called the LO (local oscillator) from another side. The



two separate signals are "mixed" and one of the resulting new signals is our L-band (IF) signal. The IF signal is now amplified with additional gain stages that operate between 950 MHz and 2150 MHz.

Mixer stage failure is rare, LO failure is rare. But IF amplifier stages like their RF counterparts do fail, and most often the failure is traced to a power circuit failure (those devilish zener diodes again). An IF stage with too much voltage not only draws more current than it should, it also changes gain numbers. You may actually see too much gain (L-band signal levels increase) but the pictures now look sparklie (on analogue) or your BER goes down (on digital). An IF stage that fails "open" will be reflected by less than normal current drain, and, a reduction (10 dB is not uncommon) in overall L-band levels as measured at the receiver.

Repairs? Well, RF and IF stage transistors can be replaced but lacking suitable noise figure measuring test equipment and knowledge of how the circuit is "optimised," it is not worth the effort. Zener diodes typically lay around the perimeter of the LNB, and if you can spot a bad one, replacement is possible provided you have suitable desoldering equipment, significant optical magnification, good light to see what you are doing, and, a steady hand! You will know when you have spotted and successfully replaced a bad voltage regulating diode (or transistor) - the total LNB current will return to a more normal level and stepping from 13 to 15 to 18 volts on the supply will make no or very little difference to the current drain.

Worth repairing? Well, if they are Gardiner Ku band units which are much prized and no longer made, worth a shot. If it cost \$50 and came from Taiwan, throw it away and start over.

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I704/66E	TV5	4055/1095R	4	3/4	27(.500)	
Ap2/76E	Sky News +	3805/1345R	4	3/4	22(.520)	
	Hmark/Kermt	3720/1430H	4	5/6	29(.270)	
	Channel "I"	382301330V	1	3/4	3(.570)	
	TVB8 +	3849/1301H	4	3/4	13(.238)	
	AXN	3920/1230H	up to 8	7/8	28(.340)	
	MRTV	3666/1484H	1	2/3	4(.442)	
	Mega +	3640/1510H	12	3/4	28(.056)	
Them3/78.5E	Mahar/DD1	3600/1550H	up to 8	3/4	26(.661)	
	TRT +	35541596H	2+ TV, radio	3/4	13(.330)	
	PTV2	3420/1730V	1	3/4	3(.366)	
	TV Maldives	3412/1738V	1	1/2	6(.312)	
	Thai Global+	3425/1725V	up to 7?	2/3	27(.500)	
	Insat 2E/83E	DD2	3910/1240V	1	3/4	5(.000)
	DD tests	3929/1221V	1	3/4	5(.000)	
ST1/88E	Taiwan Bqt	3509/1641H	13	3/4	23(.450)	
MeSt 1/91.5E	Malay. TV3	4147/1004H	1	3/4	7(.030)	
As2/100.5E	Euro Bouq	4000/1150H	5TV, 19r	3/4	28(.125)	
	Reuters	3909/1241H	1	3/4	5(.632)	
	Hubei/HBTV	3854/1296H	1	3/4	4(.418)	
	Hunan/SRT	3847/1303H	1	3/4	4(.418)	
	Guan./GDTV	3840/1310H	1	3/4	4(.418)	
	In. Mongolia	3828/1322H	2	3/4	8(.397)	
	APTN A-O	3799/1351H	1	3/4	5(.631)	
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)	
	Reuters/Sing.	3775/1375H	1	3/4	5(.631)	
	WorldNt/US	3764/1386H	1 + 20 radio	3/4	6(.100)	
	Liaonin/Svc2	3734/1416H	1	3/4	4(.418)	
	Jiangx/JXTV	3727/1423H	1	3/4	4(.418)	
	Fujian/SETV	3720/1430H	1	3/4	4(.418)	
	Hubei TV	3713/1437H	1	3/4	4(.418)	
	Henan/Main	3706/1444H	1	3/4	4(.418)	
	Egypt/Nilesat	3640/1510H	6+, radio	3/4	27(.850)	
	As2/100.5E	Feeds	4086/1064V	1	3/4	5(.632)
		TVSN	4033/1117V	1	3/4	4(.298)
		Sky Racing	4020/1130V	up to 3TV	1/2	18(.000)
		EMTV	4006/1144V	1TV, 2 radio	3/4	5(.632)
		Jilin Sat TV	3875/1275V	1	3/4	4(.418)
	HeiLongJian	3834/1316V	1	3/4	4(.418)	
	JSTV	3827/1323V	1	3/4	4(.418)	
	Anhui TV	3820/1330V	1	3/4	4(.418)	
	ShaanxiQQQ	3813/1337V	1	3/4	4(.418)	
	Guan/GXTV	3806/1344V	1	3/4	4(.418)	
	Fashion TV	3796/1354V	1	3/4	2(.533)	
	MSTV	3791/1359V	1	3/4	4(.340)	
	Feeds	3785/1365V	1	3/4	5(.632)	
	Myawady	3766/1384V	1	7/8	5(.080)	
	SABe	3742/1408V	1	3/4	3(.300)	
	Saudi TV1	3660/1490V	1 (?)	3/4	27(.500)	
As3S/105.5E	Zee bouquet	3700/1450V	9TV	3/4	27(.500)	
	Arirang TV	3755/1395V	1	7/8	4(.418)	
	Now TV	3760/1390Hz	2	7/8	26(.000)	
	Star TV	3780/1370V	17(+)TV	3/4	28(.100)	
	Star TV	3860/1290V	14(+)TV	3/4	27(.500)	
	Star TV	3880/1270H	12(+)TV	7/8	26(.850)	
	CNNI	3960/1190H	4(+)TV	3/4	26(.000)	
	Star TV	4000/1150H	7(+)TV	7/8	26(.850)	
	Sun TV	4095/1055H	1	3/4	5(.554)	
	CCTV bqt	4115/1035H	4(+)TV	3/4	19(.850)	
Cak1/107.5E	Indovision (S-band)	2.536, 2.566, 2.596, 2.626	33(+)TV	7/8	20(.000)	
Sinosat/110E	CCTV2	3889/1261Hz	1	3/4	3(.000)	
C2M/113E	TPI	4185/965V	1	3/4	6(.700)	
	Indosiar	4074/1076V	1	3/4	6(.500)	
	Anteve	4055/1095V	1	3/4	6(.510)	
	Space TV	4000/1150H	11TV, radio	3/4	26(.666)	
	C Net Taiwan	3760/1390H	11TV, radio	3/4	26(.666)	

Receivers and Errata
NDS encrypted, often FTA
FTA
Sky News 24 hr, sport, feeds; some FTA
PowVu, typ. CA
Tests, FTA
PowVu, CA
Tests, promos, ch 5 FTA
FTA; difficult to load (NTSC)
Mega Cosmos here; new Sr
FTA (includes VTV, DDR)
9 radio here
FTA, new service, testing
FTA (reaches SE Australia)
FTA
SCPC, testing MPEG-2
SCPC, weaker than 3910 above
MCPC, sometimes FTA, 2 adult chs
CA but occ. FTA
FTA (TV5 teletext)
occasional feeds, not MPEG-2
FTA SCPC, teletext
FTA SCPC, teletext
FTA SCPC, radio APID 81
FTA: #1 Chinese, #2 Mangolian
CA SCPC (news feeds)
Mostly CA; some FTA
FTA & CA
FTA; up to 20 radio channels
FTA SCPC, radio APID 256
FTA SCPC, teletext, radio APID 81
FTA SCPC, + radio APID 80
FTA SCPC, radio APID 80
FTA SCPC, + radio
Thru TARBS Aust, subs now OK
FTA SCPC feeds
Occ. FTA, not same as Aust. version
(Irdeto) CA; 1 & 3 occ. FTA
PowVu CA; poor signal level
FTA SCPC, + radio
FTA SCPC
FTA SCPC, + radio
FTA SCPC
FTA SCPC, radio APID 81
FTA SCPC, radio APID 257
FTA SCPC, now easy to load
FTA SCPC
FTA & CA, feeds
FTA SCPC - difficult to load
SCPC - now regular programming
FTA MCPC
Mediaguard CA, ch 8 FTA
FTA SCPC; audio problems
Now operational FTA
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
PowVu CA; some FTA feed channels
NDS CA (Pace DVS211, Zenith)
testing SCPC
was analogue; now FTA MCPC
NDS CA using RCA/Thomson, Pace
IRDs; new services added June
FTA SCPC, difficult to load
FTA SCPA; NT only
May only be test; NT only
FTA SCPC; NT only
CA, sometimes FTA
CA, subs available -10 radio FTA

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(C2M/113)	RCTI	3475/1675H	1	3/4	8(.000)
JcSat3/128	Miracle Net	3990/1160V	3 up to 6	5/6	22(.000)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)
L AP1/130	THT+NTV	3675/1475L	2 + 2 radio	3/4	12(.000)
Ap1A/134	Gansu TV	3769/1381V	1	1/2	6(.930)
Ap1/138	Reuters	3742/1408V	1	3/4	5(.632)
	Viacom	3860/1290V	up to 6	3/4	30(.000)
Op B3/156	Mediasat	12.336V	5TV, 3ra, Inter.t	2/3	30(.000)
	Aurora	12.407V		2/3	30(.000)
	Aurora	12.532V	now NZ covered	2/3	30(.000)
	Aurora	12.595V		3/4	30(.000)
	Aurora	12.720V		3/4	30(.000)
	Austar/tests	12.376H		3/4	29(.473)
	Austar/Foxtl	12.438H		3/4	29(.473)
	Austar/Foxtl	12.564H		3/4	29(.473)
	Austar/Foxtl	12.626H		3/4	29(.473)
	Austar/Foxtl	12.688H	(some FTA ra)	3/4	29(.473)
Op B1/160	ABC NT fd	12.256V	1TV, 3 radio	3/4	5(.026)
	Central 7	12.354H	1TV	3/4	3(.688)
	News feeds	12.367H	1	3/4	5(.424)
	Sky NZ	12.518/546V	7TV/7TV	3/4	22(.500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)
	Sky NZ	12.644V	9TV	3/4	22(.500)
PAS8/166	ABCInterch	12.312H	1	3/4	6(.978)
	ABCInterch	12.321H	1	3/4	6(.978)
	ABCInterch	12.330H	1	3/4	6(.978)
	TARBS	12.526H	12+ TV	3/4	28(.067)
	TVBJ	12.686H	11+ TV	3/4	28(.124)
	Boomerang	12.725H	5 TV	7/8	25(.728)
	NHK Joho	4065/1085H	5TV, 1 radio	3/4	26(.470)
	ESPN USA	4020/1130H	7+TV, data	7/8	26(.470)
	Discovery	3980/1170H	8 typ.	3/4	27(.690)
	CalBqt/Pas8	3940/1210H	up to 8TV	7/8	27(.690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)
	Feeds	3854/1296Hz	1	3/4	6(.110)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(.000)
	MTV	3740/1410H	8	2/3	27(.500)
PAS2/169	Pv Bouquet	12.290V	2+ TV, radio	2/3	27(.500)
	WA PowVu	12.637(.5)V	4TV, 8 radio	1/2	18(.500)
	HK PowVu	4148/1002V	up to 8	2/3	24(.430)
	Fox Bouquet	3992/1158V	8TV/data	7/8	26(.470)
	Feeds	3942/1208V	1 or 2	2/3	7(.497)
	Feeds	3934/1216V	1	3/4	10(.850)
	Feeds	3929/1121V	1	3/4	6(.618)
	Feeds	3912/1238V	1	2/3	6(.620)
	Feeds	3898/1252V	1	2/3	12(.000)
	Feeds	3812/1338V	1	3/4	6(.620)
	Middle East	3778/1372V	4	3/4	13(.331)
	Service 1	3761/1389V	1	3/4	6(.620)
	CCTV Pv	3716/1434V	5 typical	3/4	19(.850)
	Feeds	4138/1012H	1	3/4	6(.620)
	7thDyAdv	3872/1278H	1TV, 4+ audio	3/4	6(.620)
	CNNI HK	3996/1154H	1	3/4	9(.998)
	"1"/Korea	3980/1170H	1	3/4	4(.420)
	Feeds	3867/1183H	1	2/3	6(.618)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)
	Feeds	3854/1296H	1	2/3	6(.620)
	Disney	3804/1346H	3	5/6	21(.093)
	Satcom 1-6	3743/1407H	up to 5	7/8	19(.465)
I702/177E	AFRTS	4177/973LHC	8TV, 12+ rad	3/4	26(.694)
I701/180E	TNTV	11.070V	9	3/4	30(.000)
	Tele Fenua	11.168V	4	3/4	10(.100)
	Canal+ Sat	11.610H	16TV, 1 radio	3/4	30(.000)

Receivers and Errata
FTA SCPC, Australia OK
PowVu, some FTA (1,3)
CA & FTA Ntsc: Japan, Taiwan
inclined orbit +/-3.5 degrees
FTA SCPC (NT, Aust only)
FTA SCPC (NT, Aust only)
FTA, CA (NT, Aust only)
Pv, Nagravision, Irdeto; some FTA
CA, \$105 smart card required (p. 28)
CA, \$105 smart card required (p. 28)
CA, \$105 smart card required (p. 28)
CA, \$105 smart card required (p. 28)
Austar I-TV tests
CA, subscription available Australia
FTA, Sydney -30 minutes time zone
FTA, purpose here unknown
FTA
NDS CA, subscription available NZ
NDS CA, subscription available NZ
NDS CA, subscription available NZ
PowVu, FTA, news feeds
PowVu, FTA, news feeds
PowVu, FTA, ABC Melbourne feeds
TPG /Eurodec CA, occ. FTA
Irdeto CA, some FTA tests
CA, subscriptions avail Australia
PowVu CA & FTA; subscription avail
PowVu CA; ch 11 DCP-CCP bootload
PowVu/CA (some audio FTA)
PowVu CA & FTA (EWTN/Bberg)
FTA at this time
occ. feeds
PowVu, FTA at this time
CA; #7,8 FTA feeds
PowVu CA, WIN, ABC NT
PowVu CA, WA only - D9234
PowVu CA; some FTA
Pv, CA/FTA (Fox News USA, sports)
PowVu (FTA) occ feeds
PowVu (FTA) occ. feeds
Mediasat links, PowVu, usually FTA
PowVu(FTA) occ. feeds
(PowVu) FTA, occ. feeds
PowVu (FTA) occ feeds
FTA, testing CA, "threatening"
FTA SCPC feeds (occasional use)
PowVu FTA; # pgm chs varies
FTA SCPC/MCPC, news and sports
Sat, Sun 0930 UTC typ.
reverse link HK/Atlanta, feeds, FTA
FTA SCPC VPID 33, APID 36
FTA (occ. sport feeds)
FTA-typ. NTSC-occ. sport, shuttle
(PowVu) CA+FTA; UEC642 now ok
(PowVu) occ. feeds
PowVu CA
currently FTA, lowlevel, Mid East fds
PowVu CA
Testing new pay-TV service, east beam
Testing new pay TV service, east beam
Mediaguard CA, one FTA

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(I701/180E)	TVNZ	4195/955RHC	1	3/4	5(.632)
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)
	TVNZ	4178/972RHC	1	3/4	5(.632)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)
	RFO-Canal+	4095/1055L	5TV, 5+ radio	3/4	27(.500)
	TVNZ feeds	4044/1106R	1	3/4	5(.632)
	NZ Prime TV	4024/1126L	1	2/3	6(.876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)
	RFO Polycast	3858/1292L	1	3/4	4(.566)
	TVNZ	3846/1304R	1	3/4	5(.632)
	10 Australia	3765/1385R	6	7/8	29(.900)

Receivers and Errata
DMV/NTL early version, occ feds, typ ca
DMV/NTL early version, occ feds, typ ca
DMV/NTL early version, occ feds, typ ca
DMV/NTL early version, occ feds, typ ca
eastern beam to French Polynesia
SCPC, mixed CA and FTA feeds
PowVu CA; Auckland net feeds
CA, Leitch encoded
FTA SCPC; East Hemi Beam-Tahiti
SCPC, mixed CA & FTA, feeds
PowVu CA & FTA; #3 TBN

BOUQUETS - FTA vs. CA: FTA (free to air) services appear as SCPC (single channel per carrier) and within MCPC (multiple channels per carrier). FTA services here are shown **bold face**, when FTA is occasional or only for a portion of MCPC bouquets, **bold face** appears in right hand column. PowVu stands for Scientific Atlanta PowerVu which is accessible even when FTA only when the IRD has been software-designed to process SA's unique version of MPEG-2. SA IRDs, such as D9223, can be equipped with MPEG-2 standard or may only be capable of receiving SA's version of MPEG-2, even for FTAs services. SA offers an over-the-air software update for existing non-MPEG-2 versions of the receiver (see bottom of this page). Not all receivers automatically receive MPEG-2 transmissions which have variations of the MPEG-2 software "standard." In Mediasat's Optus B3 service, for example, Thasi5 is difficult to load for some IRDs unless you enter the PID numbers for the service. PID numbers are discussed in our web site (<http://www.satfacts.kwikcopy.co.nz>). Not all IRDs can deal with PID entry - virtually all 1999 and 2000-new models will do this. In tables, "# Programme Channels" indicates the total number of video + accompanying audio the IRD should load if you load the bouquet. Most IRDs ask you if you wish to load "FTA Only?" or "All including CA." Typically, load "all" even if you cannot routinely access CA services.

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

ADI MediaMate. FTA, NTSC+PAL outputs. (Pacific Digital Sys. Pty Ltd, tel 61-2-8765-0270)
AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM Pty Ltd, 61-2-9949-7417.
Benjamin DB6600-CA. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Grundig DTR1100. Mfg by Panasat (SA), very similar to Panasat 630; out of production, Irdeto capable. See Av-COMM above.
Humax F1-CI. Primarily sold for TRT (Australia), does (limited) PowerVu (not Optus Aurora approved).
Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)
Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8906.
Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.
MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. Int. 61-2-9618-5777
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. Tricky to use.
Nokia 9200. When equipped with proper CAM, does Aurora, pay-TV services provided software has been "modified" with Dr Overflow or similar program (www.BAKKERELECTRONICS.COM- Note: This site shut-down by Mindport early November - may not be functioning!). Reported factory 12 mo. warranty. Peter Older, tel 61-3-5133-7911, mobile 61-0418-386287
Nokia 9500/9600. Numerous versions for different world parts; not distributed in Pacific but assistance from Av-Comm Pty Ltd.
Nokia 9800. Latest single chip version, with CI and Irdeto capable. No software for Pacific, Asia; not recommended.
Pace DVS211. NDS CA (no FTA) for Star Asia, previously used for Indovision. (Solution 42, 61-2-9820-5962)
Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818)
Pace DVR500. Original DGT400 modified for NBC (PAS-2) affiliate use, with CAM equivalent to DGT400 but more reliable.
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.
Pacific Satellite DSR2000. Advises no longer current model (see. p. 2, here); Clone of Mediastar D7 (see above)
Panasat 520/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370.
Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but no longer available in Australia.
Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH(below) - 222 out of production
Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review Nov. 1998. SATECH 61-3-9553-3399.
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
PowerCom. FTA, PowVu, NTSC, excellent sensitivity. NetSat 61-2-9687-9903.
PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). Scientific Atlanta 61-2-9452-3388.
Praxis/DigiMaster 9600 MKII/9800AD. FTA, PowVu+analogue, withdrawn from sale in Pacific (was Skyvision-below)
Praxis 9800 ADP. FTA SCPC/MCPC, PowVu, analogue, positioner. SF review Dec '98; withdrawn from Pacific sale (below).
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-2-6292-5850, Telsat 64-6-356-3749)
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - review this issue (Skyvision - see above).
Skandia SK888 (aka DigiSkan-SMS). FTA MCPC, Irdeto CAM+software upgrade. Out of production; Skandia 61-3-9819-2466
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. SATECH 61-3-9553-3399.
Sky 21/SJ 3000ci. Claims "clone" Hyundai HSS800ci; if so, poor copy. Runs very hot, reportedly burns up smart cards
UEC642. Designed for Aurora (Irdeto), approved by Optus; limited other uses. Nationwide 61-7-3252-2947.
UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - above); power supply problems.
UEC770. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, not sold to consumers.
Xanadu. DVB compliant special receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9949-7417)
Yuri HSS-100C. FTA, clone of Hyundai, V2.27 software custom to Australia (Nationwide-above).

Accessories:

Aurora smart cards. New v1.6 now available, 1.2 no longer available for RABS. Price now A\$105, Sciteq 61-8-9306-3738.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 7/8; pgm ch 11 and follow instructions (do not leave early!)

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

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BIRD/Location	RF/IF & Polarity	Service	Errata
<u>I703/57E</u>	3808/1342R	Udaya TV	
	4052/1098R	WorldNet	VOA subers.
	4178/972L	MTA Inter.	
<u>I604/602/60E</u>	4166/984	various feeds	
<u>I704/66E</u>	3765/1385R	tests	
	4015/1135L	Mongolia	(SECAM)
<u>PAS4/68.5E</u>	3743/1407V	RTPi	(+ radio subcr)
	3864/1286V	BBC World	
	3907/1243H	Sony TV	Hindi
	4034/1116V	Doordan	(various)
	4087/1063H	CNNI	
	4110/1040H	TNT/Cartoon	
	4113/1037V	Series Ch.	
	4182/968H	MTV	
<u>PAS7/68.5E</u>	3470/1680V	test signal	
<u>LM1/75E</u>	3980/1170V	various	(Madagascar)
<u>Thaicom3/78E</u>	3871/1279H	TVT	
	3760/1390V	Army TV	
	3685/1465V	MRTV	
	3685/1465H	VTV	6.6, 7.02
	3616/1534V	ATN	
	3576/1574V	ATN Bangalr	Bengali
	3554/1596V	test card	
	3536/1614V	Punjabi TV	(occ service)
	3507/1643V	RAJ-TV	
	3489/1661H	Vasta Music	occ tests
	3465/1685V	RAJ-TV	
<u>Expres 6A/80E</u>	3675/1475R	RTR	(global beam)
<u>InSat 2E/83E</u>	3481/1669V	Sun TV	
	3562/1588V	Vijay/Asianet	aud. 5.5/6.6
	3599/1551V	JayaTV	
	3810/1340V	DD1-Tamil	"
	3850/1300V	DD1-National	"
	3930/1220V	DD2 Metro	"
	3970/1180V	Teluga 1	"
	3998/1152V	sport feeds	"
	4035/1115V	Sun TV	"
	4060/1090V	Surya/Sun TV	"
	4093/1057V	DD7	"
<u>ChnStr1/87.5E</u>	3880/1270H	occ feeds/ card	P4 NSW, Ntsc
<u>ST1/88E</u>	3550/1600V	test card	
	3582/1568V	Nila TV	(vintage TV)
<u>CIS S6/90E</u>	3675/1475R	RTR1	P3 NSW
	3875/1275R	Orbita 1	
	3916/1234R	RTR II	
	3935/1215R	Orbita II	
<u>MeSat-1/91.5E</u>	3710/1440H	VTV1,2, 4	
	3880/1270H	RTM-1	
<u>Chinasat22/98</u>	3900/1250H	tests	+ 3940/1210
<u>InSat 2B/93.5E</u>	4165/985H	India Metro	NSW on 3.7m
	4080/1070V	DD7 (Tamil)	
	4070/1080H	DD9	
	3970/1180V	DD9 (Kan.)	
	3882/1268V	DD1	
	3840/1310V	DD?	
	3762/1388V	DD4	
<u>AsSat2/100.5E</u>	3660/1490V	feeds, tests	
	3680/1470H	feeds	
	3860/1290V	feeds	

BIRD/Location	RF/IF & Polarity	Service	Errata
(As2/100.5E)	3885/1265H	WorldNet	VOA subers
	3960/1190H	CCTV4	
	3980/1170V	RTPi	+5 radio svcs
<u>CIS S21/103E</u>	3675/1475R	RTR	
	3875/1275R	Vrk Apt	
<u>AsSat3s/105.5</u>	3680/1470H	CETV	
(temp FTA)	3800/1350H	Star Sport	NTSC
(temp FTA)	3840/1310H	Channel [V]	NTSC
	3900/1250V	AlphaTV Punja	
(temp FTA)	3920/1230H	Phoenix Ch	NTSC
	3940/1210V	Zee India	
	3980/1170V	Zee TV	
	4020/1130V	Sahara TV	6.2, 6.8
	4100/1050V	PTV2/World	
<u>T'kom1/108E</u>	4000/1150H	tests	
<u>PalapC2/113E</u>	4160/990H	(France) TV5	
	4140/1010V	Brunei + feeds	
	4120/1030H	MTV Asia	
	4080/1070H	Herbalife	+ tests
	4040/1110H	CNBC	
	3970/1180V	CNNI	
	3880/1270H	Aust ATN7	
	3840/1310H	TVRI	tests
	3742/1408V	RCTI	English subcr
<u>AsSat1/122E</u>	3677/1473V	Test card	& 3933/1217H
<u>ChinS 6/125E</u>	4085/1065V	feeds	seldom seen
<u>JcSat3/128E</u>	3768/1382V	feeds	occ., P5 NZ
	4085/1065V	test card	NTSC. 6.8 aud.
<u>Ap1A/134E</u>	4160/1050V	CETV	
	3980/1170V	CETV1	
	3900/1250V	CETV2	
<u>Ap1A/138E</u>	4160/990H	CCTV7	
<u>S7/140E</u>	3675/1475R	ORT Moscow	+/-4d. inclined
	3875/1275R	feeds, tests	
<u>LMAP2/142.5</u>	3675/1475L	occ. tests	+/- 3 deg inc.
<u>Gorizont 33</u>	3675/1475R	tests	+/- 1.2 deg inc
	3875/1275R	RTR	pgme audio 7.5
<u>Ag2/146E</u>	3787/1363H	GMA	P1/2 s. eqtr
<u>Me2/148E</u>	4080/1070H	test card	occ. use
<u>PAS8/166.5E</u>	3880/1270V	test card, feeds	not full time
	3865/1285H	Napa test card	not fulltime
<u>PAS2/169E</u>	3940/1240V	Napa test card	
<u>1802/174E</u>	4166/984R	Feeds	
	4177/973R	Feeds	
<u>I702/177E</u>	4166/984R	Feeds	inc. KBS Korea
	4187/963R	Occ. feeds	
<u>I701/180E</u>	3810/1340R	Occ. feeds	
	3841/1309L	RFO	East Beam
	3845/1305R	Occ. feeds	inc. from USA
	3930/1220R	USA net feeds	FTA & encrypt
	3975/1175R	Occ. feeds	

"Unusual" CA formats

<u>PAS4/68.5E</u>	3785/1365V	Discovery India	BMAC
	3860/1290H	ESPN India	BMAC
<u>Ap2/76E</u>	3960/1190H	HBO Asia	GI Digicipher2
<u>C2/113E</u>	3930/1220H	Filip. Peo. Net	GI 1.5 MPEG
<u>Ap1/138E</u>	4100/1050V	ESPN	BMAC
<u>PAS2/169E</u>	4028/1122H	ABS/CBN	GI 1.5 MPEG

QUICK CHECKS for LNB/LNBfs

As noted on page 22, the LNB or LNBf is subject to failure more often than perhaps any other "part" of a DTH/TVRO system. LNB(f) units are amazingly high tech for a very reasonable price and no other segment of the DTH/TVRO system has improved so significantly nor so rapidly from the early days of home satellite dish systems.

1) **Physical damage:** Inside of the weather sealed case are micro miniature parts created especially to survive in a harsh environment. Dropping an LNB so that it lands with a "thud" is a no-no; the circuit board inside is not capable of sustaining heavy stresses and when it hits the ground or a concrete floor, the board flexes often causing parts previously secured in place with solder to loosen so they no longer make proper connection. Moisture that gets into the LNB(f) is a secondary threat. The LNB would work best if it was in a total vacuum but that is not practical. Moisture can ingress (leak) into the LNB through improperly sealed F connector(s), through the feed "mouth" where the small (probe) antenna is located, or around cover seals. Even a very small amount of moisture inside will reduce performance or shut the LNB down.

2) **Physical impairments:** Any type of foreign material that manages to get inside the wave guide opening to the typically gold coloured (probe antenna) feed is a disaster. Dirt, dust blown in during a storm, and spiders are a direct threat. Even when the feed portion is covered with a (typically plastic) cover to keep unwanted objects out of the probe antenna chamber is no guarantee that a spider cannot / will not build a 'nest' on top of the plastic cover. Virtually any spider or wasp nest built on top of the cover, or inside of the probe antenna chamber, will stop all reception - especially at Ku. The bug has a moisture content (like human bodies, as much as 90% is "wet") and this moisture, even a very thin layer, will act as a barrier to the inward flow of weak satellite microwave signals. The very first thing to do if a system quits is to visually inspect the area of the feed, including the chamber where the LNB probe antenna rests. If you find something there, turn off the LNB power and use a non-metallic instrument (such as a cotton swab) to gently poke and scrape the foreign matter away from the probe antenna and out of the wave guide chamber. In an uncovered feed opening installation, which invites spiders and wasps to crawl inside and create a home, it might be advisable to take a piece of thin, clear plastic to fabricate a "cover" for the feed/wave guide opening. However - be warned. Not all plastic materials are transparent to microwave energy and some before and after covering testing should be done to determine which material available to you is the least degrading to reception.

3) **Physical protection:** With most LNB(f)s, the L-band output "F" connector sits on the top end of the LNB - the most elevated portion. This means it is hit by rain which, if the connector is not properly weather sealed, leaks moisture in and around the LNB's female F connector and thence downward (gravity flow) into the innards of the LNB. Once the male "F" connector has been installed for the run to the receiver, this connector MUST be sealed to prevent moisture from leaking in around the connector. Standard electrical tape will NOT seal the fitting; it becomes brittle with time, and is not intended for moist area applications in the first place. An amalgamating tape (available at most hardware stores) or something called "Coax-Seal" is designed to mould around the fitting and when applied with stiff finger pressure it will wrap itself into the crevices and grooves of the fittings. Various self-hardening sealants are also available but remember - someday you may need to remove the L-band coax fitting to replace the LNB and if you make it tough to get the cable off later, you may regret your technique!

4) **A handy way to check** whether an LNB is working is to simply power it up, connected to a signal level meter or spectrum analyser, and from 30 cm to 1m distance away point the probe end directly at an operating fluorescent light. The light generates microwave energy and you should be able to "measure" an increase in noise (on the meter or spec an) when the light is on and you are "pointed at" the light source. Some also report test success by using a microwave oven as a signal source - it may even be possible (although the oven is generally in S-band) to "locate" RF leaks from the oven as you move the LNB mouth around the door seam lines of the oven.

5) **Paper reference:** And as suggested on page 22 here, every LNB(f) installed should be recorded for current drain at the time of installation. Many instruments can measure the current drain of an LNB and the amount of current used when the LNB is new will be a handy reference for you if the LNB develops suspected faults at a later date.

TUNING IN THE INDUSTRY'S TV PROGRAMME

SPACE Pacific, the Asia-Pacific industry membership trade association, has produced (and continues to produce) a series of one hour television programmes. These "SPACE Pacific Report" shows, hosted by Bob Cooper, cover a range of topics of interest to installers and enthusiasts. Show numbers and content are as follows: #9901- Spectrum Analyser techniques, #9902- Feeds and LNBs, #9903- Dish antenna designs and problems, #9904- The dish marketplace, and, "tiny parts," #9905- Dr Overflow (Nokia) software, #9906- How the uplink works (tour of RCA's Vernon Valley site), #9907- Uplink Two, including uplink transmitters, #9908- Digital Basics (Mark Long), #9909- Real World Installs (Mark Long), #9910 - Installing a polar mount dish and signal level test equipment, #9911 - "SPIN" (the hidden side of satellite). #0012 - First Report from SPRSCS 2000 (recorded in Melbourne June 28, 29 - "Ideal IRDs," more), #0013 - Second Report from SPRSCS 2000 (recorded in Melbourne June 29, 30 - "ABA Blackspot session"). "Report" is broadcast by Mediasat on Optus B3, 12.336Vt, ad-hoc channel 3(*) (Sr 30.000, FEC 2/3) with the following coming-weeks schedule: **Sunday July 16** - Show 9910 0200-0300 UTC (1400 NZT, 1200 AET, 1000 Western Australia; repeats 0700 UTC/7PM NZT, 5PM Sydney, 3PM Perth). **Sunday July 23** - Show 0012, same times as July 16; **Sunday July 30** - Show 0013, same times as July 16; **Sunday August 6** - Show 9911, same times as July 16; **Sunday August 13** - Show 0012, same times as July 16; **Sunday August 20** - Show 0013, same times as July 16. (* - Mediasat may pre-empt showings, check other bouquet channels - such as 5 - if not on 3.) SPACE Pacific Report has also been broadcast by Westlink, Aurora service on Optus B3, vertical (12.595, Sr 30.000, FEC 3/4 - requires Optus Aurora card but is otherwise FTA). Westlink will again carry SPACE Pacific Report when new shows currently in planning are produced and available; details here in August-September (will start after September 1). In the event of schedule changes (*), SPACE Pacific attempts to pre-announce which show(s) will appear through the SatFACTS Web site prior to each weekend (<http://www.satfacts.kwikkopy.co.nz>). SPRSCS 2000 sessions taping scheduled for play on Mediasat and Westlink will be announced on our web site and posted in August - September issues of SatFACTS.

Sponsorship of SPACE Pacific Report. In general answer to queries - AvComm, Satech and Sciteq have contributed corporate funding to make possible the production of the first set of nine SPACE Pacific Report programmes. Additional funding from Ikusi Australia NZ Pty Ltd. has been received for final production of show 9910. Funds derived from sale of VHS tape copies are also an important element in meeting the (A)\$1,300 overhead of each show. Mediasat and Westlink donate the time to broadcast the programmes, and both are to be commended for this support. Sponsorship of shows is available to commercial groups; contact Bob Cooper (e-mail Skyking@clear.net.nz; tel 64-9-406-0651).

WITH THE OBSERVERS

AT PRESS DEADLINE

A new MCPC service has popped up on Thaicom 3 at 78.5E, 3855/1565Vt, Sr 26.666, 3/4. The services all seem directed at India (#1-Suprabhat, #2-Bloomberg TV Asia, #3-Sanskar, #4-Prabhat TV, #5-Raj Plus) - will stay FTA is unknown. 1701 at 180E: Check RFO on 4095L and tell us what you see.

ApStar 2/76E: "All analogue now gone" reports David Leach (NSW). "AXN 3920/1230Hz Sr 28.340, 7/8 with ch 5 FTA, rest CA. Also 3820/1330Vt ch 1 Indian programming, 24 hours Sr 3.570, 3/4." Strong test carrier reported 3850/1300Vt, no identification. NewsAsia testing on 4160Hz MPEG-2 briefly during mid-June, plans return September with regular satellite service.

AsiaSat 2/100.5E: APTN 3799/1351Hz is now encrypted; Reuters 3909/1241Hz using MPEG 4:2:2, same effect as encryption for stock MPEG-2 IRDs. News feeds on 4086/1064Vt, Sr 5.632, 3/4 (B. Richards using Nokia 9500 with dvbedit ver 5b6 software)

AsiaSat 3S/105.5E: "Audio from Arirang TV on 3755/1395 is all broken up on Xanadu IRD, OK on Praxis 9600" (D. Leach, NSW). "Audio problems with Arirang noted on two different IRD brands" (L. Mathews, Auckland). "Zee TV bouquet on 3700/1450Vt went (Mediaguard) CA for all but AsiaNet Kaveri ch. 8" (Stewart, Qld). Sun TV testing 4095/1055Hz, Sr 5.554, 3/4. Zee Cinema CA movies, 4060/1090Vt, has shut down analogue. Some interesting occ feeds on 3820/1330Vt, Sr 27.500, 3/4.

ChinaStar /87.5E: "News feeds to CCTV, CETV from Fiji, Solomon Islands noted 3880/1270Hz analogue" (D. Leach, NSW).

Express 6/103.5E: Gorizont 25 no longer at this location, Express 6 is - inclination now about half of what it previously was but signals not as strong into Australia.

Express 6A/80E: "At this low look angle, 3675 is almost impossible with Thaicom's MRTV on 3685 and only 1.5 degrees away" (D. Leach, NSW).

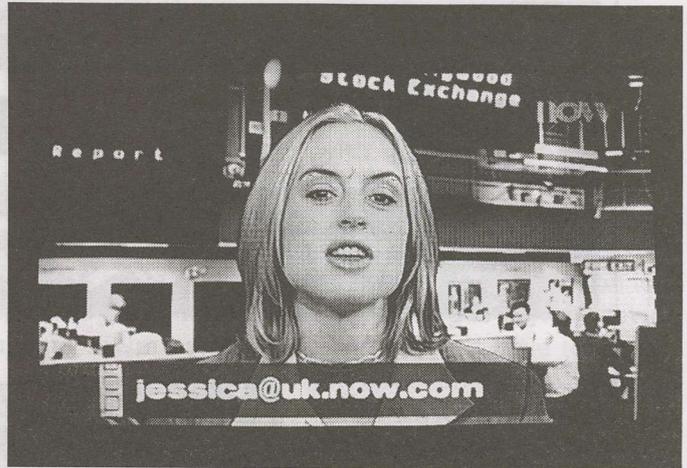
Gorizont 33/145E: RTR on 3875/1275RHC, audio 7.5. "Disappointing signal levels" (D. Pemberton, Australia).

InSat 2E/83E: "Metro DD2 3910/1240Vt Sr 5.000, 3/4 is powerhouse but 3929/1221Vt Sr 5.000, 3/4 is below threshold" (D. Leach, NSW).

Intelsat 701/180E: "NBC feeds to 7 Australia on 3960/1190 RHC, Sr 6.447, 7/8 but CA" (D. Leach, NSW). Tahitian web sites for TNTV (11.070Vt) <http://www.tns.pf> and Telefenua (11.168Vt) <http://www.chez.com/telefenua>.

Intelsat 702/177E: "Fiji news feeds to Korean KBS, along with sport feeds on 4166 and 4187" (D. Leach, NSW).

Intelsat 802/174E: "Fiji news feeds continue here to Australia, Asia on 4166 and 4177 FTA analogue" (D. Leach, NSW).



"NOW TV" began programming June 29 on AsiaSat 3 (3760/1390Hz, Sr 26.000, 7/8 with "dot.com" generation programming that is eclectic mix of computer animation and yuppie.

Optus + 7 Australia have two new programme channels within Australian pay-TV bouquet standing by for special event coverage of Sydney Olympics.



Optus B3/156E: Thai TV5 service in Mediasat 12.336Vt no longer has "PID problems," should work with any IRD; 5 video, 3 audio. Disney Australia gone from 12.376Hz.

PanAmSat PAS2/169E: Feeds on 3912/1238Vt, Sr 6.620, 2/3; also 3934/1216Vt, Sr 10.850, 3/4 (B. Richards) "California bouquet 3901/1249Hz which worked for several

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 August 15th issue: August 5 by mail (use form appearing page 34), or 5PM NZT August 6th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

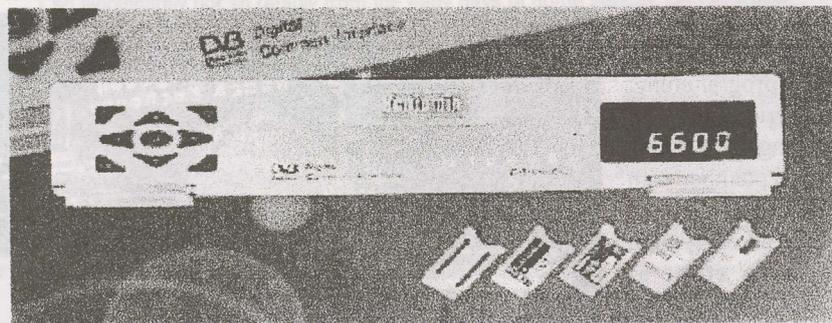


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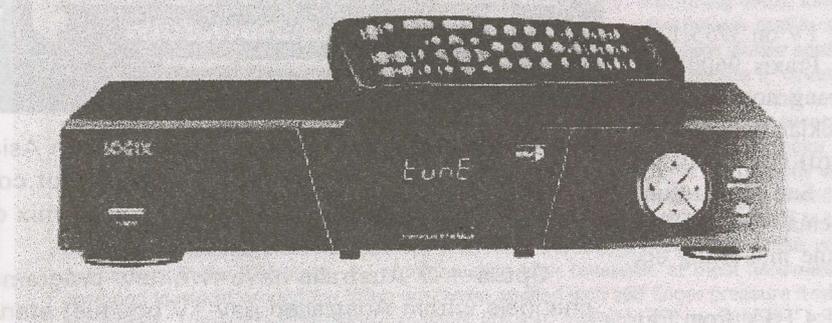
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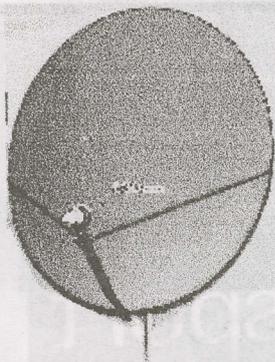
Benjamin Receivers:

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- Digital + Analogue DB7000+
- Digital + CI DB6600+
- Digital + Ana + Posnr DB8000+

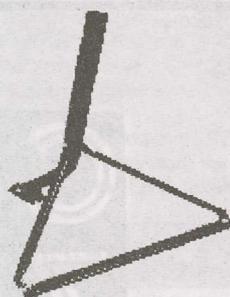


Logix Receivers:

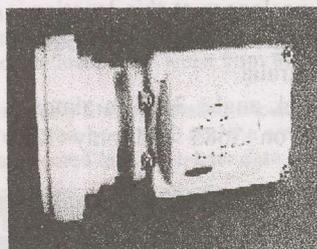
- Digital LGI2000
- Digital + Analogue LGI 2000DA
- Digital + CI LGI2000CI
- Digital + Ana + Posnr LGI 2000DAF
- Digital + Ana + Posnr + CI LGI2000CIAF



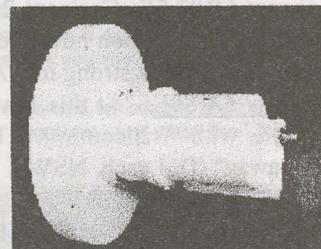
45 ~ 180cm Ku dishes



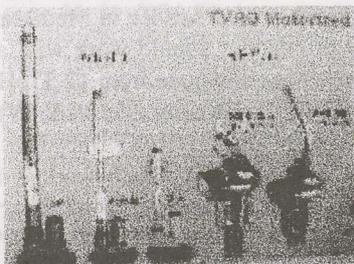
Offset dish mounts



Autosat Ku LNB



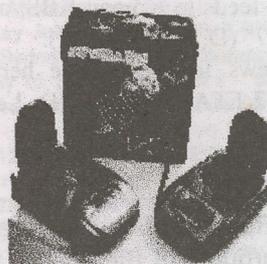
Autosat C LNB - dual



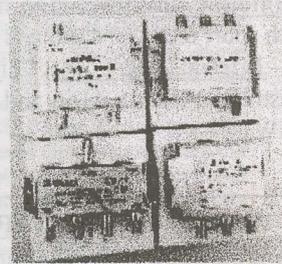
12"/18"/24"/36" heavy duty /regular actuator



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What is happening to the Russian TV?

Nobody is certain how many Russian émigrés living in Victoria or Auckland watch Russian satellite TV but the number is easily in the thousands. For some, 100, 200, even 400 unit flats have a common antenna (SMATV) for direct Russian reception. For most A or N\$2,000 buys them a suitable dish, receiver, and sometimes a motorised actuator to track the inclined orbit satellite. But the popular 80E Russian service has moved, the 96.5E and 103.5E birds have become difficult and the June launch of Gorizont 33 at 145E has so far offered a poor excuse for South Pacific service. What is a Russian to do? The answer now, as it has been increasingly so for several months, is digital reception of the THT/NTV package from LMI AP1 at 130E.

Forget the analogue Russian services. Forget RTR on 3875 from 140E or on 3675 from 103E or 96.5E, forget ORT on 3675 from 140E. Install a modest sized dish (2.4m or smaller, even in NZ), go to 3675/1475LHC, plan to do a modest amount of tracking (inclination is now past 3.5 degrees and growing) although this is one of the most powerful satellites in the sky. Any quality MPEG-2 IRD will handle the 3675/1475 left hand circular (LHC) service (Sr 12.000, FEC 3/4). Programme S1 is NTV/HTB (Moscow + 8 hours) with VPID of 2306, APID 2307. S2 is THT/TNT (Moscow + 7 hours) with VPID 2318 and APID 2819. There are two bonus radio services - "Echo of Moscow" (APID 2308) and "Sport FM" (APID 2821) and NTV, TNT and Echo are web site supported as well. That means programming schedules, news of special telecasts (NTV/HTB is <http://www.ntv.ru>, telephone is +7-95 290 7313 and e-mail is ntv@ntv.ru; TNT/THT is <http://www.tht.ru>, telephone is +7-95 217 9464 while e-mail is tht@tht.ru). The inclination is a bit of a technical challenge - for New Zealanders the figure "8" lays on its side and tracking is part up/down and part east-west. For most of Australia, it is more up and down than east-west. You don't have to really move the dish if you are clever and work out a way of moving the feed in the right directions (leave the dish stationary - the signal is strong). Alternately, install a pair of LNBS with separate feeds (or LNBFs) and switch between the two selecting the one with optimum signal. Solving this is why *you* are paid big bucks!

months on UEC 642 has stopped again, obviously data stream change the UEC won't deal with" (AI, Qld). CMT is to move to PAS-8 California bouquet around July 17, shutting down on PAS-2. Feeds on 3854/1295Hz, Sr 6.620, 2/3 (B. Richards). "Fox feeds to Australia 3989 have moved to 3992/1158Vt, Sr 26.470, 7/8 - chs 3 (Fox Sports), 5 (Fox news) and 7 (feeds) remain FTA (B. Richards). 7th Day feeding 3855/1295Hz, Sr 6.619, 2/3. (B. Richards)

PanAmSat PAS8/166.5E: Feeds on 3854/1296Hz, Sr 6.110, 3/4 (B. Richards). Filipino ABS-CBN CA bouquet 3800/1350Vt, Sr 26.920, 3/4 has movies, news, sports. "TVBJ Chinese service now on 12.686Hz, Sr 28.124, 3/4, initially 11 chs" (B. Richards).

Stationar 6/96.5E: "After move from 90E, RTR is P3 on 3675/1475RHC" (D. Leach, NSW).

Thaicom 3/78.5E: "MRTV P5 NTSC analogue 3685/1465 Hz; RAJ-TV P2.5 PAL analogue 3507/1643 Vt, ATN P2 PAL analogue 3616Vt; 3600/1550Hz, Sr 26.662, 3/4 full bouquet has been FTA but Greek Skai-TV has now left; also 3550/1600Hz, Sr 13.330, 3/4 TRT and test card and 3666/1484Hz, Sr 4.442, 2/3 FTA NTSC (D. Leach, NSW with 3.7m). Latest Mega Cosmos numbers 3640/1510Hz, Sr 28.056, 2/3. "TRT 2 ch video, 9 audio 3554/1596Vt, Sr 13.333, 3/4" (D. Ditcham, WA).

Errata: GE7 is to test at 146W, well within range of many readers. Likewise, Ku Echostar 6 will test at 148W. TDRS H testing 150W, will be 171W. Question: Has anyone tried to modify Sr or FEC with Panasonic IRD used for Canal+ service? Advise Steffen Holzt antenne-cal@canl.nc.

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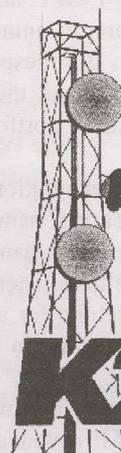
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Sign-off

What is a name worth?

If you have any doubt that DVB-T (digital video broadcasting using terrestrial transmitters) is likely to change the essence of our business, read this.

Satellite and terrestrial TV aerial installer John Hoskins, a SPACE supporter from the founding days, has operated as "The Antenna Man" for more than a decade out of New Lambton, NSW. Early this year he was contacted by a prestigious legal firm with a query - "will you sell us your business name?"

"The Antenna Man" had been registered by Hoskins when he began business; it turned out upon search two others in Australia also called themselves "The Antenna Man" but Hoskins, by being the earliest to do so, had seniority.

During SPRSCS 2000 rumours swept the gathering that Comet was in the process of acquiring additional firms. SRS was mentioned frequently, then "Mr Antenna." In fact, Comet has been positioning itself to be ready for the onslaught of business expected when Australia's terrestrial analogue telecasters crank up their digital terrestrial services on or by January 1, 2001. By acquiring "Mr Antenna" and pre-empting similar names such as "The Antenna Man," Comet is able to create a "brand name" for both terrestrial and satellite antenna work which will in turn make their mid 1999 public stock float potentially more valuable.

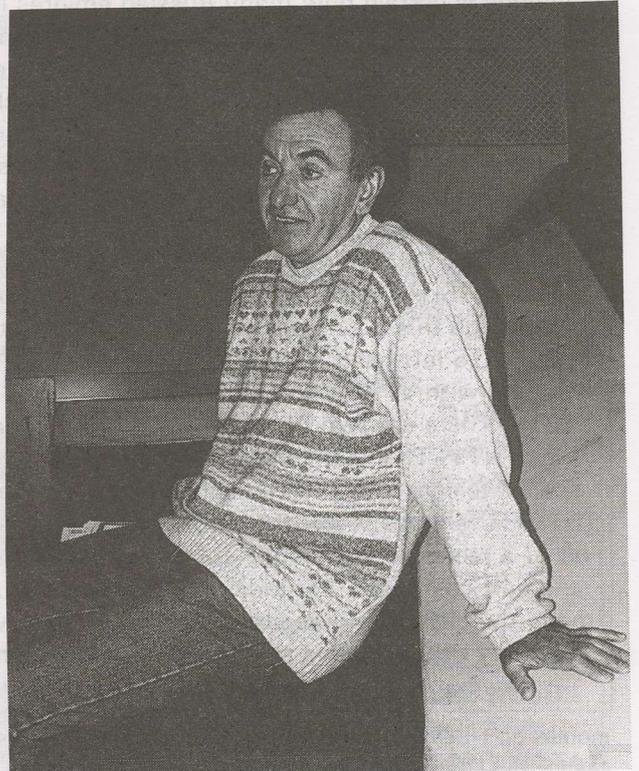
Hoskins ended up selling Comet the "rights" to his firm's name ("*not enough to retire, but it did put a healthy dent into my existing home mortgage*") with the tacit approval he could continue to use the name himself as a one man firm. What he cannot do is grow into a firm with a name similar to "Mr Antenna" and threaten Comet's new brand name recognition.

Comet as a name is about as memorable as Saturn (cable) in the Wellington area of New Zealand. Nice word, absolutely *nothing* to connect it to what the firm does. Memorable only if people have a reason to remember it.

As long as Comet has been dealing almost exclusively with corporate clients (Foxtel, Austar, TARBS, TVB et al), public recognition of their name has been pretty unimportant. Excepting, of course, on the stock market. But these are - as they say - early days for Kingsley Munday and the Comet promoters. The real riches for their personal portfolios are probably 3 to 5 years into the future.

Comet as a name to attract immediate recognition by the average TV viewing consumer is a nothing name. "Mr. Antenna", or "The Antenna Man" on the other hand is not only memorable but the names actually tell the listener what the firm does. It is unlikely someone searching for a firm to install their new digital TV aerial would start in the "C" portion of the white pages. Or upon seeing "Comet" listed in the yellow pages have any reason to select the firm over other more work-function-related names. Like "Mr Antenna."

Comet's name recognition is practically zero outside of our small industry. They had to change that if they wanted corporate growth. If 99% of their business today is with



John Hoskins reflects on what his company name was worth during SPRSCS 2000 in Melbourne.

Foxtel, Austar and one or two other satellite firms, a significant portion they expect after digital terrestrial launches will be with individual consumers who call them for a "digital aerial system." For the first time, naming and name recognition will mean everything.

Buying Mr Antenna immediately inflates the Comet Melbourne work force by a reported 40+ installers. This comes at a time when there is so much satellite install work that many consumers are being quoted dates 2 or 3 weeks into the future for their own Foxtel (et al) installations. These guys probably already own "F crimping tools" so perhaps for Comet that makes them qualified to do satellite work in addition to terrestrial. And chances are they already know not to appear at the customer's door with their pants unzipped.

A couple of years back one of the get rich schemes widely promoted the cheeky approach to finding recognised corporate names and registering them for yourself - before the corporation itself did. Names like coke.com were methodically web-searched and grabbed by enterprising folks hoping to cash in when the real Coca-Cola corporation woke up to find somebody had grabbed their web site name. A few people - damn few - probably became overnight millionaires in this land/name rush. Most spent more registering obscure names than they realised in reselling of the names.

As obvious as Mr Antenna (.com) or The Antenna Man (.com) might be to the management at Comet, chances are they are not out of the name forest yet. Digital begs further innovation. For example, "Mr Digital" and "The Digital Man." Or a marriage of TV and digital. "Mr Digital TV" (digitalTV.com) or "Digital TV Man" (digitalTVman.com) might be consumer friendly. Or how about DigiTV in any of several forms?

Hoskins never expected his business name to be a valuable asset. But times are changing. Someday soon, "Mr Crimping Tool" may even become valuable.

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

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

Your Name _____

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Make/size dish _____ LNB _____ Receiver _____

Your email address _____ if you have one!

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What would YOU like to see changed in IRDs???

One of the most thought provoking sessions during SPRSCS 2000 was a Garry Cratt led hour seeking to identify where MPEG-2 IRD designers/manufacturers "go astray" by bungling their software, or hardware designs. A list of 20+ "suggested changes" resulted and the list will be presented in detail in SatFACTS for August (#72) as well as forwarded in videotaped format from SPRSCS to receiver manufacturers. NOW - it is **your** turn. Suggest to us some changes YOU would like to see in future generation IRDs!

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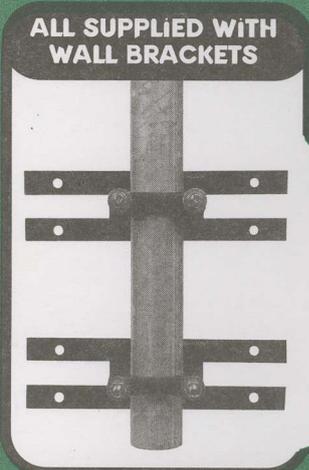
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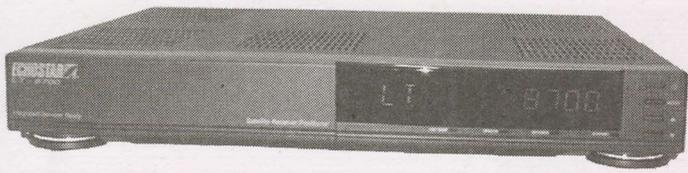


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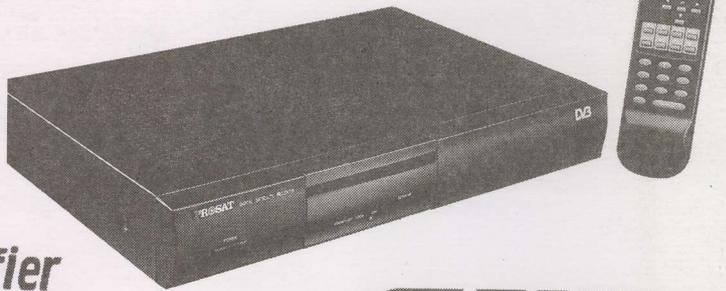
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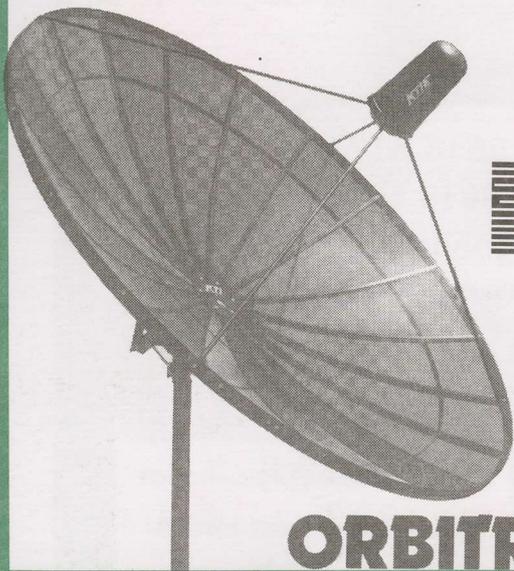
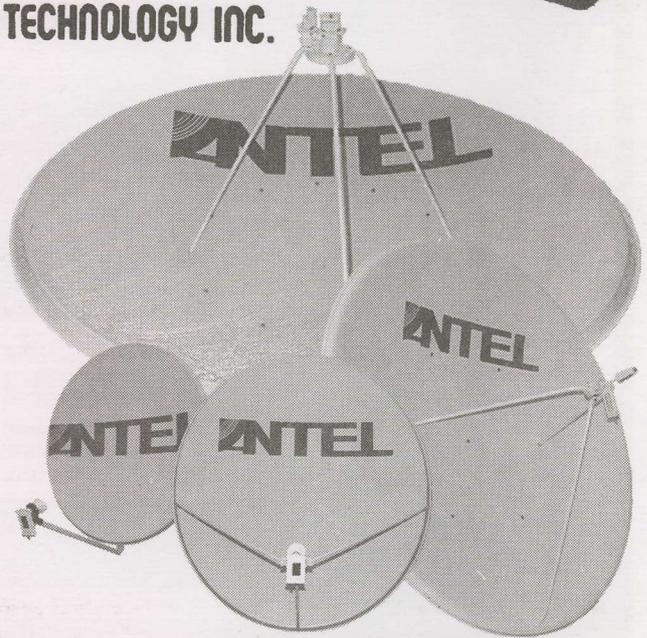


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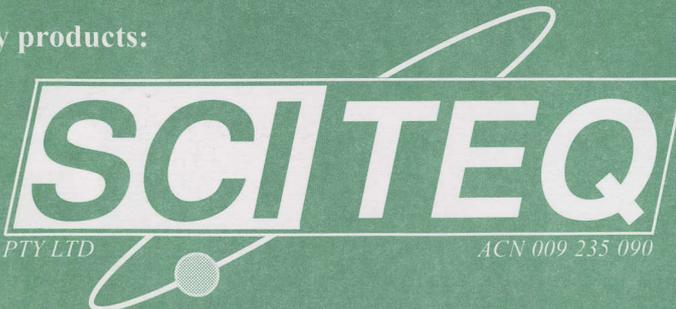


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