Bob Cooper's

April 15 2001

SatFACTS

MONTHLY

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

IN THIS ISSUE

Sharing TVRO reception without wires

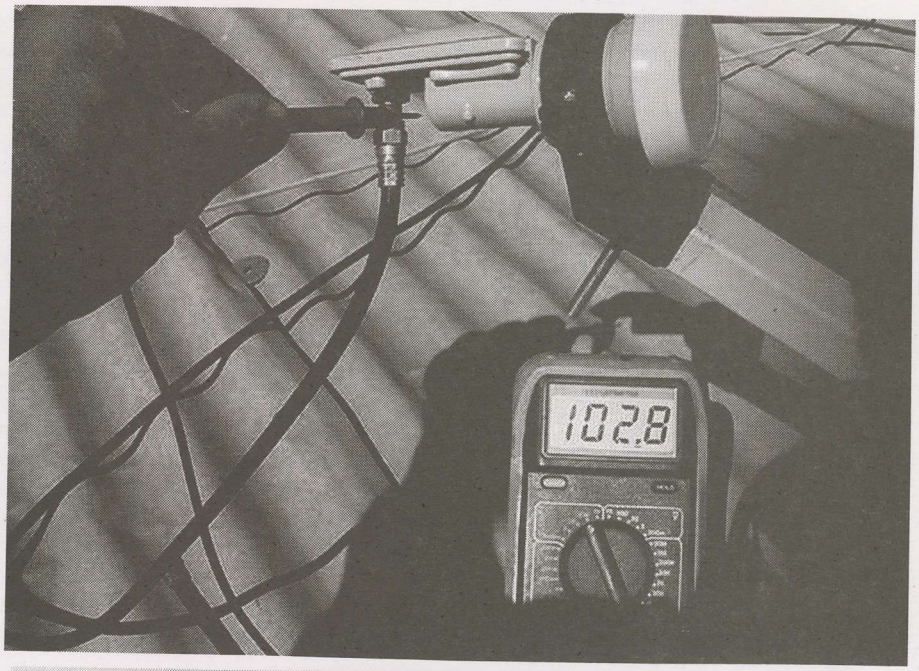
A Shocker! 100 volts AC at the LNBf

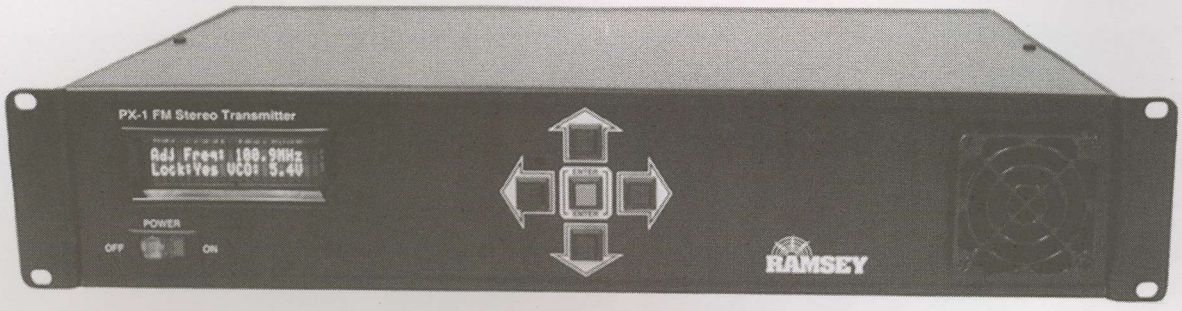
How they did it- Community FM on the air

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

Vol. 7 ◆ No. 80

Price Per Copy:
NZ$10/A$11/US$8

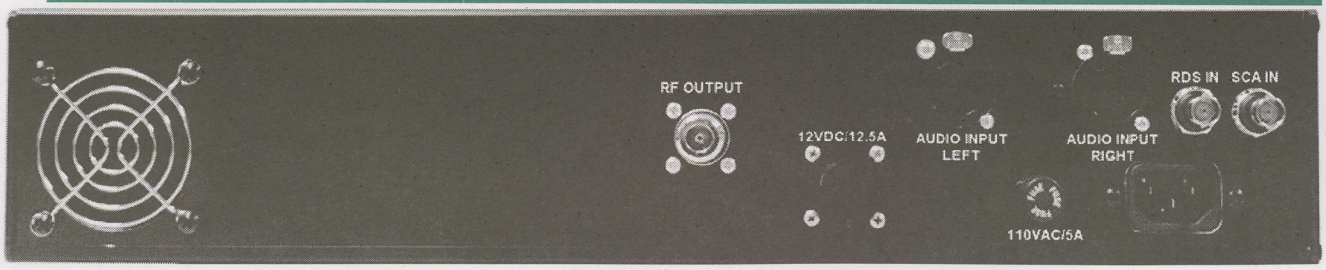




The PX1 Technical Standard - for sound so good you will swear you are in a recording studio!

• **Frequency range**: 87.5 to 108.0 MHz in 100 kHz steps (you dial up your frequency - if circumstances change, just reach up and move your station to a new frequency!) • **Power output**: from -60 dBm to +47 dBm (40 watts maximum output, smoothly adjustable down to a fraction of a watt!) **Broadcast Modes**: Stereo (+/- 75 kHz bandwidth) with 55 dB minimum separation (typically 60-70dB) from 50 hertz to 16 kilohertz audio range with THD (total harmonic distortion) not over 0.3% with processing - or you have switch-option of standard mono with or without SCA (it even has digital inputs for the future!) , and, a "brick wall" 16 kHz steep low pass filter to ensure that even if your CD source somehow has audio stuff above that frequency, it won't get into the system and cause beat problems (19 kHz is "down" 68 dB) • **Operating power source**: 110VAC, 220-250VAC, and 12VDC (requiring 11 amps for full power - a 100amp rated car battery easily runs it for 10 hours or more which means a modest solar panel array would operate PX1 with no commercial power required!) • **Inputs**: Connect the audio output (in stereo or mono) from a satellite receiver through a pair of professional, balanced, XLR audio inputs (yes - we *include* these special plugs with each PX1 so if you are on Kiribati with no Dick Smith store, you're still able to get on the air immediately), or, plug in a CD player, microphone(s) or your own switching audio input source (a mixer - we can source for you until we have our own!) • **Input adjustments**: We've been in the satellite link business forever (well, since 1979) and fully understand that you can have widely varying inputs from different sources. So we built-in 4095 steps of audio input adjustment (you can *really* fine tune this baby!) so even the "weakest" audio input from Granny's cassette player can be amplified to full modulation volume (which, by the way, also has 4095 steps of adjustment) • **Cooling**: High volume CFM fan for those moist, humid climates where you need to get the heat away from the oversized heat sinks quickly to maintain transmitter efficiency - plus, over temperature automatic detection winds back the output power if anything gets "too hot" and is in danger of becoming a problem (we've never been to Kiribati but we can appreciate that an FM transmitter there needs special automatic protection circuits) • **Output stability**: While we expect you to connect the transmitter output to our own line of 50 ohm antennas for maximum coverage, we also know someone will try to broadcast using a 19" clip lead hanging down from the type "N" output connector on the rear panel. So we built in automatic VSWR (standing wave ratio) protection which senses abnormally high reflected power (transmission juice not accepted by the transmitting antenna array and sent backwards to the transmitter) to ensure you never - NEVER - blow up your solid state final amplifier transistors. If the VSWR rises, the output power automatically reduces until you fix whatever is wrong with the antenna system (we field tested the PX1 on a remote island in the Caribbean for years, know what happens if something fails and the manufacturer is thousands of miles away!) • **Clean neighbour policy**: The PX1 has tremendous bandpass filtering built in - hey, we had to beat the very stringent USA specs demanded by the FCC/Federal Communications Commission, to get this transmitter approved for use there - we are better than 90 dB below the selected frequency output at full output on 2X (second harmonic) which means you won't get into anyone's TV reception or screw up the local airport tower when operating this super-clean transmitter! • **More clean neighbour policy**: So the neighbourhood meenie kid comes into the station with his latest rap-CD and wants to "crank it up" to full volume. We've been there and built in "over modulation protection" to make sure that no matter how loud his rap or how much he cranks it up, the only thing that will fault is his own ear drums. • **Comfort zone**: Everything you need to monitor we monitor for you. If it is not automatic (such as automatic over modulation protection), we create a switch selectable (fluorescent character) display which you can check as often as you wish for PX1 operating parameters. Like? The actual temperature of the preamp and the final amplifier, left and right audio levels to PX1, VCO (transmitter oscillator) voltage, modulation levels, and the actual power output plus the reflected power from the antenna - to ensure you know when you have the antenna properly mounted and tuned. It's all there on the front panel display so nothing sneaks up on you and goes "snap." • **Housing**: All of this is in a standard 19" rack (hey - if you are going to be a professional radio station, scrounge up a real world professional rack to stick this baby in - that is 5" high and 15" deep - you don't have to have a rack of course - it will sit nicely on a banana crate or folding card table or even the front passenger seat of your Ford Explorer equipped with the Bridgestone tires) - but it gives your station a "professional" touch. • **More power**? Up to 600 solid-state watts output available!

It is not just a professional transmitter - but a COMPLETE FM STATION in a box!

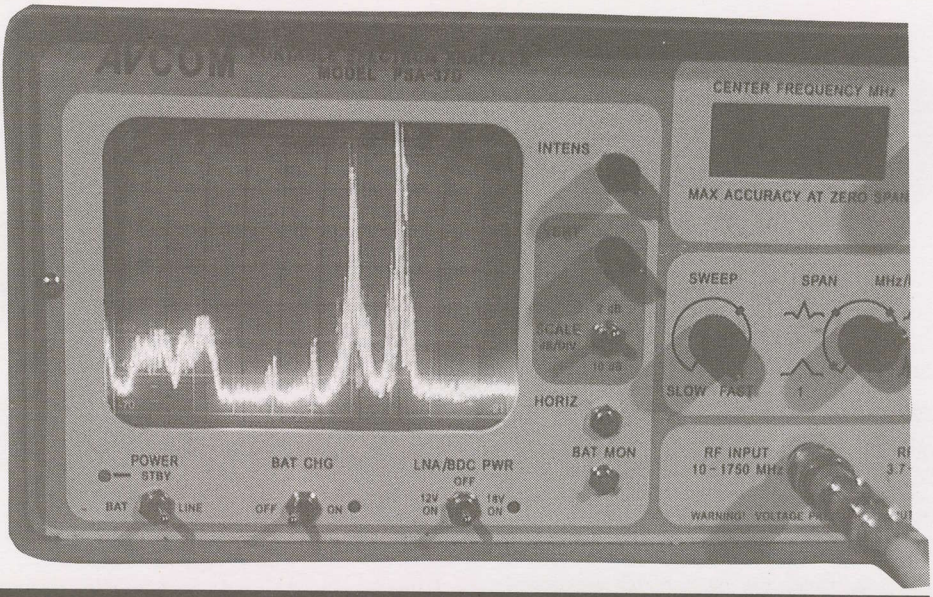


AVCOM - RAMSEY will supply the total station - FM transmitter, transmission line with connectors attached, and the transmitting antenna (with stainless steel hardware) from our unique selection of FM transmitting antennas (omni-directional or narrow beamwidth Logi design all matched to your proposed transmitter frequency - or broadbanded!). Coming soon - a complete "PC Controller" that allows you to mix inputs from satellite, CD player/changers, and other sources - all automated so your FM station can operate unattended for days!

For full information, check out our product web site at http:www.highpowerfm.com.

AVCOM - RAMSEY Technologies, Inc.
793 Canning Parkway, Victor, New York 14565 USA tel + +1-716-924-4560
web **www.avcomramsey.com** and email **sales@avcomramsey.com**

RAIN OR SHINE ... YOU CAN SEE FOREVER.



INTRODUCING - the PSA-37D: The perfect "everyman's analyser" from America and Avcom-Ramsey.

You have always wanted a spectrum analyser, your work demands that you create better results for time invested. But it *is* a worry. SpecAns are often difficult to operate, complex to interpret, cumbersome to keep running - not to mention EXPENSIVE!

The Avcom-Ramsey PSA37D is your answer. Full spectrum coverage for terrestrial and satellite (covers ALL satellite bands). Compact, tough, and best of all - straight forward to use!

Tune in Sunday
May 27th
Mediasat 12.336Vt
Sr 30.00, FEC 2/3
0200 UTC (2PM NZ, 12N Sydney, 10AM Perth) repeated 5 hours later (0700 UTC)

UNIQUELY - the ONLY terrestrial + satellite spectrum analyser supported by *its own TV show* delivered to your home or workshop through **SPACE** Pacific Reports! If you have watched SPR 9901(*), you've seen the full video instruction course for the PSA line of analysers!

* - Talk about field support! SPR 9901 next scheduled Optus B1, 12.336Vt, Sr 30.000, FEC 2/3 Sunday May 27th 2PM NZT, 12 noon AEST, 10AM WA, repeats 5 hours later.

THE PSA -37D is the perfect "Everyman's Analyser" from America

• **Frequency range**: 10 MHz to 1750 and uniquely 3.7 - 4.2 GHz (in five user selected bands) • **Displays**: 4-digit LCD readout of frequency tuning, 101mm width large screen CRT display • **Frequency accuracy**: +/- 4 MHz nominal with zero span setting • **Input reference levels** - appears on permanent graticule screen overlay for quick, foolproof interpretation of 0, -20 and -40 dBm (same as +49, 29 and 9 dBmV) - perfect ranges for off-air TV, L-band satellite with a noise floor near 10 dBuV for locating really weak TV or other carriers with switch selectable 2 dB or 10 dB per graticule division • **Dynamic Range/amplitude accuracy**: On screen dynamic range (from weakest carrier to strongest carrier display), 60 dB typical with +/- 2 dB readout accuracy • **Resolution bandwidth**: 300 kHz, ideal for defining individual FM stations, locating clandestine carriers - widely used for "sniffing out" illegal telephone and room "bugs" by the security industry • **Span width**: from 1 MHz per front screen graticule division to 50 MHz per division at 500 MHz sweep width • **Powering**: 220-250VAC mains with self contained common-sense gel cell battery/ internal charger (push button battery status check) • **External Powering**: Front panel switch selects +13 or +18VDC to operate LNB ("F" fitting) or DC operated (terrestrial) masthead amps plus unique 3.7 - 4.2 ("N" fitting) for direct measurement of C-band equipment with +18VDC) • **Construction**: Rugged epoxy coated aluminium chassis and case, adjustable carrying handle (optional Avsac zipper case) , 7.72 Kg, 37cm x 14 cm x 34 cm.

another state-of-art product from

AVCOM - RAMSEY Technologies, Inc.

793 Canning Parkway, Victor, New York 14565 USA tel + +1-716-924-4560

web **www.avcomramsey.com** and email **sales@avcomramsey.com**

SPRSCS 2001

September 27 - 28 - 29 in Melbourne

Use form below to REQUEST an invitation to attend. Casual drop-ins will not be admitted.

Registration will be conducted beginning June 1. Attendees must REQUEST an invitation to attend as the highly complex FM/SDS/DVB-T sessions will have seating limited to maximum numbers and only those who register promptly after June 1 will be guaranteed seating. **STEP ONE**: Use the form below to REQUEST an INVITATION to attend. This is NOT a commitment from you to attend but lacking a written invitation from us, you may be prevented from attending the sessions that interest you most. Do not put this off - being late is to not attend for lack of seating! **STEP TWO**: When you receive our written invitation to attend, complete and return as soon after June 1st as possible.

REQUEST FOR INVITATION - this does NOT obligate you to attend!

☑ PLEASE address an invitation to attend SPRSCS 2001 to the individual named below. My areas of interest while attending would be as follows (indicate with "X" mark please):

☐ I am interested in low power **Community FM** radio broadcasting

If yes - please further indicate -

- ☐ I would like to **build** a low power FM stereo transmitter at SPRSCS 2001 and take it home with me
- ☐ The heck with building - I'd still like to **buy** one while there!

☐ I am interested in **SDS** (Shared Dish Systems) - p. 6 this issue

If yes, please further indicate -

- ☐ I am interested in the 950 - 1450 (2150) L-band **retransmission** of dish signals
- ☐ I am interested in retransmission by **remodulating** in L-band from satellite/tape/hard drive
- ☐ I am interested in **2.4 Gig** systems and would like to "play with one" at conference
- ☐ I would be interested in a one-day work shop leading to **building** these systems

☐ I think Aurora-RABS is dead but would still like a chance to **meet with ABA** folks

☐ I'd like the chance to meet with **someone from Optus** - perhaps Ed Guz???

☐ I want to "touch" and "play with" DVB-T

- ☐ I would be interested in a one-day workshop covering all aspects of DVB-T installation

Please place the following name on list for written invitations:

Name _____ Company _____

Mailing address _____

Town/city _____ postal code _____ State/Country _____

Return this to SPACE Pacific, PO Box 30, Mangonui, Far North, New Zealand or, fax to + + 64-9-406-1083 or email as attachment to skyking@clear.net.nz

SatFACTS
MONTHLY

ISSN 1174-0779

is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd.

This publication is dedicated to the premise that as we are entering the 21st century, ancient 20th century notions concerning borders and boundaries no long define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

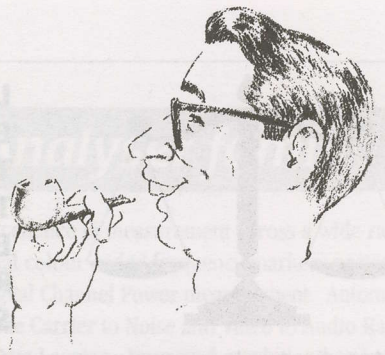
Editor/Publisher
Robert B. Cooper (ZL4AAA)
Office Manager
Gay V. Cooper (ZL1GG)

Reaching SatFACTS
Tel: 64-9-406-0651
Fax: 64-9-406-1083
Mail: PO Box 330
Mangonui, Far North
New Zealand
Email -Skyking@clear.net.nz
http://www.satfacts.kwikkopy.co.nz

Subscription Rates
Within NZ: $70 p/y
Australia: AV-COMM Pty Ltd, PO Box 225, Balgowlah, NSW 2093
61-2-9939-4377
Elsewhere: US$75p/y
All copies sent via airmail fast post world-wide

ERRATA

COOP'S COMMENT



How a magazine works, what makes it survive in the face of endless demands on a person's disposable income, is a study in microcosm of how our business world works.

The DTH/TVRO world is composed of extremely motivated individuals (hobbyists), dealers who sell and install systems, distributors who import hardware for resale, our programmers and of course people who are curious as to what this new technology is all about. The primary strength of SatFACTS is our tightly focused Pacific-Asia field of view and (with no modesty) my outspoken nature of addressing (some might say "attacking") subjects.

www.elecdesign.com
Electronic Design
The Authority on Emerging Technologies for Design Solutions

FOR DESIGNERS AT HIGHER FREQUENCIES
Microwaves & RF
Wireless Applications Issue

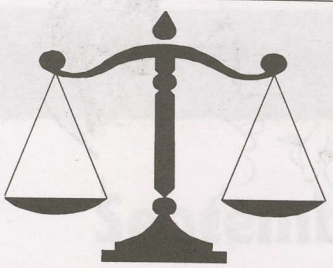
Son Seth and I recently counted the number of publications we receive each month; 123. Many of these are highly specialised and as you might imagine I read or speed-read material several hours each day. Magazines that once double dipped - subscription revenue and advertising revenue - are becoming scarcer. Many now live on advertising revenue alone and send their issues to anyone who "qualifies" for "controlled circulation." I would prefer to do that with SatFACTS but the revenue we earn from advertising is a pittance - a reflection of the very small number of suppliers to our industry and if we had to exist on only advertising income alone the magazine you are reading would be only advertising - no editorial content at all. That might please Ed Guz and the ABA but it is hardly an appropriate answer to an ongoing problem.

In February USA firm Paraclipse ran their last advertisement with us - after 73 months of being on the inside front cover without a miss. As Norm Bruner of Paraclipse told me, "We did a considerable amount more in business in Australia when we first started. Nobody seems to be able to stop the intrusion of low cost, poorly constructed Asian antennas and coincidentally, C-band importance has eroded in favour of Ku band at the same time. The American manufacturers have been forced out ('it gets a picture - what the heck!') and there is nothing that can be done to stop the slide."

Advertising support from firms that actually do business in this marketplace is the lifeblood of a publication. Without advertising SatFACTS would look like CTD / Coop's Technology Digest . That's not all bad, but it is also not a "real magazine" by any stretch of the definition of magazine.

We carry a diverse advertiser base - few publications in the world include regular advertisers from the USA, New Zealand, Hong Kong, Australia and Sweden. But there is a dangerously thin line between having enough advertising and being short on advertising. The message here is simply this - if you are in this industry selling product, and you are not advertising, your support is very much needed. Not by me, but by the industry which provides you with business. Supporting the industry's magazine, no matter how you feel about my own aggressiveness, is good for the industry. Trust me.

Free magazines? If you want to become more skilled in microwaves, you need "Electronic Design" (www.elecdesign.com) and "Microwaves & RF" (www.mwrf.com). Both are "controlled" and you will qualify because of your involvement in satellites.



LETTERS

ABA experience good

"My experience with the ABA has been excellent. There is a very large hill blocking normal terrestrial reception and I had to install a large aerial pointing towards Wollongong. This produced all but one channel (4) with 25-30% snow levels using a 25 foot mast. Prime TV came to do the practical testing, and 3 weeks later with ABA approval I had my Nokia 9200-S (with Irdeto built-in) working with no problems. The ABA people I dealt with on the telephone were friendly, helpful and although I had a bit of a problem with the 'dB reporting number', ABA personnel assisted. I have worked in electronics for 25 years and hold a Electrical Supervisor Certificate. C-band satellite TV is a hobby and through SatFACTS I learned of the ABA Blackspot programme."

Hans Strecker, NSW

Let us be crystal clear here; it is not the ABA per se with whom we have a "beef." It is the antiquated legislation created to protect terrestrial broadcasters that seems out of place. We, too, have found the ABA to be very helpful (if a tad slow in responding but that's another story) and we hope they will join us in Melbourne at SPRSCS 2001 as they did in 2000 for an additional update on the Blackspot programme.

RTVe has inflated pricing

"Reference your note (SF#79, p. 31) about RTVe offering their international service to SMATV and CATV. We are a TV broadcaster, and we asked them for permission to retransmit in the Auckland region a 30 minute daily newscast (1400 NZT), live and without any added advert breaks. They replied it would cost us US$1,000 per month for this 30 minute daily service. I have a programme acquisition budget of zero dollars so that is a no goer. Pity a state broadcaster, RTVe, FTA on satellite, does not allow a (fellow) non-commercial terrestrial broadcaster to promote their wares for free among the Spanish speaking community of Auckland. It is a good thing that others in the European Bouquet (TV5, DW + USA's WorldNet) don't take a leaf out of the RTVe book!"

Hans Versluys, Programme Director, Triangle Television Auckland, New Zealand

Pity indeed. The bottom line (profit or loss) crunch is becoming a very big item with virtually everyone these days as the world's economies drop into the cellar. They are cutting off their nose to fix a drip.

Ground gain

"Once again SatFACTS has explained something I could not work out. The article on ground gain for very low look angles (SF#79) describes our at-shop reception on PAS-4. The dish actually looks slightly down (below the horizon) suggesting the only PAS-4 we are getting is from the ground reflected signal. Fascinating stuff this microwave world!"

Leon Senior, Strong Aust, Melbourne

PROGRAMMER PROGRAMMING PROMOTION UPDATE

APRIL 15, 2001

Singapore Tel appears to have acquired Cable & Wireless Optus for reported A$17 billion. Three serious buyers tried to work deal, including Vodafone and New Zealand's Telecom. Vodafone made it clear if they "won," all non-telephone assets would be quickly resold. NZ Telecom was primarily interested in Optus mobile phone business. SingTel as new owner will bring Singapore business *ethics* to Optus which could prove fatal to some personnel in TV business. It is possible SingTel will come to conclusion Aurora and other TV assets are not in their "business plan" and look for buyers to off-load onto. Australian military staff reportedly concerned about how ST&T will fit into operation of new Optus C1 satellite. Military has A$250m invested in project, scheduled for lift-off in 2002, in addition to C and Ku band planning, same bird also to provide 'secure' military networks. Of concern, how a foreign (Government) owned firm will treat Australian military communications.

Ed Guz & Co's latest letter. Packages containing instructions for 'upgrading' of UEC642 IRDs authorised within Aurora platform began arriving in mail boxes in mid-March. Letter all but demands confidential information from viewers, seems to be designed to "catch" non-Optus approved IRDs out, and if instructions are followed will certainly eliminate anyone using 642 for Aurora plus any other bouquet (such as Mediasat or pay-TV). Reaction has been strong - one dealer wrote SatFACTS, "*I am urging all my Aurora customers* to send a message we are not playing the 'Guz-game'. We suggest they return the form uncompleted with the sentence, "*You can't trust Ed Guz*" on (postage prepaid by Optus) envelopes." Adding injury to insult, Optus misprinted their own telephone numbers (!) in original letter and had to send out 2nd letter to correct this mistake (1300 301 168). Further details p. 15.

Aurora subtitle software. Faults continue (SF#79, p. 2) - on 29 March machine doing work hiccuped on air and spit out product identification: "Softel D1 Subtitle inserter." When you are shopping for your own, perhaps a brand and model to avoid?

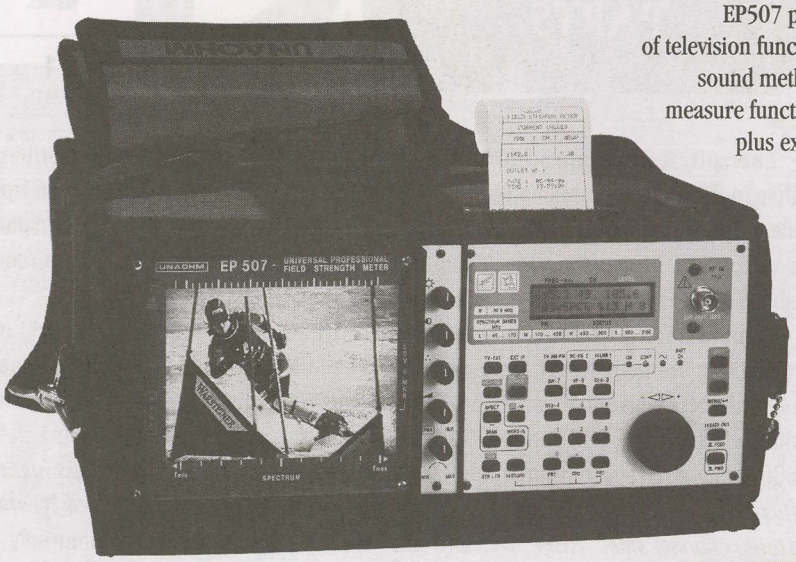
You don't need "access" to check this. Several reports that within the PAS-2 Ku Western Australia service, composed on GWN, WIN, ABC and SBS, not all programme channels are equal. Someone who has bothered to "measure" the service (12.637[.5]vt, Sr 18.500, 1/2) reports, "*WIN is lower quality. If you put the SA 9234 in the antenna pointing menu, you get for example a reading of 6 in signal quality on ABC, SBS and GWN. If you change to WIN and do the same antenna pointing menu, you get only 2. Are there two separate carriers here combined by using the NIT?*" Good question - any thoughts out there??? Perhaps it is that WIN is a lousy off-air fed pickup with a poor signal to noise ratio to start with?

Obscure announcement appearing in (Brisbane) Courier Mail (Match 24): "*Important Notice - Circumvention Devices. The recently enacted Copyright Amendment Act (Digital Agenda) 2000 introduces new enforcement provisions enabling courts to fine offenders. In line with this Queensland Newspapers Pty Ltd will not accept advertisements for circumvention devices, e.g. mod chips.*"

Not so obscure newspaper advertisement: "*PAY TV INSTALLER - Australian Visual Communication Ltd in line with its national rollout, contractors are required in all areas, particularly in S/E Qld. Work is currently available in sites to Melbourne.*" Contact is given as Paul Wilson - person by that name is ex-Galaxy, also ex-Comet.

You bet your bootie. Sky Network NZ is following in the footprints of UK BSkyB with plans to feature live, real time horse, dog and other betting options to Interactive TV users. Sky plans a much delayed rollout of OpenTV late this month, will have EPG, a weather service, E-mail and games with a "betting service" to follow. Punters will be able to lay off odds and get on-line using their set-top box remote and on-screen instructions.

The growing Unaohm Television Analyser family

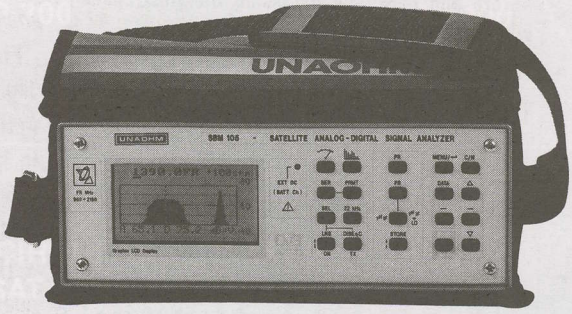


EP507 permits excellence in measurement across a wide range of television functions. Dual colour coded frequency markers provide a sound method of Digital Channel Power measurement. Automatic measure functions include Carrier to Noise and Video to Audio Ratios plus expanded Data Logging. Improved resolution bandwidth displays extra Spectrum detail. QPSK, OFDM and QAM quality measures of Bit Error Rate and Modulation Error Ratio etc., colour Constellation Diagram and printout of MPEG Network Information Tables are available. An internal reference Noise Generator that permits measurement of insertion loss or filter alignment etc. anywhere between 45 and 2000MHz is also available. A quality TFT LCD screen uses colour to clarify the meaning of most measurements, or simply to show a colour TV picture.

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

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

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



UNAOHM

Another quality product from

Lacey's Australia

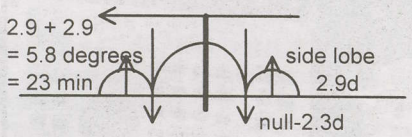
12 Kitson St. Frankston VIC 3199
Tel:(03) 9783 2388 Fax:(03) 9783 5767
e-mail: placey@netlink.com.au
branch offices in Sydney, Ulverstone & Woolgoolga

Solar Outage

"On March 15th at 1.30PM local time, all of my satellite reception went to heck in a hand basket. All analogue was covered with snow, all digital simply froze and quit. I was pointed at Thaicom 2/3 at the time. Fearing the worst, including a $50 service call, I tried to comfort my wife. Then I remembered SatFACTS #78 and the article on solar outage. Sure enough, comparing the description in SatFACTS against what I was observing, the time and the date, it had to be! 45 minutes later it cleared up - rather longer than SatFACTS had predicted. Have other readers had a similar experience?"

Siam Global, Bangkok, Thailand

Some basic physics. The earth rotates so the sun moves through 15 degrees of longitude per hour - give or take your latitude number. That works out to 0.25 degree per minute. If your antenna (3 dB) beamwidth on a ten foot dish is under 2 degrees, as well it should be, that says white noise from the sun ("snow") for around 5 minutes. But 45 minutes??? At 0.25 degrees per minute, this amounts to 11.25 degrees of antenna beamwidth at the point where the sun starts to and stops creating interference. A 11.25 degree beamwidth is extraordinary - so wide that you would see everything from 72.0 east to 85 east simultaneously - hardly "sharp" enough to separate satellites (pointing at 100E for example would include everything from 94.5 east to 105.5 east). It sounds as if your feed is incorrect for your dish and suggest you explore why.



Comstar dish mystery

"Reference question about what happened to Taiwan based firm building Comstar dishes (SF#79, p. 31). The answer is Comstar is now assembled in Queensland having moved here from Asia and is perhaps the only Australian-built dish family in the marketplace. Oh yes, the prices are now lower than previously!"

Henry Wong, C&T Satellite Pty Ltd, Queensland

Readers had previously reported Comstar had moved from Taiwan to Thailand and then disappeared.

Guz & Co

"Perhaps Ed Guz and Co might spend more time getting the subtitling and other bugs out of Aurora and less time harassing the Australians who depend upon this service for television?"

NS, Victoria

TVNZ + TelstraSaturn?

"SF's web site reports a later start for TVNZ portion of New Zealand bouquet originally scheduled for May. What's happening?"

G. Blankenship, Wellington

TVNZ will not select an OpenTV capable IRD until mid-May. That puts off their own 1/2 transponder format bouquet to at least October 1 - a function of when the IRDs can be delivered. UEC is most likely supplier at this stage.

HARDWARE EQUIPMENT PARTS UPDATE

APRIL 15, 2001

Lawsuit. Now we are suing each other, perhaps much to delight of authorities. A chap in Queensland is asking for "unpaid commissions" exceeding A$2 million from the national distributor of UEC642 IRDs as well as "damages" as the court might award, up to 3 times the claimed unpaid commissions. We explore this latest round of sibling fighting on p. 32.

Numbers. Our SF#79 report on "How many UEC642s are out there" brought many responses, primarily from people who should be in a position to know what at least *their own* "real" numbers might be. We reported Westlink at 1,250 but they advise there are currently 180 "primary" and 360 "schools" in their net - dropping 1,250 to 660. They also report Information Radio (200), "*has no dedicated receivers just for this service - this is simulcast of 990 AM radio using an otherwise unused Westlink stereo channel side.*" RHEF + Health Net - we reported 5,830 which admittedly seemed large to us even if the numbers "fit." They advise there are 600 hospital sites but refused to reveal how many doctors have signed up for the $29 a month training package (each doctor would have his or her own DTH system). "*5,830 might be our goal, but we are not there - yet!*" they report. So we cross checked, using our source for number of receivers shipped to Westlink (800 in initial release) and RHEF plus HTN. Problem seems to be - Nationwide (or UEC direct without Nationwide) shipped more receivers than have been activated - in some cases as few as 30% seem to have been turned on. And that says? Nationwide sold and we assume was paid for many more than the hyped-up promoters were later able to put into operation. Someplace in Australia - bulging warehouses filled with UEC642s!

Speculation Comet is facing financial challenges with web posting of extracts from half-year financial statement. Some quotations: "(The) *Evcom business has been a disappointing performer* in line with a poor performance of the Vomet commercial business. These combined commercial installation businesses represent less than 4% of turnover and management are currently restructuring this business." "*The initial set-up costs in the U.K.* have been greater than expected ... the full start-up costs of the U.K. have been expensed in the first half and total $2.29m ... (resulting in) a Group Consolidated loss of $714,000." "*The business of Mr Alarm* ... has been closed as a result of ongoing losses." And, "*we have decided to put our NZ expansion* on hold and have advised the minority stockholders Strongline that we are prepared to exit our shareholding should they consider our 'hold' position diminishes their growth opportunities." Australian Financial Review under heading, "Analysts puzzled as Comet shares tail off," wrote, "*While Comet has never been a flashy performer, analysts are puzzled by its latest plunge. The stock has fallen 40 percent this year.*"

First hard-drive IRD. Strong Aust expects to receive initial allotment of twin CAM digital IRDs equipped with 30 gig hard drive video recording system before end of April. Strong SRT 4890 will allow you to record pay or FTA digital programming (up to 18 hours), playback on command, catch up with programming that started before you were available to view and dump to tape for long-term archiving. Price? Around A$1000 (Strong Aust 61-3-9553 3399).

10,000 DVB-T (terrestrial digital) set-top boxes reportedly on order from UEC - one guess who the buyer is (delivery "around midyear").

Speaking of which - Australian web sites relate 2,500 DVB-T boxes have been sold (1 April), no knowledge how many of those are in consumer hands versus dealer hands. Moreover, newer S-VHS and stereo audio out versions due into market place by June. The beat goes on.

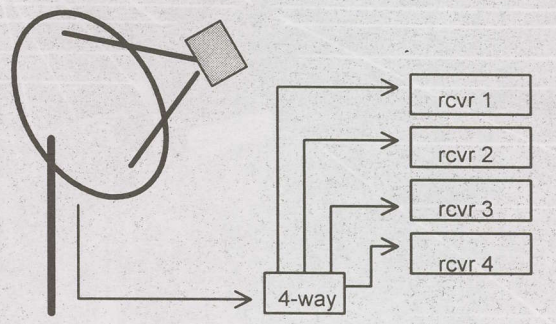
NOT an April Fool's Joke!

Several ways to SHARE satellite signals without wires

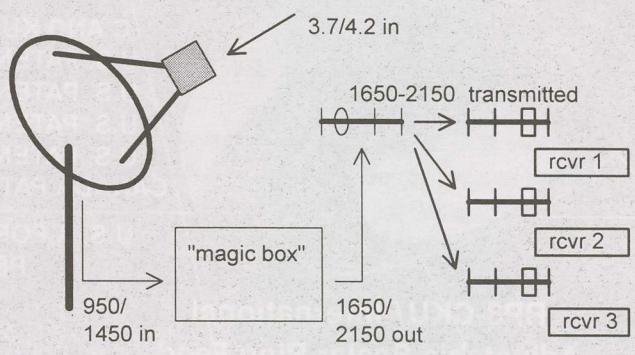
Those who have been frustrated by the cost and complexity of sharing the satellite reception from a single (or multiple) dish with less fortunate "neighbours" lacking access to a dish will take heart in what follows. Newly developed technology takes the mystery out of "shared dish systems" (SDS from here on) and suggests creative ways for people who have been denied access to DTH TVRO to join the 21st century.

First the technical part. A typical C or Ku band dish system "translates" the incoming 4 or 12 GHz signals downward in frequency to a much lower frequency which we call "L-band." This is a portion of spectrum between 950 and 2150 MHz chosen as the "IF" (intermediate frequency) to link the dish system (including the LNB - low noise block downconverter) to the actual analogue or digital satellite receiver. L-band is desirable as a transportation frequency range because commonly available, cost effective parts such as RG6 family cable, F-fittings and multiple output splitters work well here. Most would agree that "microwaves" begin someplace between 1,000 and 3,000 MHz (megahertz) which suggests that L-band is either very low in the "microwave spectrum" or very high in the next down frequency range, UHF (ultra high frequency). In fact, L-band at least in the 950 - 1450 MHz region "acts" more like UHF than microwaves and for semiskilled and unskilled folks making installations, that is a blessing. UHF is far more forgiving of ignorant mistakes than microwave frequencies.

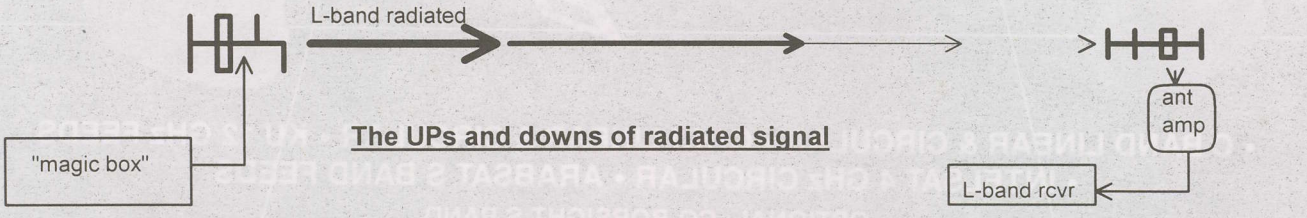
Most C-band LNBs down convert or translate the 3700 - 4200 MHz frequency spectrum to 950-1450 MHz. Using RG6 cable, two or three or four way splitters and F-fittings, it is possible with most installations to connect up 2, 3 or 4 separate receivers to a single dish. With slightly more complication, a pair of LNBs installed on one dish can produce selectable L-band service from both the vertical and horizontal (or right hand or left hand - circular) polarities from a single satellite. When 3700 - 4200 horizontal ends up being down converted to 950-1450 MHz , and the LNB(f) has some form of voltage or tone switching built-in, the user can switch from horizontal to vertical on the same satellite with a remote control command. Or, it is possible with added complexity to down convert 3700 - 4200 horizontal to 950 - 1450, and simultaneously down convert 3700 - 4200 vertical to 1650 - 2150. When this sort of separate L-band frequency conversion is employed, a "wideband" L-band receiver tuning 950 - 2150 can zip through all of the horizontals and then all of the verticals. Better yet, if there are two or more receivers attached to the system, one can tune in the horizontals (950 - 1450) while the second can simultaneously wander about the verticals (1650 - 2150) because both are full-time present on the same RG6. In all of this there is the "germ" of a concept that makes possible neighbourhood shared dish systems.



More than one receiver per dish has always meant signal splitters (or loop through receivers) and hard wire to each receiver.

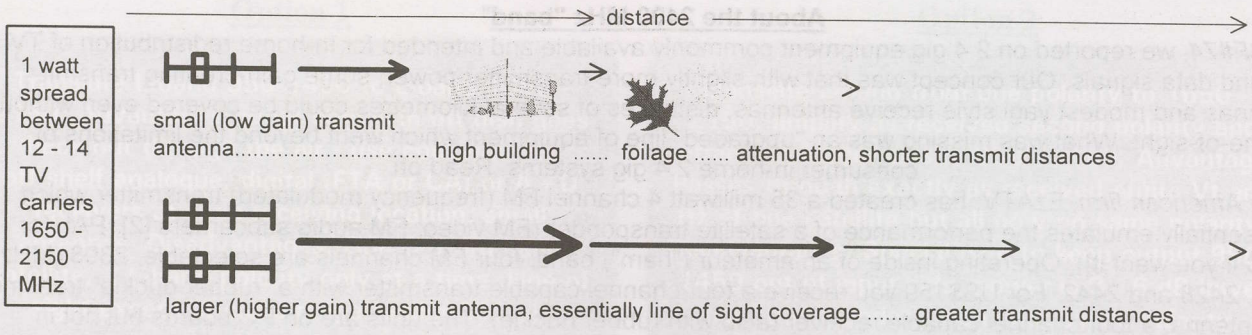


On the other hand, if the incoming L-band of 950-1450 was frequency translated to 1650-2150, and sent back out through *the air* to remote receivers . . .



The UPs and downs of radiated signal

transmitter power is lost in feedline, amplified by antenna, lost again with each unit of distance covered, raised by receive antenna, raised by antenna amp, lost in feedline



Modern analogue, digital or analogue + digital receivers now routinely tune 950 - 2150 MHz. In other words, they don't really care where you are in L-band as long as you are someplace between the two extremes. There is something else they don't care about; how the L-band signals arrive at their input connector. We expect they get there through a piece of RG6 because that is the way it has always been done. It may come as a surprise to you that if the RG6 is disconnected from the L-band input on the TVRO receiver and a 3" stub of copper wire is inserted into the input fitting, under the "correct" circumstances the receiver will still produce satellite reception. Just a 3" stub of wire, not connected to anything on one end and inserted or wedged into the F fitting on the receiver proper (see diagram below).

What might those "correct circumstances" be?

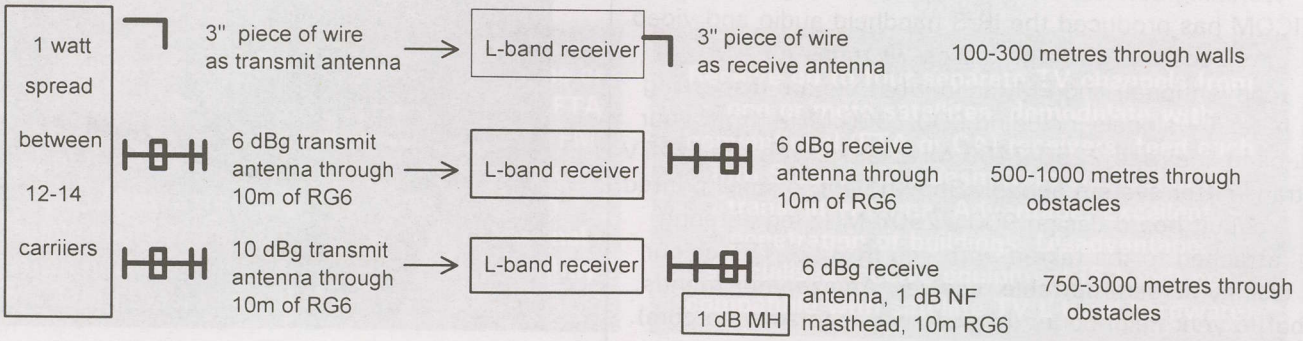
When SatFACTS visited the USA last September (SF#74, p. 1, 18 and 20) we carried with us a technical outline for an entirely new way to create SDS. In the USA, we called on skilled microwave people who had cut their teeth on the original C-band TVRO industry of the late 70s and 80s - people who instinctively knew with talented finger tips and decades of experience how to change the flow of microwave energy. We can now report success, and more important, an entirely new line of off-the-shelf products which are currently scheduled to stand for public (industry) inspection during SPRSCS 2001 late in September (coming) in Melbourne.

The "correct circumstances." First you discard the concept that L-band signals have to be bottled up inside of a piece of (RG6) coax to get from point A to point B. As we reported in SF#74, p. 18, you have the present option of replacing the RG6 cable with a 2.4 GHz in-house microwave transmitter. Widely sold through outlets such as Dick Smith and Radio Shack, 2.4 GHz "transmitters" with just a few milliwatts (one or two or three thousands of one watt) power easily travel through normal home walls, even down the street and across fences to neighbours. We update you on the status of some "slightly more powerful" 2.4 GHz equipment on p. 8 here. But 2.4 GHz requires some extra special skills, being well into the microwave band, and while it is possible to adapt the consumer grade electronics to longer transmission ranges, you won't do it successfully without at least a quality spectrum analyser and some appreciation of how microwave circuits work (or do *not* work). Moreover, 2.4 GHz receivers that are capable of receiving perhaps 1 to 4 separate TV channels cost about as much as an off-the-shelf FTA analogue or even MPEG-2 receiver. We already know something about L-band receivers - but 2.4 GHz (called S-band) is an entirely new learning experience.

Suppose, a technical exercise here - not a legal one - suppose you disconnected the L-band input from the receiver, ran it through a magic box, and amplified the L-band 950 - 1450 signals to perhaps one watt total power. Then suppose you connected the output of that amplifier to a resonant L-band transmission antenna and allowed the signals to wander off through the air?

This is what the 2.4 GHz equipment does. Now with the L-band 950 - 1450 satellite received signals relaunched into the air, still in the 950 - 1450 MHz range, you go down the street or next door or into the backyard and stick a smallish L-band receive antenna up on a short stick. On the L-band antenna you install a thumb sized L-band masthead (MH) amplifier designed to amplify the 950 - 1450 MHz signals, then run through a short length of RG6 cable to a standard, off-the-shelf, analogue or digital or A + D L-band receiver. *What happens?* You have the *same* satellite TV as received by the dish, now at a remote location, with no RG6 or other cable in between. The original incoming signals if digital remain digital, if analogue remain analogue. If they were FTA, they still are; or if CA, they still are. All you have done is substitute "wireless" for "RG6" connection. Nothing else is changed.

A one watt "transmission amplifier" will boost the power level LNB delivered input signal around 1000 times. A small L-band transmit antenna will amplify it by another 400%. You need this amplification because, as the diagrams here show, once the 950 - 1450 is "launched" into the air, it begins to "attenuate" very rapidly. How far will it travel before it is too



About the 2400 MHz "band"

In SF#74, we reported on 2.4 gig equipment commonly available and intended for in-home redistribution of TV and data signals. Our concept was that with slightly more transmitter power, some gain-creating transmit antennas and modest yagi style receive antennas, distances of several kilometres could be covered even without line-of-sight. What was missing was an "upgraded" line of equipment which went beyond the limitations of consumer in-home 2.4 gig systems. Read on.

An American firm, EzATV, has created a 35 milliwatt 4 channel FM (frequency modulated) transmitter which essentially emulates the performance of a satellite transponder (FM video, FM audio subcarriers [2], PAL [or NTSC if you want it]). Operating inside of an amateur ("ham") band, four FM channels are selectable: 2398 (MHz), 2412, 2428 and 2442. For US$159 you receive a four channel capable transmitter with a "rubber duckie" transmit antenna, a four channel capable receiver (also with rubber duckie). The units are on PC boards but not in consumer enclosures (the manufacturer assumes buyers will create their own cases using readily available Radio Shack/Dick Smith plastic or metal boxes). The transmitter and the receiver require powerpack supplies - the transmitter needs 12-15 volts DC at 500 mA while the receiver requires the same voltage at 270 mA. These are off-the-shelf power packs - the same 500 mA version would do for both applications. RCA inputs on the transmitter feed satellite video and audio - you can feed two separate audio channels (stereo no less) and the transmitter creates standard satellite-like FM subcarriers at 6.0 and 6.5 MHz. The user selects the transmit channel frequency with on-board switches; the receiver has a built-in scanner and will scan (on command) between the four channels until it locates a signal. The receiver output is through RCA sockets (video, audio left, audio right). The only controls other than channel selection are modulation (contrast level) on the transmitter, and a companion "contrast" control (video level) on the receiver output.

With the 3" "rubber duckie" antennas, typical ranges are 2000 feet (600+ metres). And the options. The least expensive way to lengthen a circuit or compensate for building/tree/foilage attenuation is more antenna gain. A 62mm x 58mm "patch" antenna on a nifty 50mm stand jumps the range by 50% (to 900 metres) as a minimum - they say by adding one each patch antenna at the transmit and receive ends, you'll do 2.4 kilometres with the 35 milliwatt rig. That could be generous but for an extra US$39 (per patch antenna) it is cheap range extension. A larger (30cm x 30cm) "super high gain patch antenna" is more pricey - US$199. For the same money, you could order the BT-1000 high gain amplifier (turning 35 mW into 1 watt) and a slightly less money 3/4 watt unit (US$159) is another option.

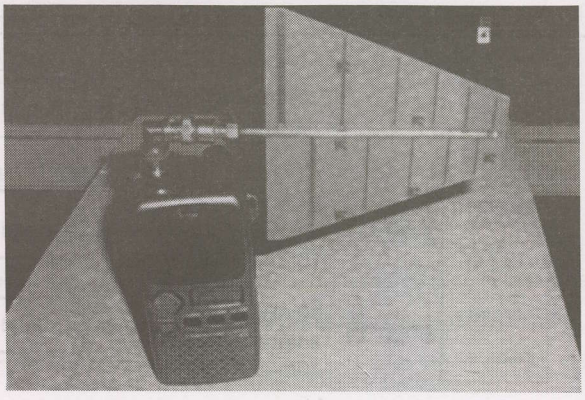
Uses? Well, from a purely technical (not legal) viewpoint, this is one way to distribute up to four channels of video + audio throughout a housing complex, apartment set or small community. Extra transmitters (remember - the first US$159 gets you one each transmitter plus receiver, with antennas) to complete the four channel set are US$79 as are extra receivers (any receiver can tune in all four of the "channels"). Even higher gain antennas are available from other sources (see SF#74, p. 1 and 18) - for greater ranges (some users claim 25km but that seems idealistic and certainly requires LOS - line of sight between the two antennas). Either of the audio channels can be used for data transmission (they claim up to 150 kilobits per second) as well. Full data is available on Internet (http://www.4atv.com) but you can contact them by email (sales@4atv.com) or fax (++1-847-619-0852).

weak to be used? From hundreds of metres to kilometres. If you raise the transmit power to 2 watts, that helps. If you increase the "gain" of the L-band transmit antenna, that gets you more distance. If you install a better grade of masthead amplifier or a higher gain receive antenna at the receive site, that helps as well. Changing from a 6 dB gain transmit antenna to a 12 dB gain transmit antenna (just a slightly larger antenna) will as a minimum *double the distance* covered! As the box directly below illustrates, you can even become "walking portable" if you select a suitable receiver that tunes L-band frequencies.

No, the "system" does not care if you input C or Ku, analogue or digital because the final "demodulation" or recovery of satellite signal is still performed by the standard L-band home satellite receiver. Now, suppose you wanted more than 500 MHz of spectrum repeated (950 - 1450). Hold tight. The real technical limitations here are as follows. First you need a power amplifier that covers a sufficiently wide

Kids - try this at home! *(batteries not included)*

Here is something you never dreamed you could do with your home dish system - *walk down the street watching satellite TV!* Communications gear creator ICOM has produced the IR-3 handheld audio and video receiver. Just the basics - it tunes for AM (conventional) and FM (as in what we are discussing here) TV signals including 900-1300 MHz (from your L-band line) and 2250-2450 MHz (as in with the EzATV transmitter system above). Shown here, a small printed circuit board design 900 - 2500 MHz log antenna attached to the take-it-with you IR-3 (2" TFT colour display screen) portable receiver. Amaze your friends, baffle your neighbours (http://www.icomamerica.com).



Option 1

Translate L-band 950-1450 to L-band 1650 - 2150. Advantages: what comes in off dish goes back out through the air - use conventional off-shelf analogue, digital (FTA or CA) or A + D receivers at each receiving location, small antennas. Disadvantages: One C or Ku band satellite, 1 L-band polarity only at a time. Line of sight except at close range (under 500m).

Option 2

Translate L-band from one polarity to 1650 - 2150, amplify as received second polarity and retransmit as composite 950 - 2150. Advantage: Passes through exactly as received entire Vt and Hz of one satellite but all now on same polarity. Disadvantages: Special care to keep output 950 - 1450 out of input side, power is 3 - 6 dB lower per "transponder" than with single polarity.

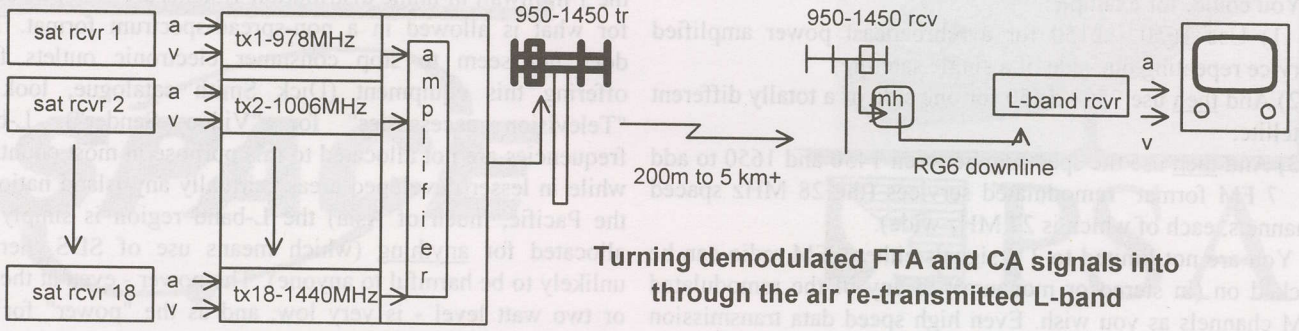
spectrum to do more than 500 MHz at a time - say 950 to 2150. Now you have 1,200 megahertz of L-band to "fill" with energy. That happens to be "doable." Next you need a transmission antenna that covers such a wide spectrum. Look left and down to the printed circuit board antenna mounted on the ICOM receiver. It covers 900 to 2500 MHz so obviously you can design an antenna that produces "signal gain" over a wide spectrum of frequencies. Another done deal. The third element, the L-band receiver capable of tuning from 950 - 2150 is a stock item through every distributor advertising in this issue of SF.

So now suppose you took the horizontal side of a satellite and down converted it to 950 - 1450, and then you simultaneously took the vertical side and down converted it to 1650 - 2150. And amplified both sides through a common power amplifier, connected the combined polarities covering 950 - 2150 to a suitable transmit antenna. Bingo - you have all (both polarisations) of a single satellite in one L-band transmission package travelling through the air to one, a dozen, a thousand off-the-shelf DTH receivers each connected to the "system" through a tiny wideband antenna and a masthead amplifier (where required - not always needed).

There are other optional "models" available. Suppose you have two or more satellites you want to simultaneously select programming from. After all, not every service on a full satellite is of interest to a diverse viewing group. Not everyone wants a couple of dozen provincial Chinese stations through AsiaSat 2, as one example. Suppose you replaced the "straight-through" amplified LNB(f) signals on L-band from the dish with one, ten, even up to 18 separate TVRO receivers. They could all be FTA, or CA and FTA - as the situation dictated.

From each receiver you recovered audio and video through the SCART or RCA outputs. Now take a suitable cable and connect the TVRO receiver video and audio output into a pair of mating RCA sockets on the rear of a different version "magic box." This one has one, ten or perhaps 18 high quality FM TV transmitters inside. The FM (frequency modulated) TV transmitters generate the exact same standard of TV signals as you would tune-in with an off-the-shelf analogue TVRO receiver; 27 MHz wide FM, audio on a subcarrier frequency such as 6.8 MHz. We diagram that for you directly above.

With 18 separate FM TV "transmitters" in a single container, equipped with 18 pair of RCA A and V inputs, and a single F (or SMA) output fitting, and by spacing the "TV channels" 28 MHz apart, you have just recreated a satellite spectrum on the ground. Some programming comes from one satellite, some from another, even some from tape or a hard drive. The receive sites use the same "tiny" L-band antenna, masthead



Turning demodulated FTA and CA signals into through the air re-transmitted L-band

Option 3

Receive up to 18 separate TV channels from one or more satellites, demodulate with conventional (FTA or CA) receivers, feed each A + V into L-band FM transmitters connected to transmit antenna. Advantages: Able to mix and match channels from multiple sources including tape, use conventional off-shelf analogue receivers. Disadvantage: slightly less (10%) range than Option 1 or 2.

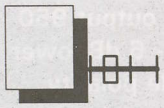
Option 4

Receive up to four separate TV channels from one or more satellites, demodulate with conventional (FTA or CA) receivers, feed each into S-band FM transmitters connected to transmit antenna. Advantage: Excellent penetration of buildings. Disadvantage: specialised receive equipment (S-band) not compatible with satellite TV L-band hardware.

Some simple rules for planning a SDS system to serve an area

Transmit antenna - (1) You want "LOS" (line of sight) to as many potential receive locations as possible - but not by using great height (mountain top). Get above "ground clutter" so you can "see" to receive antenna locations, but not over distances. If you get too high up, and are also too far away from the receive locations, you can "overshoot" the viewers or deliver weak signals that have had to travel too far.

Receive antenna -



(2) Best possible location is on a window ledge with LOS to the transmit antenna, allowing easy and quick mounting of wideband antenna and masthead (as required) with a short run of RG6 cable in or through the window casing / sill to the waiting TVRO/DTH receiver.

amp if required and stock analogue off the shelf TVRO/DTH receiver to receive any of the channels transmitted. Think about how you would "package" up to 18 channels of "service" from a single "SDS headend" using the resources of as many satellite dishes and receivers as would be required to generate the "programming line-up" you would like to redistribute over the neighbourhood or community. Pretty exciting stuff!

Yet additional flexibility

If you are careful about how you handle the RF portions (remember - there are some skill levels here you will have to adapt to and perhaps only by doing it will you gain the necessary experience), there are other options available.

You could, for example:

1) Use 1650 - 2150 for a rebroadcast power amplified service repeating one side of a single satellite;

2) And then use 950 - 1450 for one side of a totally different satellite;

3) And then use the spectrum between 1450 and 1650 to add in 7 FM format remodulated services (the 28 MHz spaced channels, each of which is 27 MHz wide).

You are not limited to TV signals either - FM radio can be tacked on (in stereo or monaural) to any of the remodulated FM channels as you wish. Even high speed data transmission married to a 27 MHz wide FM channel - in the region of more than 10 Mbps by the way (several times more than 10 Mbps if you are really clever with what you are doing). Moreover, data, radio and TV can all be mixed and share the same SDS transmission system package.

All of this is technically possible because L-band equipment has become amazingly straight forward to manufacture and install, and, we believe it will be shockingly inexpensive in its most basic formats by the time we arrive at SPRSCS 2001 in Melbourne late in September.

Practical applications

There are both private (one home) and commercial (multiple home) opportunities here. Using the existing 2.4 GHz equipment, you can deliver 1 to 4 TV channels throughout a home with ease (p. 8 here). You could even be walking around your home with an ICOM R3 receiver watching satellite TV wherever you go. The least complex SDS packages for L-band will do the same thing for what we expect (by Melbourne) will be a very similar price. From that point the system can be expanded (on paper before construction or as add-ons after construction) to ultimately deliver literally hundreds of channels of TV and radio - even data.

Alas, there has to be at least one downside to all of this and it is the matter of "spectrum allocation." The 2.4 GHz gear has been in kind of a grey area for years - a strict interpretation of rules in some countries (Australia, for example) suggests even the 1 milliwatt in-home distribution systems are "too powerful" for what is allowed in a non-spread-spectrum format. That does not seem to stop consumer electronic outlets from offering this equipment (Dick Smith catalogue, look up "Television accessories" for "Video Sender"). L-band frequencies are not allocated to this purpose in most countries, while in lesser developed areas (virtually any island nation in the Pacific, much of Asia) the L-band region is simply not allocated for anything (which means use of SDS there is unlikely to be harmful to anyone). The power - even at the one or two watt level - is very low, and as the "power" for any single TV carrier (transponder or FM channel) is only a tiny portion of the one or two watts the radiated signals are very small (a one watt amplifier "shared" by 500 MHz of spectrum space equates to milliwatts per individual carrier signal). The "secret" to what makes this work is the "gain" built into the receiving system - the masthead amplifier and the receive antenna gain total a significant portion of the overall "system gain" for each receive location, making it possible for even milliwatts to travel kilometres. The second "secret" to the system is that for at least the analogue format signals, they are FM which means very low carrier to noise ratios (8 dB or less) are all that is needed (with a 27 MHz wide signal) to create P5 images (no sparklies) over considerable distances.

Terminology

CA: Conditional access transmissions. **DTH:** Direct to home (as in satellite to home). **FTA:** Free to air transmissions. **L-band:** Frequency range which most of the satellite energy received by a dish + LNB occupies while travelling to actual satellite receiver. **LOS:** Line of sight (transmitting antenna and receive antenna must be able to "see" one another). **Patch antenna:** Tiny printed circuit antenna for microwave transmission and reception. **PC boards:** Electronic circuit boards, less housing/case and power supply to operate. **RG6:** Standard cable. **S-band:** Next "up" frequency band above L-band, typically refers to 2-3 GHz region. **SDS:** Shared dish systems, allowing two or more separate residences to use same dish without interconnecting cable or wiring. **SMA fittings:** Special L and S band fittings you don't want to know about. **TVRO:** Television receive-only dish system (designed to receive, not transmit).

Equipment availability

Watch SF for news - only 2.4 GHz gear is presently available; be patient! Target dates are September 27-29 at SPRSCS 2001 Melbourne; field testing now underway, reports June-July-August SF.

"A hell of a tingle - but NOT life threatening"

UEC Foxtel IRDs can give you a jolt

Imagine this situation. You are using a Comet approved harness and hanging over a tin roof which is wet from a recent rain. Your boots are leather soled and you are trying to determine if the LNBf is good or bad. Balancing with one foot on the damp tin roof you reach out and grab the LNBf "F" fitting. Suddenly you feel a "zap," a jolt of electricity. Instinctively you release the LNBf and jump backwards. It is only the harness that saves you from tumbling head over heels to the ground below. You end up dangling by the harness, groping for a footing, and pondering what to do next.

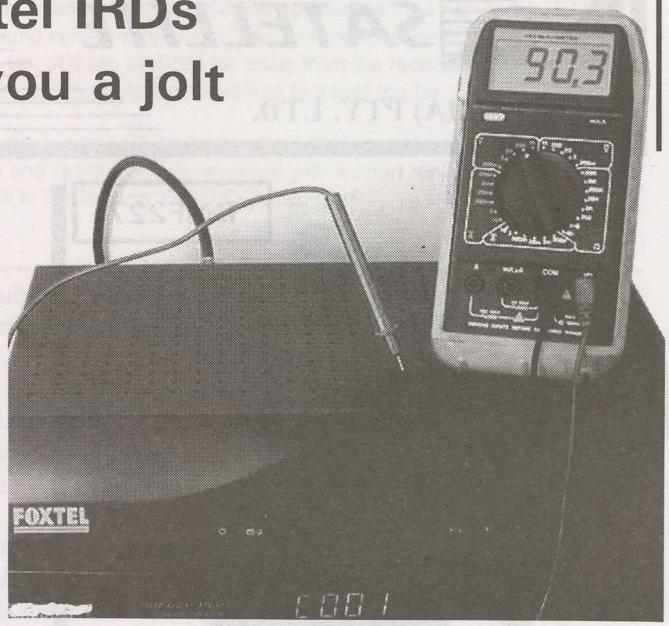
SatFACTS commissioned tests conducted with UEC 642, 660 and 700 series IRDs reveal an "unusual" power supply design which results in *leakage* to the case of the IRD of a voltage that we measured between 90 and 110 volts AC - depending upon conditions we will explain. When the "case" is hot with this much AC voltage, it travels to any connected parts including the LNBf through the shield portion of the RG6 downline. This means the LNBf, up there on the dish, is "hot" with AC - we measured as much as 100 volts on the F fitting of the LNB.

Voltage alone will not kill you. It takes voltage + current to knock you out, endanger the operation of your heart, cause fibrillation or reach a "threshold level" where your muscles contract and you are no longer able to let go of the voltage source (see p. 28, here). We will be very clear about this - as best we have determined, the current leaking through the case to ground (through your body in our example) is very small. It appears to be just over 1/10th of one milliamp (110 microamps to be precise). And well it should be as Australian safety rules specify that anything equal to or greater than 10 mils (that is ten milliamps - ten thousands of an amp) would be illegal. 110 microamps is 1/100th of the threshold point for real danger from the electricity itself.

Let's back up several steps. Our mains voltage is variously between 220 and 260 volts AC. If you insert a two prong plug into a wall outlet and grab one of the two wires in each hand, you won't die unless - unless you are "grounded" and the voltage through the mains cord flows in and through your body to ground. If grabbing 240 volts was deadly, your yard could be littered with dead birds!

UEC has designed a "universal" power supply for their 642/660/700 series receivers. "Universal" means it can be used virtually anyplace in the world where the AC mains is between 90 and 250 volts AC by selecting an appropriate fuse value and an appropriate line cord plus AC mains male plug for the country of use. "Universal" also means it is the least expensive power supply UEC can make and get by "safety standards."

Initially we worried about the "safety" of a receiver that leaks +/- 100 VAC to the LNB, the case of the IRD, and into anyone who comes into contact with any of these items. Australian safety rules (p. 28, here) set us straight - unless we could show the current flow from the voltage was 10 mils or greater, the device is "totally legal." Not everyone involved in product safety agrees or understands this by the way - Alan



Use a DMM on AC volts scale. Connect one lead to the case of the IRD, the second to a "real" ground. You will measure 90-110 volts AC. Now substitute your body for the DMM and feel the "tingle."

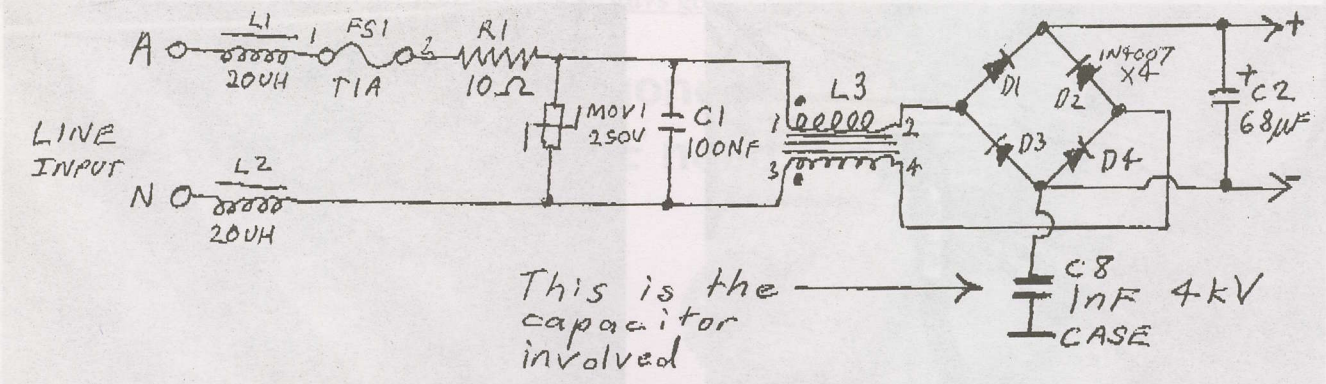
Faulks (Electrical Approvals Officer, Department of Mines and Energy, Brisbane - **1**) and Electricity Supply and Safety, St Leonards, NSW (**2**) strongly recommended to us, "d*o not use this device until the defect is repaired.*" In fact, there is no apparent defect - getting jolted with 100 volts AC is perfectly legal.

But is it harmless? Remember that you have to have voltage plus current to die. A horrendous voltage (such as from the flyback transformer supply in a TV set) is very uncomfortable to touch but seldom deadly because the current is only a few mils. "Seldom deadly" is the key here. If you are a DTH technician, you have (we assume) some basic knowledge of electricity and know what a "jolt" feels like. You also know when to take precautions, or, you should know. Consider this report a "safety alert" so you won't fall off any roofs.

There are scenarios where even the 100 volts AC and the low current *could be* deadly. Here are some examples.

You are back on the roof reaching for the LNBf and you are not wearing a Comet approved harness. In fact you have no harness at all. Touching the LNBf fitting, you are jolted. Your body recoils, you instinctively fall backwards letting go of the LNBf and then discover you are two floors above a concrete driveway and gravity is propelling you down - head first. The electrical jolt may be harmless; landing on your head on concrete after falling two stories might not be.

You are a consumer. Wet from a shower, dripping water, you walk across the concrete floor to change the channel on the IRD. You can't locate the remote control so you reach out to use the buttons on the IRD proper. And touch the metal case with a pool of water at your feet. "Jolt!" No harm done unless of course you recoil backwards, slip on the water, strike your head on a sharp object and snap your neck in two. Then, all bets are off.



This is a sketch of the UEC SMPS power supply segment of concern. C8 (bottom, right) goes to chassis ground and it is through this capacitor that our 90 - 110 region AC voltage "leaks." On the far right hand side (+ and -) across C2, we have approximately 340 volts DC which is the mains rectified (DC) operating voltage for the IRD.

Our investigation found anecdotal reports of Foxtel customers who had taken it upon themselves to unplug their IRDs (RG6 from LNB disconnected, loop line to TV set disconnected, VHF-UHF aerial comes out last and the customer stands there - briefly - touching the IRD with one hand and the grounded domestic TV aerial PAL plug with the other hand). "Jolt!"

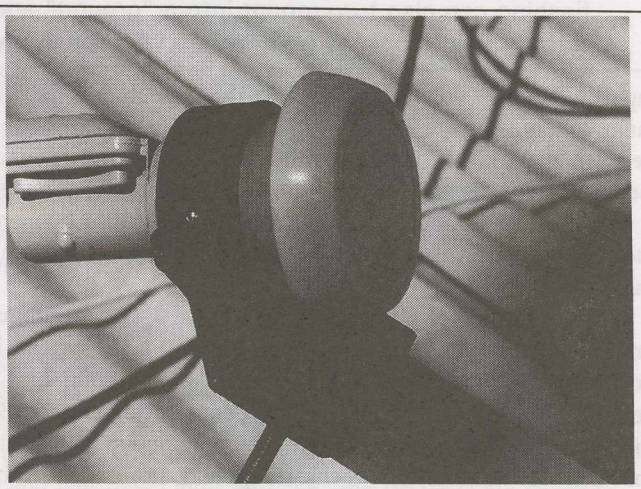
Our initial response to reports of "UEC shocks" was there might be a "few" faulty receivers out there. It turns out the receivers all share the same design and all are capable of jolting the user or installer. And it is all *perfectly legal* because the "jolt" is a voltage with a self-limited micro-current that under "normal circumstances" should not directly injure or kill a human being.

So what is really going on here? Has the Australian test standards authority messed up by allowing current limited 100 + volts to lay there ready to "sting" on the case of a Foxtel IRD?

Foxtel issued an "alert" to installation technicians late in 2000, relayed through installation contractor Comer. The essence was, "*There have been reports of 'shocks' with Foxtel IRDs - call us if you experience this for advice.*" Foxtel (and most other) DTH systems are now installed with a plastic ring at the dish. The ring insulates, keeps from touching ground, the metal case of the LNBf. This is based upon the probability the dish and mount may actually be at "earth" ground potential, by being fastened to a tin roof, having lag bolts that somehow come into contact with metal flashing in the roofing super structure. If the dish is "at ground" potential and the LNBf, fed from the Foxtel IRD, has 100 volt range AC on it, there is a "ground loop" created. Ground loops, as we will explore in a future issue of SF, are very unfriendly to you. So to avoid ground loops, knowing the IRD is "AC hot" and that the AC voltage will through the shield on the RG6 travel out of doors to the LNBf case, Foxtel requires plastic ring insulation of the LNBf.

This is all well and good engineering practice. Until. Until you, the installer, come into contact with the LNBf case, or the shield portion of the RG6, while being grounded yourself to the roof. Now the 100 volt range AC, even if at 1/10th of one mil, flows from the LNBf case through your body to ground (the roof or other earth ground you are touching).

You can measure the AC voltage between the LNBf (case, shield on RG6) by using a DMM from the LNB to the tin roof (if one is handy - we show that on the front cover). But most

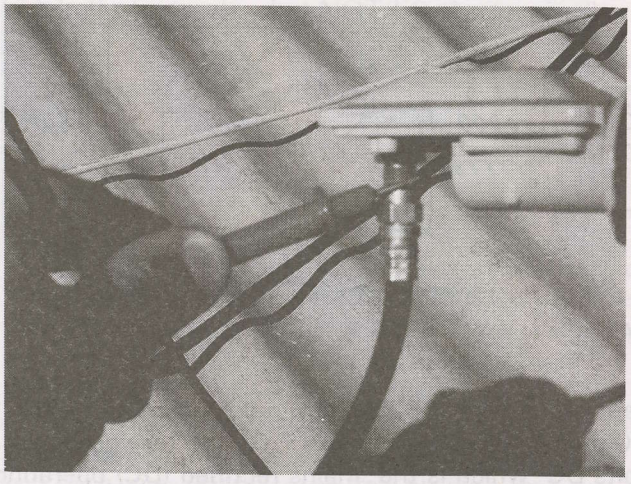


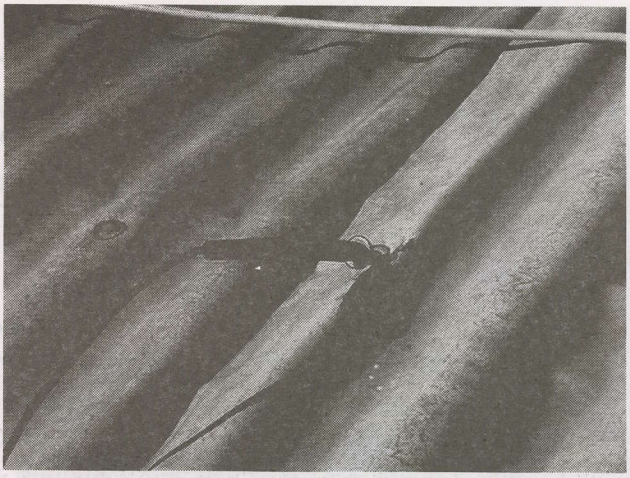
The LNBf "floats" in a plastic ring because it must not touch something that has a direct ground connection with 100V AC on RG6 shield transferred from UEC case. Other option - "plastic cased" LNBfs!.

of this is more academic than truly dangerous. What about the design of the power supply that creates this situation?

In the schematic (above) we see L1 and L2, both RF (as in radio frequency) chokes in the mains lead. Also note L3 and that troublesome capacitor C8. The combination of L1, L2, L3 and the "tuning" effect of C8 create a broad spectrum filter for radio frequency energy generated by the SMPS supply. These components help ensure that RFI (radio frequency interference) generated by the SMPS will not leak back into the mains AC system and cause problems for broadcast (AM), short-wave and TV reception. You will remember our previous concerns with RFI leaking from an IRD and creating interference for other spectrum users (SF#74, p. 32 reference Benjamin DB6600CI). C8's true role in this supply is multipurpose as best known to UEC design engineer Barry Bailey. C8 is a fixed, ceramic type. If the current is "limited" to something close to 1/10th of one mil, how is this accomplished? The answer is the impedance of C8 limits the current flow to IRD chassis ground. How does that work, since as a matter of safety concern the system's inability to supply enough current to be dangerous is pivotal to this discussion and the Australian safety authority approval?

The maximum voltage on C8 following the AC to DC bridge rectifier is a negative 353 volts (assuming 240 volts AC at the





Not all roofs are tin (right), not all Foxtel dishes attach to roofs. Under eaves mounts that contact metal roof flashing can also turn mount into a "ground" and this becomes a warning for installers - don't touch anything that is or may be at ground potential while also holding onto shield portion of RG6 connector.

input). This 353 volts is with respect to the neutral of the AC mains and the voltage is negative at the point of C8 connection because that is the bridge rectifier leg chosen by designer Bailey. It happens that being on the negative leg, he has added a measure of additional safety to the system. It also happens the bridge diodes play a part in the reading you will get but that is another story.

The impedance of C8 is calculated to be 3.183 megohms, under the AC mains conditions given for a 50 hertz system. If you know the maximum voltage present at the point of C8 connection (-353 volts) and the impedance of the cap (3.183 megohms), you can calculate the maximum amount of current that will flow through C8 to chassis ground. It turns out to be 110.9 microamp.

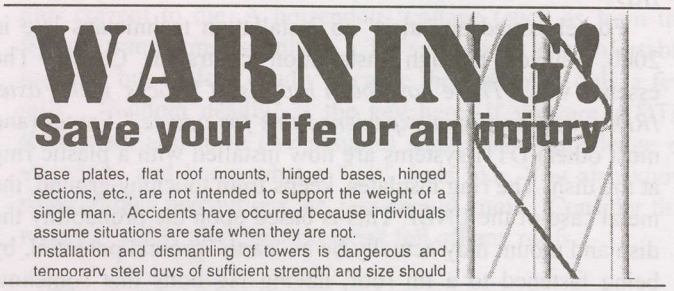
That is what it is supposed to be. Measuring a current flow this low requires laboratory not field equipment. We used a not-recently-calibrated Fluke 87 meter and found 63.8 uA AC true RMS. In a one millisecond time frame, we measured 115.9 uA so the calculated figure turns out to be well within the range we actually measured.

Can't they get rid of that "tingle?"

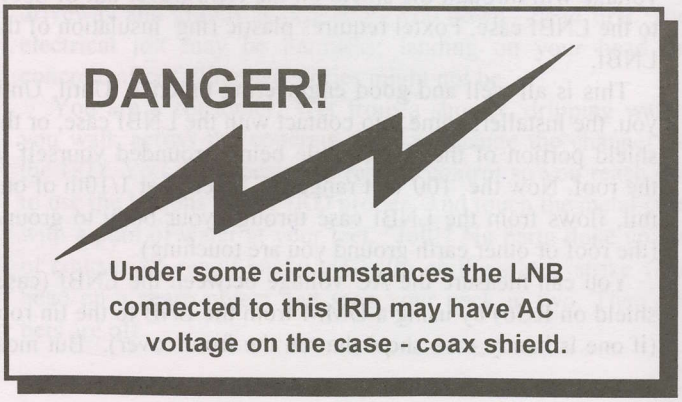
SMPS is a very tricky technology. Certainly there are other ways to design an SMPS than as Bailey has done but all bring with them designer baggage he apparently hoped to avoid. The power supply inside of the IRD does not function in isolation to the balance of the DTH system, and it must also interface safely with consumer electronic products - the TV set and VCR. To this end, that C8 cap has a reduction in impedance as the (radio) frequency of hash generated by the SMPS goes up. This means the cap with L1, L2 and L3 is "broadbanded" well into at least the HF (high frequency) region.

So other than falling off a roof, or striking your head when slipping in a pool of water from the unexpected jolt, is the UEC IRD totally safe? Not quite. There is one situation where the current build up could be lethal. Return with us now to SF#79, p. 22 and a "Technical Correspondence" discussion relating to using multiple UEC IRDs in a SMATV headend. The original report suggested dropping the UEC operating voltage to 117V AC and employing an isolation transformer to power "five IRDs."

Consider the chap who has to install several (2 to say 10) UEC 642 or other same SMPS design units in one location. If he does not use an isolation transformer, something very nasty happens. Taking a power strip and plugging 2 or more IRDs in, then connecting them to a single LNBf through splitters creates a potentially "jolting" experience. Why? Because the 110 microamps is additive. Five IRDs and we have 560 microamps - more than 1/2 mil. Ten and you have over 1 mil and now we have crossed the safety threshold for danger. This could kill you. Bottom line? Be careful!



Modelled after TV tower and ham antenna warning labels, telling people to be careful not to bring metal into contact with overhead power lines - this warning on IRD and perhaps LNBs is suggested. For manufacturer, it is a "safe move" to prevent law suits as well as good public relations.



1) Alan Faulks, Electrical Approvals Officer, Electrical Safety Branch, Department of Mines and Energy, GPO Box 194, Brisbane, Qld 4001 (fax 07 3237 0229; tel 07 3237 0278.

2) Electrical Supply and Safety, Level 6, Minerals and Energy House, 29-57 Christie St, St Leonards, NSW 2065.

ABA drops next shoe - how many feet have these guys got?

YELLOW "zones" gone??? - *One* Dealer told *"NOW EVERYONE* needs ABA approval!"

In our July 2000 SF#71, in reporting on the ABA presentation to the SPRSCS 2000 conference in Melbourne, we said:

"*For most* (in attendance at conference), ABA created maps showing where a potential Blackspot home could be located and not have to even apply for ABA approval were a revelation." ABA produced maps, distributed to attendees of SPRSCS 2000, broke existing terrestrial coverage zones down and specified where no terrestrial coverage was indicated. Maps indicating a "*yellow zone*," no terrestrial coverage, told installers where they could sell Aurora packages and go directly to the relevant satellite broadcasters (such as Imparja / Central 7) and get "turned on" without ABA meddling.

Brian Watson, Western Video in Tasmania was told by the ABA March 26 that from March 22, there are no more "yellow zones;" no more areas, anyplace in Australia, where you may install an Aurora package which includes any of the commercial services (Imparja, Central 7, WIN, GWN) without first obtaining ABA approval.

SatFACTS immediately contacted Greg Cupitt at the ABA to get his take on this report. Watson has pushed through more than 125 Blackspot approvals and is certainly no novice in this area. Cupitt at our deadline (April 4) writes:

"The yellow zones still exist and certainly haven't been eliminated. Residents in the yellow zone (remote licence area) make their request for enabling their receiver smartcards directly to the relevant satellite broadcaster."

So we are confused - Cupitt is certainly the "last word" on ABA procedures, while Watson was told by a member of Cupitt's staff the "no-more-yellow" story. See how easy it can be to get cross wind to the truth in this mess!

In SF#79, we reported the frustration dealers felt towards the ABA and the four commercial broadcasters using satellite. By eliminating the yellow zone - no ABA required - ruling, the ABA would ratchet the animosity level up significantly and dealers would be very upset by the change. There is more.

We reported in SF#79, "*Although* (ABA's) *Greg Cupitt* privately warns us, 'not to be unduly concerned,' about the status of installers, it is our (SF's) job to do just this. It may come down to an issue of how the satellite broadcasters deal with the new routine. Consider you are an installer and you have a system sale conditioned upon the relevant approval from the ABA. What is to prevent Imparja or any other satellite broadcaster from 'working deals' with individuals or groups of installers to the detriment of you? As of March 22, Imparja has advised one Tasmanian firm, "*We no longer will accept initiating an application process from you - the installer.* From this date forward, the consumer (would-be-satellite-TV viewer) must make first contact with us (Imparja) and we will then determine which dealer will handle testing and ultimately installation for this system."

If this becomes widespread, Imparja has just taken the salesman installer out of the picture - unless the installer *happens* to be the installer they now call for Tasmanian sales.

CABLE & WIRELESS OPTUS

Yours faithfully

E. R. Guz

Ed Guz
Manager Aurora
Cable & Wireless Optus

And - the Guz & Co letter

Shortly after March 15th, consumers who have Aurora systems began to receive an "information pack" that includes a letter ("Dear Viewer") signed by Ed Guz ("Yours faithfully"). The packet advises users of UEC642 receivers they have "three upgrade options." It seems Aurora is anxious to have all 642 receivers loaded with new (available over the air) software. They make claims about the software ("improved colour locking, flexibility for audio sampling rates and video resolution, faster EPG updates, improved teletext") and the two that really count - "support of new version smart cards" and "improved anti-piracy operation."

The options: (1) *Manual installation* - the user follows steps outlined in the packet; (2) *Automatic installation* - user completes survey-reply form (postage paid envelope supplied), and on a Monday morning between 4 and 5AM AEST between now and late June Optus will "hit" the IRD; (3) *No upgrade* - in essence, leave the box alone, about which Optus warns in bold face type, "We do not recommend that you choose this option as failure to install the new software could result in (decoders) being unable to operate (with) future broadcaster changes."

Reaction to the Guz & Co letter was instantly negative. Dealers viewing the report on our SatFACTS web site (http://www.satfacts.kwikkopy.co.nz) had violent reactions:

"*What an underhanded way* to create a customer mailing list to do with as they wish in the future!" (**AR**, NSW). "*Why should we believe for a minute* their so-called upgrades are for anyone's benefit but their own? Why should we believe their 'upgrades' make reception better or faster or easier? Nothing they have told us in the past year has been true, why should this be true? Can't they get it through their heads - these boxes belong to the people who paid for them, they are not 'on loan' from Optus and Optus cannot simply charge in throwing bits and bytes helter skelter because they have a bug up their rear end!" (**GD**, Victoria) "*I had this nightmare*; awoke to find a crew of tiny elves all dressed in Optus uniforms with miniature hammers and hacksaws cutting my UEC642 into splinters and then gluing the parts back together again." (**KG**, Queensland) "*So what are our options* with this so-called survey? (1) Boycott the form, (2) Return it with a statement to the effect the information they are asking for is none of their business, (3) Return it unsigned but otherwise complete, (4) Sign it but add a line, 'This is approval for an upgrade one time only and is not an ongoing consent to upgrade my decoder more than one time'." (**LK**, Victoria)

Satech is now STRONG AUST.

Same great products.

Same superb service.

Same caring people.

Now with a STRONGer product line!

ONE STOP SHOP

for ALL of your professional satellite needs!

ANTENNAS!

All sizes from 65cm to 4.9m!
All shapes!
And when only quality will do -

CABLES/CONNECTORS!

- Huge range RG6, RG11
- dual, quad, flooded, messenger
- 5 core tracking system

-by metre or by reel-
Times Fibre and Commscope!

LNB, LNB(f)s!

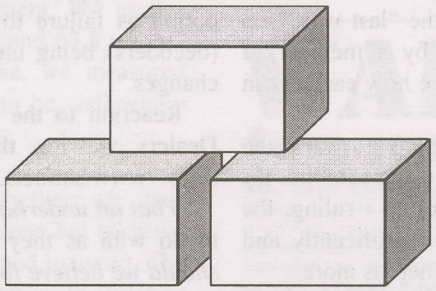
- C-band (17K, voltage switching)
- Ku-band (0.8dB, prime, offset)
- Digi-Ready PLL
- High Stability
- Low Phase Noise
- 2.3 GHz MMDS integrated

CalAmp, Strong and more!

ACCESSORIES!

- fly leads
- wallplates
- feed horns
- tools
- tapes
- poles
- decktite

FAST SERVICE - DIRECT CONTACT - HERE TO SERVE YOU!
On the web: http://www.satech.com.au
email satellite@satech.com.au



WATCH THIS SPACE!

Unwrapping soon.
More computing power than a Pentium equipped PC -
The PHOENIX 333 CI
Super **R**eceiver!

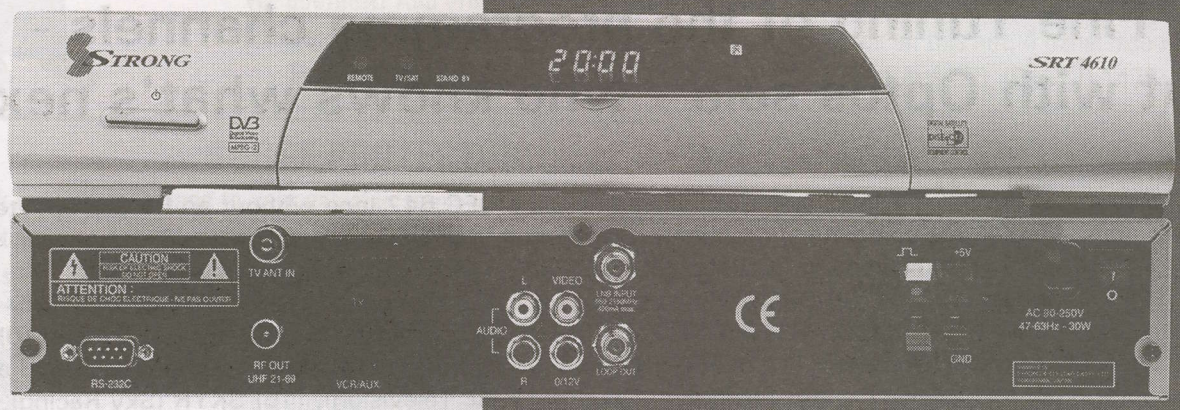
OUR COMMITMENT TO YOU - THE DEALER!

STRONG AUST realises you are in the front line of this industry, that you want more from a distributor than merely lip service and here today - gone tomorrow products and prices. The industry is changing *and so are we* - growing with you to provide backup service you can depend upon to help you through difficult installs, unreliable equipment. *You have a friend at STRONG AUST!*

Head Office: 302 Chesterville Rd, Moorabbin East, Victoria, Australia Ph: 61 3 9553 3399 Fax: 61 3 9553 3393

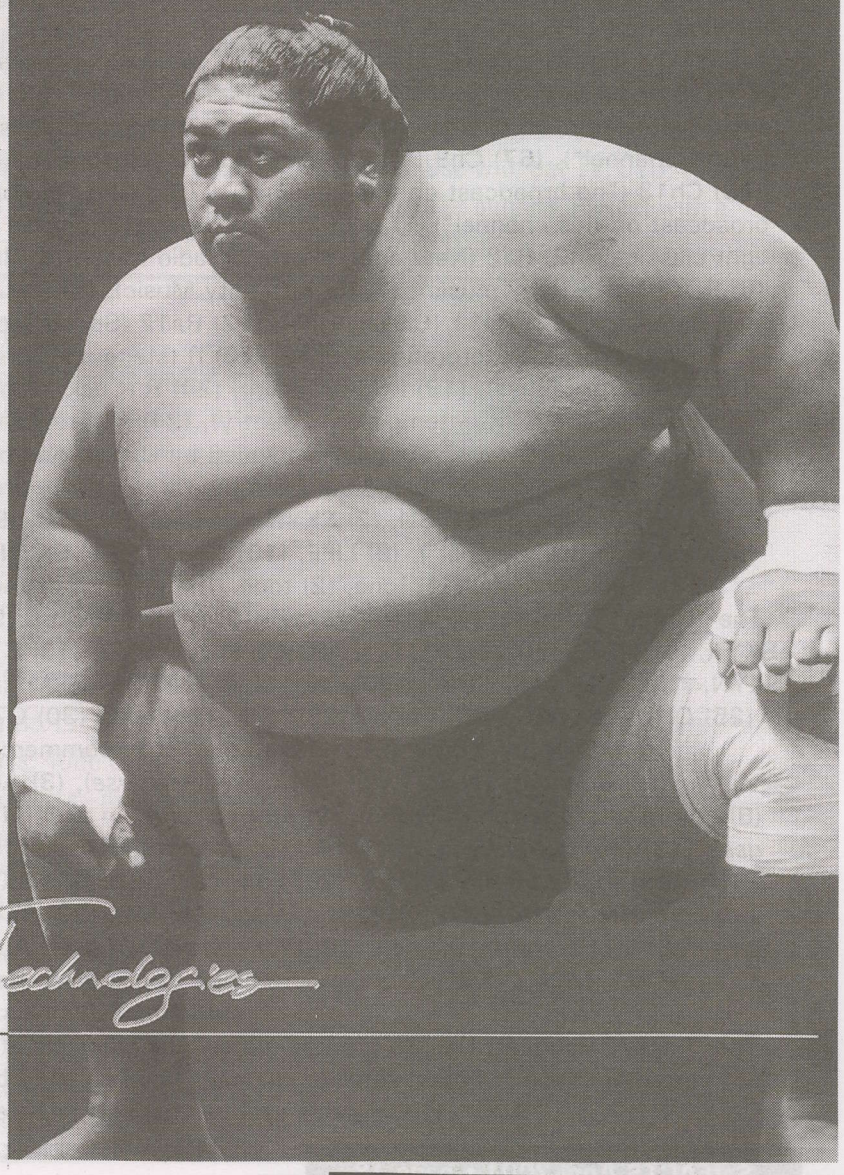
All products available through following distributors:

Strong Aust (Victoria) Tel: (03) 9553 3399
Southern Satellite Communications (SA) Tel: (08) 8299 0644
Network Satellite Services (NSW) Tel: (02) 9742 3098
Norsat (Western Australia) Tel: (08) 9451 8300
Nationwide Antenna Systems (Qld) Tel (07) 8252 2947
Mathews Electronic Service (New Zealand) Tel: (09) 634 5130 or 0800-777-376 outside of Auckland



SRT 4610

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



STRONG Technologies

Fine Tuning of the programme channels - but with Optus sold - who knows what's next!

The following is the pay-TV loading sequences logged on a UEC 642 (one without an Ed Guz update we might add!) April 4. For complete instruction on setting up your UEC to load the pay-TV channels, see SatFACTS #75 (November 200), p. 28, "UEC 642 - Making it work outside of Aurora."

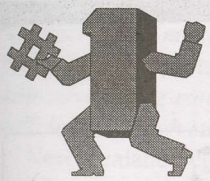
The DTH TV bouquet: (1) TV1, (2) SHOW (Showtime), (3) ENCR (Encore), (4) FS1 (Fox Sport 1), (5) ARNA (Arena), (6) [v] (channel V music), (7) Nickelodeon, (8) DISC (Discovery), (9) FS2 (Fox Sport 2), (10) LIFE (Lifestyle), (11) CMDY (Comedy), (12) NGEO (National Geographic), (13) MAIN (pay-per-view and adult after hours), (14) MC (Music Country - formerly Country Music Television), (15) SKYR (Sky Racing), (16) ANPL (Animal Planet from Discovery), (17) MOV1 (Movie 1), (18) MOVX (Movie Extra), (19) MOVG (Movie Greats), (20) C7S (C7 Sport), (21) C7S2 (C7 Sport 2), (22) ODSY (Odyssey), (23) MTV (Music Television), (24) SKYN (Sky News), (25) TCM (Turner Classic Movies and Cartoon Network), (26) TWC (The Weather Channel), (27) CNBC, (28) WMOV (World Movies), (29) TVSN (The shopping channel, FTA), (30) CNNI (Cable News Network International), (31) ESPN, (32) OVAT (Ovation), (33) OH! (situation comedies), (34) RAI (Italy), (35) ANT (Antenna TV Greece), (36) BBC (BBC World), (37) FOX (Foxtel version of Fox 8), (38) FOX (Austar version of Fox 8), (39) UKTV (British syndicated), (40) HALL (Hallmark made for TV movies), (41) FX, (42) KIDS, (43) FOXN (Fox News), (44) BLM (Bloomberg financial news), (45) CARTOON (Foxtel cartoons), (46) TCM (Foxtel classic movies), (47) SHW2 (Showtime, delayed 2 hours for WA), (48) DISN (Disney), (49) CNNF (CNN financial), (50) NHK (Japan), (51) SKYN (Sky news - *may be temporary*), (52) NRL (Optus Rugby League channel), (53) C7G (C7 games, was an Olympics channel), (54) HIST (History channel), (55) LIFE (Lifestyle, *may be temporary*), (56) m MAX (Music Max), (57) FTV (Fashion television), (58) WNI (Foxtel weather channel), (59) FX (*may be temporary)*, (60) CMDY (*may be temporary*), (61) SKYN (*may be temporary*), (62) FS1 (*may be temporary*), (63) Ch53 ("no broadcast on this channel"), (64) Adlt ("switch to main events channel"), (65) Ch2 ("no broadcast on this channel"), (66) Ch7 ("no broadcast on this channel"), (67) Ch9 ("no broadcast on this channel"), (68) Ch10 ("no broadcast on this channel"), (69) Ch13 ("no broadcast on this channel"), (70) Ch28 ("no broadcast on this channel"), (71) Ch29 ("no broadcast on this channel"), (72) Ch30 ("no broadcast on this channel"). The DTH radio bouquet: (1) Ra1 (light classical), (2) Ra2 (New age), (3) Ra3 (Radio Italia), (4) Ra4 (Sport 927), (5) Ra5 (Radio news extra), (6) Ra6 (High Energy music), (7) Ra7 (County Music), (8) Ra8 (Top 100), (9) Ra9 (Cafe Jazz), (10) Ra10 (Easy Listening), (11) Ra11 (Classic Hits), (12) Ra12 (Special occasions), (13) R (Austar radio), (14) R (retro beat), (15) R (underground sounds) (16) R (stage and screen music), (17) R (Latin beat), (18) R (Contemporary Blues), (19) R (Soul Train), (20) R (Cocktail lounge music), (21) R (Hottest hits), (22) R (Global Pulse), (23) R (Contemporary Country), (24) R (Great Symphonies (25) tone (test), (26) tone (test). Specialised " channel lists" are now employed by Optus, Austar and Foxtel. The DTH list includes virtually everything "up there" between the three service providers. Specialised lists follow.

The "Test" Bouquet: (1) DISN, (2) SKYN, (3) C7G, (4) C7S, (5) C7S2, (6) NGEO, (7) FS1, (8) Ch54 ("no broadcast on this channel"), (9) LIFE, (10) CMDY, (11) SKYN, (12) TCM, (13) FOX, (14) FX, plus, two radio channels (1) tone, (2) tone. The purpose of the "Test Bouquet" is not known.

The "Optus" Bouquet: (1) ARNA, (2) [v], (3) NICK, (4) DISC (Discovery), (5) LIFE, (6) MAIN, (7) MC, (8) SKYR, (9) ANPL, (10) MOV1, (11) MOVX, (12) MOVG, (13) C7S, (14) C7S2, (15) ODSY, (16) MTV, (17) SKYN, (18) TCM, (19) CNBC, (20) WMOV, (21) TVSN (FTA), (22) CNNI, (23) ESPN, (24) OVAT (Ovation), (25) OH!, (26) BBC, (27) CNNF, (28) NHK, (29) NRL, (30) C7G, (31) DISN, plus, radio channels 1 - 12 from DTH list. Optus continues to market to commercial establishments (motels, hotels).

The "Austar" Bouquet: (1) TV1, (2) (*not currently in use*), (3) ARNA, (4) LIFE, (5) CMDY, (6) FX, (7) UKTV, (8) Fox (Austar version of Fox 8), (9) (*not currently in use*), (10) DISC, (11) NGEO, (12) (*not currently in use*), (13) (*not currently in use*), (14) (*not currently in use*), (15) NICK, (16) DISN, (17) TCM, (18) TVSN (FTA), (19) (*not currently in use*), (20) FS1, (21) FS2, (22) SKYR, (23) C7S, (24) ESPN, (25) MAIN, (26) (*not currently in use*), (27) [v], (28) m Mac, (29) MC, (30) SKYN, (31) TWC, (32) CNNI, (33) CNNI, (34) BLM, (35) (*not currently in use*), (36) (*not currently in use*). Austar customers taking Optus services (such as MOV1, MOVX, MOVG) are programmed to use both the Austar and the Optus bouquets for the authorised channels.

The "Foxtel" Bouquet: Has 36 programme service channels of which 2, 7, 9, 10, 13, 28, 29 and 30 are "not currently in use." Foxtel satellite channels have recently been rearranged to make them coincide with Foxtel cable service channels (where 2 is ABC, etc.).



ENTHUSIASTS!

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

SURGE PROTECTOR!

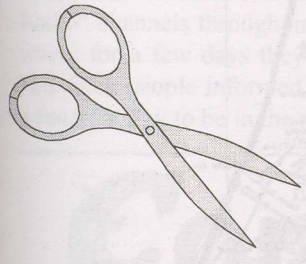
Don't risk lightening damage to your valuable satellite TV equipment or PC. Install this high voltage arrestor right at the input socket to minimise the danger! Great device (sorry, will not protect against small arms fire). Au$22 (Cat # X1480)

12 way MOTHER of all power boards!

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

PUT IT ALL TOGETHER with a DUAL BAND COMBINER!

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

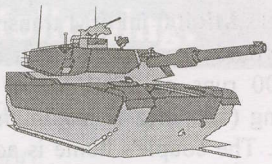


CUT OUT all of those extra REMOTES!

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

ANALOGUE RECEIVERS!

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



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

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

AV-COMM PTY LTD (ACN 002 174 478)
P.O. Box 225 Balgowlah NSW 2093 Australia
TEL: 612 9939 4377 FAX: 612 9939 4376
Web: http://www.avcomm.com.au Email: sales@avcomm.com.au
You are welcome to join our E-mail Newsletter Service;
just send E-mail to addme@avcomm.com.au

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

a technical and marketing advisory

memo

to the membership from your industry trade association

SPACE Pacific
Satellite
Programme
Access
Committ**E**e

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

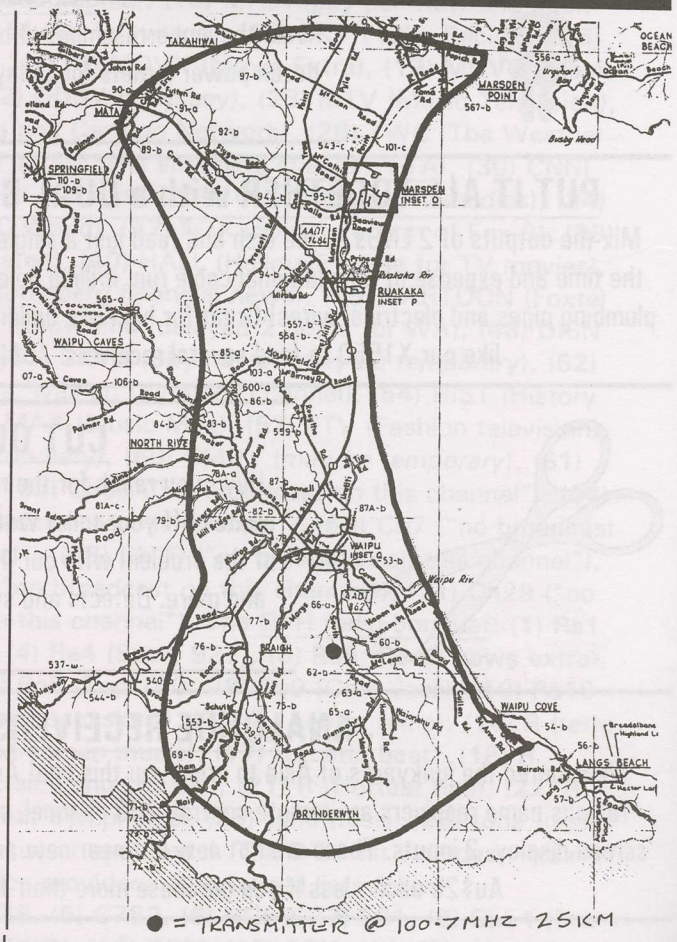
Your own radio "station"

Paul and Robin are very much like you. Paul installs for Sky Network TV, has a lively terrestrial aerial and MATV installation and service base, and Robin keeps the records and chases new business. Paul also has several C and Ku band dishes at his home near Waipu (Northland, NZ). He has been inspired by a number of events to build a low power community radio station including articles appearing in SatFACTS over the years.

Bream Bay Community Radio (cleverly, BBC-R) began broadcasting March 19. Using a 300 milliwatt transmitter supplied by inForM Radio Systems (1) with their 1/2 wave vertical antenna mounted on a top piece of ground near their home, BBC-R operating on 100.7 MHz covers a region approximately 25km north by south and a few km east by west.

"This is totally fun!" reports Robin with enthusiasm in her voice. *"Paul uses his aerial knowledge to install special* (dipole) *receiving antennas at local shops and stores, makes sure they can hear our station properly, and people are intrigued with having their own radio station. We air a notice board, items of local interest, a weekly book review from the Waipu library, episodes from recorded book stories and of course music and news."*

Paul's MR400 inForM transmitter is in miniature everything you would expect to find in a high power FM station. The MR400 runs on 230VAC or a 12 volt battery, has audio limiting (100 kHz is maximum deviation), a front panel VU meter. The couple's home is adjacent to a tall hill where Paul had previously installed off-air terrestrial antennas and he ran shielded audio cable from their desktop in-home studio to the hill. There the MR400 with a 1/2 wave vertical transmitting antenna is mounted 6m above ground.



1) Wayne Garroway, inForM Radio (64)(0)3-338 0077; inform@radioinfo.co.nz; http://www.radioinfo.co.nz/inform.htm. MR400 is NZ$29 a week.

MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer." All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) each year (September 27 - 29 in Melbourne - 2001). 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 in previous issues of SatFACTS. Page space within SatFACTS is donated each month to the trade association without cost by the publisher.

"Paul does the Sky installs, handles our terrestrial TV customers and makes the transmission system run; I get to 'play radio'" reports Robin. *"We are feeling our way along with advertising rates, confident that within a month or two we'll have enough support to make this a business."*

New Zealand regulations allow (type approved) 300 mW and down transmitters to operate in the 88.0 - 88.5, 100.0 - 100.7 and soon the 107.5 - 108 (FM broadcast) band without a license. The regional radio inspector (RI in the trade) may or may not conduct an operating inspection as a part of the launch procedure - their choice.

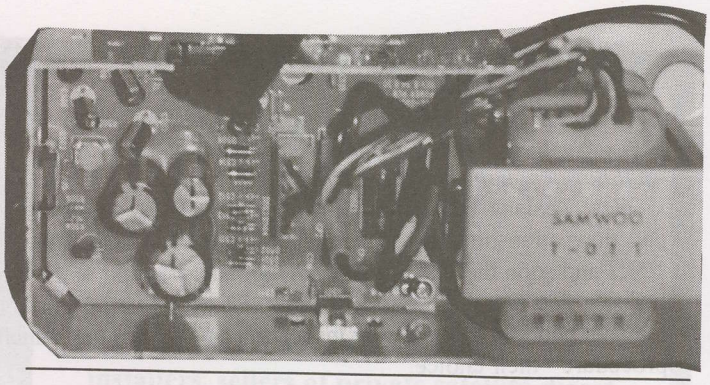
Paul and Robin have secured formal contracts with World Radio Network (and others). From one of Paul's dishes, they plug into the WRN-1 AsiaSat 2 service typically around 7PM and stay there until 7AM the next morning. It's all English, often highly entertaining and it costs nothing to be an affiliate.

"This is a very direct way to learn the radio business" suggests Robin. *"We are learning by doing it, and in a few months we'll sound far better than we do today. The most important thing we feel is to give BBC-R a local identity, use local people and keep the topics on air as connected as possible with Bream Bay. Radio has lost that hometown, personal touch and maybe our success will depend upon getting it back again."*

InForM Radio's MR400 is available only by annual lease - Wayne Garroway feels this is the best way to ensure the transmitters stay "legal" and don't jeopardise his type approval status. His customers include folks who operate the "tourist Radio" channels throughout New Zealand, and special events where for a few days they need one or more radio voices to help keep people informed and participating in an activity. It's a fun new way to be in the radio business!

TECHNICAL

CORRESPONDENCE



Fien's response regarding UEC 642 power supplies

"I read the comments of I.F. of Queensland (SF#79, p. 22) with interest. My approach to the chronic overheating problems with UEC switch mode power supplies (SMPS), which have existed since the first 642s released, was not based upon any extremely scientific analysis of the situation, but rather was based on my extensive experience with switch mode supplies. That is, most SMPS operate very reliably over an extremely wide input voltage range - this being one of the useful side effects of using switch mode techniques - and the heat generated is related to the 'point' in the cycle at which the switching is done; when the voltage is higher the circuitry switches off much sooner than when the voltage is lower. This creates quite large (but hopefully well damped) switching transients. The damping of the transients contributes a very significant amount to the total heat generated. If you can run over a larger portion of the cycle before switching off, there is less energy to dissipate and additionally the voltage is lower (117 versus 240). Therefore the dissipated power (that which creates waste heat - not the energy that gores to the operating circuits) will be lower. I accept that as I.F. calculated and measured, the answer is probably around 6 watts less heat and that is a quite significant percentage of the waste heat that has to be disposed of by the power supply.

"The voltages 'in other portions of the circuit' are all derived from the SMPS output and are not - as far as I can determine - affected by the input to the SMPS.

"As regards safety, I have not (from a practical point of view) found any greater percentage of faults with units run on 117 volts input; in fact, there has been a very significant reduction in the number and type of faults on sets operated at 117 volts. As to what UEC might have to say about but this technique, I respectfully suggest they be asked (*).

"Finally the question of selecting an appropriate transformer for the voltage step down. All I have selected are rated at 250 VA, double winding, not auto transformers which I agree would be a potentially dangerous situation as you might end up with 117 and 240 applied to the input rather than 0 and 117 volts. The primary is a single untapped winding. there is the usual Faraday shield and a secondary winding of -117, 0 and +117 volts (or thereabouts). These transformers were produced in quantity for a range of electrical instrumentation equipment widely used until a few years ago in commercial building control systems.

"These transformers run 'only just warm' with 5 UEC receivers connected. I have not bothered to measure the circuit parameters but they don't feel as though they are dissipating the 5 x 38 watts (taking the 38 watts as the 'normal' UEC draw from their manual); the 28 watts suggested by I.F. seems logical, perhaps even as low as 26 watts.

"It was not my intention to encourage others to convert their UEC 642s to 117 volts input, but simply to point out that in this day and age when SMPS devices are often pushed to (and beyond) their operating limits, there is an external step the user can take to greatly reduce the likelihood of UEC product failure. The reality is that SMPS allows a manufacturer to create a single power supply design, change the fuse and having selected an appropriate power cord for the destination country, simply relabel it and ship as required world-wide. The SMPS is the least expensive 'universal' power supply design presently available, as TV set, VCR and a host of other consumer electronic goods have decided for their own product lines. " (Eric F. Fien, Broadnet, NSW)

(* - UEC and their distributor have quite deliberately stayed out of the industry main stream by avoiding any confrontations, not issuing product updates or advisories, never participating in industry activities - such as SPRSCS. This in turn has created ill will towards UEC and the master distributor. We can assure you they do subscribe to and read SatFACTS - the decision to not be a part of the industry that has created so much wealth for them is theirs alone. It is highly unusual for an industry's largest volume supplier to be so totally divorced from industry activities.)

Eating humble ***pi***

"My published letter suggesting an alternative method of determining the correction factor for antenna measurements done for Blackspot reception approvals contained a type setting typographic error. You listed my calculation formulae as wavelength (lambda) divided by lambda-lambda whereas it should have read wavelength divided by pi."

(Brian Parry, Down to Earth Antenna Service)

Which equates to λ/π!

About line amplifier distortion

"I think many newcomers are missing an important point about line amplifiers, whether used between satellite dish/LNB and receiver or in a VHF/UHF distribution system. It is inherent that any amplifier adds 'distortion' to signals processed through; this is inescapable. In a dish system, the inline amplifier (some call them 'bullet amps') have three important 'rating factors': First, they have some amount of 'gain.' 10 or 20 dB was the original choice, now most are settling on 15-16 dB gain and offering only a single model. Second, they have a 'noise figure' or factor. As long as the bullet amp is preceded by a low noise LNB (as all would be), the noise factor is not vital to system performance but it should be less than 8 dB. Third and most important is 'total output capability.' Each carrier whether analogue or digital has some measurable signal level - power. When you sum or

add the power level of all signals passing through the inline amp, they cannot exceed in total power passing through the manufacturer's maximum rating. If they do, an entirely new type of 'amplified distortion' occurs; analogue signals 'flat top' (lose some of their peak energy) and digital signals develop 'beats' (unwanted amplifier created signals that interfere with the incoming satellite signals). If an amplifier does overload (too much power passing through) there are two obvious answers: (1) You did not need and should not have installed the amplifier in the first place, or, (2) search out a model with higher total output capabilities.

VHF-UHF line amps are not dissimilar in problems. A masthead amp that exceeds its rated output (because the individual carriers add up to more 'power' than the amplifier was designed to handle) generates new signals - false signals that are only there because of amplifier malfunction. These 'beat signals' if they fall in frequency into a TV channel you are trying to receive generate herringbone or other picture distortions. In some cases you can adjust an internal 'amp-gain' control *down* to correct this situation; in others, you need to replace the masthead with a model having higher rated output capability. New DVB-T signals, while not registering on the TV sets except as an increase in snow or noise, none the less have a 'signal level' which inside of a masthead is just like a new analogue signal. A home analogue TV aerial system with masthead that worked 'fine' before DVB-T went on the air locally but now seems to generate 'snow' or other artefacts on previously clean analogue signals will have to be upgraded to handle the increased 'thru-put' from the DVB-T transmitters.

Finally, house distribution amps are equally susceptible to these problems and the solution is the same - upgrade to a better speced model." (A. Cummings, Victoria)

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

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym	Receivers and Errata
Ap2/76E	TVB8 +	3849/1301H	4	3/4	13(.238)	PowVu, CA
	AXN	3920/1230H	up to 8	7/8	28(.340)	Tests, promos, **up to 5 chs FTA**
Thcm3/78.5	SkyChAust	3695/1455V	up to 3	3/4	5(.000)	Finally settled here from As2
	MRTV-Mynr	3666/1484H	1	3/4	6(.000)	erratic service
	Mega +	3640/1510H	12	3/4	28(.056)	Mega Cosmos here; new Sr
	Mahar/DD1	3600/1550H	up to 8	3/4	26(.661)	USA religion chs, CMM music FTA
	TRT +	3551/1600H	4+ TV, radio	3/4	13(.330)	3 Angels USA, Ch of Hope, + 9 radio
	Greece TV	3430/1720H	1	3/4	3(.225)	Newly reported SCPC 01/01
	PTV2	3420/1730V	1	3/4	3(.366)	FTA, not seen Australia
	TV Maldives	3412/1738V	1	1/2	6(.312)	FTA (reaches SE Australia)
	Thai Global+	3425/1725V	up to 7?	2/3	27(.500)	FTA
Insat 2E/83	**DD2**	3910/1240V	1	3/4	5(.000)	SCPC, testing MPEG-2; OK E. Aust.
	DD tests	3832/1318V	1	3/4	5(.000)	SCPC, weaker than 3910 above
ST1/88E	Taiwan Bqt	3509/1641H	13	3/4	23(.450)	MCPC, **sometimes FTA**, 2 adult chs
Yaml102/9	**Tumen TV**	3578/1572L	1+radio	3/4	4(.355)	unlikely south of eqtor
	TV6 Bqt	3645/1510L	3(+)	3/4	28(.000)	new Sr; unlikely south of eqtor
MeS 1/91.5	**Malay. TV3**	4147/1004H	1	3/4	7(.030)	CA but occ. FTA
As2/100.5E	**Euro Bouqt**	4000/1150H	6TV, 21r	3/4	28(.125)	FTA (TV5 teletext); now includes RTPi
	Reuters Sing	3907/1243H	1	3/4	5(.632)	occasional feeds, **some FTA** MPEG2
	Hubei/HBTV	3854/1296H	1	3/4	4(.418)	FTA SCPC, teletext
	Hunan/SRT	3847/1303H	1	3/4	4(.418)	FTA SCPC, teletext
	Guan./GDTV	3840/1310H	1	3/4	4(.418)	FTA SCPC, radio APID 81
	In. Mongolia	3828/1322H	2	3/4	8(.397)	FTA: #1 Mongolian, #2 Mandarin
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)	Mostly CA; **some FTA**
	Reuters/Sing.	3775/1375H	1	3/4	5(.631)	**FTA** & CA
	WorldNt/US	3764/1386H	1 + 20 radio	3/4	6(.100)	FTA; up to 20 radio channels
	Liaonin/Svc2	3734/1416H	1	3/4	4(.418)	FTA SCPC, radio APID 256
	Jiangx/JXTV	3727/1423H	1	3/4	4(.418)	FTA SCPC, teletext, radio APID 81
	Fujian/SETV	3720/1430H	1	3/4	4(.418)	FTA SCPC, + radio APID 80
	Hubei TV	3713/1437H	1	3/4	4(.418)	FTA SCPC, radio APID 80
	Henan/Main	3706/1444H	1	3/4	4(.418)	FTA SCPC, + radio
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27(.850)	Thru TARBS Aust, subs now OK
As2/100.5E	**Feeds**	4086/1064V	1	3/4	5(.632)	FTA SCPC feeds
	TVSN	4033/1117V	1	3/4	4(.298)	Occ. **FTA**, not same as Aust. version
	Jilin Sat TV	3875/1275V	1	3/4	4(.418)	FTA SCPC, + radio
	Beijing TV	3864/1286V	1	3/4	4(.418)	CA and **FTA** SCPC, not full time
	HeiLongJian	3834/1316V	1	3/4	4(.418)	FTA SCPC
	JSTV	3827/1323V	1	3/4	4(.418)	FTA SCPC, + radio
	Anhui TV	3820/1330V	1	3/4	4(.418)	FTA SCPC + radio
	ShaanxiQQQ	3813/1337V	1	3/4	4(.418)	FTA SCPC, radio APID 81
	Guan/GXTV	3806/1344V	1	3/4	4(.418)	FTA SCPC, radio APID 257
	Fashion TV	3795/1355V	1	3/4	2(.533)	FTA SCPC, reload VPID 308, APID 256
	MSTV	3791/1359V	1	3/4	4(.340)	FTA SCPC
	Myawady	3766/1384V	1	7/8	5(.080)	FTA SCPC - difficult to load
	Saudi TV1	3660/1490V	1 (?)	3/4	27(.500)	FTA MCPC
As3S/105.5	Zee bouquet	3700/1450V	9TV	3/4	27(.500)	Mediaguard CA, **ch 8 FTA**
	ETV Bangla.	3749/1401V	1TV	3/4	4(.340)	PowVu but FTA at this time
	Arirang TV	3755/1395V	1	7/8	4(.418)	FTA SCPC; reported audio problems
	Now TV	3760/1390Hz	2	7/8	26(.000)	
	Star TV	3780/1370V	17(+)TV	3/4	28(.100)	NDS CA (Pace DVS211, Zenith)
	Star TV	3860/1290V	14(+)TV	3/4	27(500)	NDS CA (Pace DVS211, Zenith)
	Star TV	3880/1270H	12(+)TV	7/8	26(.850)	NDS CA (Pace DV211, Zenith) + **1 FTA**
	Alive TV	3900/1250Vt	5TV	7/8	27(.895)	PAL, NTSC, 1 ch CA
	CNNI	3960/1190H	4(+)TV	3/4	26(.000)	PowVu CA; some **FTA** feed channels
	Star TV	4000/1150H	7(+)TV	7/8	26(.850)	NDS CA + **info card FTA**
	Sun TV	4095/1055H	1	3/4	5(.554)	"History Channel" testing SCPC
	CCTV bqt	4115/1035H	4(+) TV	3/4	19(.850)	was analogue; now FTA MCPC
	Zee Bqt #2	4135/1015V	4(+) TV	1/2 or 2/3	15(.000)	New bqt, Zee News + here
Cak1/107.5	Indovision (S-band)	2.536, 2.566, 2.596, 2.626	33(+) TV	7/8	20(.000)	NDS CA using RCA/Thomson, Pace IRDs
C2M/113E	**TPI**	4185/965V	1	3/4	6(.700)	FTA SCPA; NT only
	Metro TV	4089/1061H	1	3/4	6(.498)	testing new svc (03-01)
	Ch NewsAsia	4071/1079H	3	3/4	14(.060)	CH News Asia FTA; VPID 33, APID 34
	Anteve	4055/1095V	1	3/4	6(.510)	FTA SCPC; NT only
	Space TV	4000/1150H	11TV, radio	3/4	26(.666)	CA, sometimes **FTA**
	ETTV Shop	3790/1360H	1	3/4	3(.050)	FTA SCPC
	C Net Taiwan	3760/1390H	11TV, radio	3/4	26(.666)	CA, subs available **-10 radio** typ. **FTA**

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(C2M/113	**RCTI**	3475/1675H	1	3/4	8(.000)	FTA SCPC, Australia OK
JcSat3/128	Miracle Net	3990/1160V	3 up to 6	5/6	22(.000)	PowVu, some **FTA** (ch # 1,3)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)	CA & **FTA** Ntsc: Japan, Taiwan
MeaSat 2	Astro Mux	11.106H (+)	up to 7TV	7/8	30(.000)	Aust east coast beam; also 11.168Hz
Op B3/156	Mediasat	12.336V/T2	9TV, 3ra, Inter.t	2/3	30(.000)	CA, **some FTA, Herbalife, new svcs**
	Aurora	12.407V/T3		2/3	30(.000)	cvrs Aust, NZ 90 cm; CA (*)
	Aurora	12.532V/T5	Inc Zee, ATV	2/3	30(.000)	cvrs Aust, NZ 90 cm; CA (*)
	Aurora	12.595V/T6		3/4	30(.000)	Aust only; * - smart card p. 28
	Aurora	12.657V/T7	6CA testing	2/3	30(.000)	cvrs Aust, NZ 90cm; CA(*)
	Aurora	12.720V/T8		3/4	30(.000)	Aust only;* - smart card p. 28
	Austar/tests	12.376H/T10		3/4	29(.473)	Austar I-TV tests
	Austar/Foxtl	12.438H/T11		3/4	29(.473)	CA, subscription available Australia
	Austar.Fxtl	12.501H/T12		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.564H/T13		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.626H/T14		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.688H/T15	(some FTA ra)	3/4	29(.473)	CA, subscription available Australia
Op B1/160	**ABC NT fd**	12.260V	1TV, 3 radio	3/4	5(.026)	may go to 12.280; V832, A833
	ABC feeds	12.317H	1	3/4	6(.980)	also 12.326, 12.335; ex PAS8 Ku
	Central 7	12.354H	1TV	3/4	3(.688)	VPID1280, APID 1281
	Imparja mx	12.360H	1	3/4	5(.424)	VPID 1024, APID 1025
	Mediasat#2	12.406V	up to 6 TV	2/3	30(.000)	also try Sr 28.000; FTA & CA
	Mediasat#3	12.424H	3+ TV	2/3	19(.800)	net feeds, Australia only, FTA & CA
	Ninc Nct	12.512H	1 TV typ.	3/4	5(.632)	testing digital feeds
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.644/671V	9TV	3/4	22(.500)	NDS CA, subscription available NZ
PAS8/166	TARBS	12.526H	12+ TV	3/4	28(.067)	TPG /Eurodec CA, occ. FTA
	TARBS2	12.606H	6+TV	3/4	28(.067)	Tests, inc. ESPN, see TARBS above
	JEDI/TVB	12.686H	11+ TV	3/4	28(.126)	Irdeto CA, **some FTA** tests
	Boomerang	12.725H	5 TV	7/8	25(.728)	CA, subs avail Aust, **CNN FTA**
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(.125)	PowVu CA
	NHK Joho	4065/1085H	7TV, 1 radio	3/4	26(.470)	PowVu CA & **FTA**; subscription avail
	Japan Bqt	4050/1100H	2	3/4	12(.000)	PowVu CA; NTV Int, Fuji TV
	ESPN USA	4020/1130H	7+TV, data	7/8	26(.470)	PowVu CA; ch 11 DCP-CCP bootload
	Discovery	3980/1170H	8 typ.	3/4	27(.690)	PowVu/CA (some audio **FTA**)
	CalBqt/Pas8	3940/1210H	up to 8TV	7/8	27(.690)	PowVu CA & **FTA (EWTN/EB Net)**
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)	FTA at this time
	Filipino Bqt	3880/1270V	up to 9 TV	3/4	28(.700)	Some **FTA**; also 4040V, 27.686,7/8
	Feeds	3854/1296H	1	3/4	6(.110)	occ. feeds, inc. Mediasat Sydney
	Arirang 2	3815/1335V	1	3/4	4(.400)	CA, Korea
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(.632)	was As2; PowVu CA
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(.000)	PowVu, CNN now CA
	MTV	3740/1410H	8	2/3	27(.500)	CA; #7,8 **FTA feeds**
PAS2/169	Pv Bouquet	12.290V	2+ TV, radio	2/3	27(.500)	PowVu CA, WIN, ABC NT
	WA PowVu	12.637(.5)V	4TV, 8 radio	1/2	18(.500)	PowVu CA, WA only - D9234
	HK PowVu	4148/1002V	up to 8	2/3	24(.430)	PowVu CA; some **FTA**
	Fox Bouquet	3992/1158V	8TV/data	7/8	26(.470)	Pv, CA/FTA (**FTA ch 3 only**)
	Feeds	3966/1184V	1	2/3	6(.620)	PowVu (FTA) occ feeds
	Feeds	3957/1193V	1	2/3	6(.620)	PowVu (FTA) occ. feeds
	Aust-feeds	3942/1208V	1	2/3	6(.620)	Mediasat outward bound feeds
	Feeds	3934/1216V	1	3/4	10(.850)	PowVu (FTA) occ. feeds
	Feeds	3912/1238V	1	2/3	6(.620)	PowVu(FTA) occ. feeds
	Feeds	3898/1252V	1	2/3	12(.000)	PowVu (FTA) occ. feeds
	Middle East	3836/1314V	4 typ (+ more)	3/4	13(.331)	Pv FTA, testing Irdeto; was 3778V
	Feeds	3803/1347V	1	2/3	6(.620)	PowVu (FTA) occ. feeds
	BBC +	3743/1407V	3	3/4	21(.800)	**BBC FTA**, others CA usually
	CCTV Pv	3716/1434V	5 typical	3/4	19(.850)	PowVu FTA; # pgm chs varies
	Feeds	4040/1110H	1	3/4	10(.850)	PowVu (FTA) occ. feeds
	KBS/Korea	4026/1124H	1	3/4	5(.062)	some **FTA**, some CA
	7th DyAdv	3872/1278H	1	3/4	6(.620)	Sat, Sun 0930UTC typ; sports 3873
	Feeds	3868/1182H	1	2/3	6(.620)	FTA (occ. sports); try 3863, Sr6.110
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498	FTA-typ. NTSC-occ. sport, shuttle
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)	(PowVu) CA+**FTA**

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(PAS2/169E)	**occ feeds**	3776/1374H	1 typ	3/4	5(.560)	occ feeds, typ FTA; also Sr 5.600
	Koran Bqt	3768/1382H	up to 3	3/4	8(.320)	Korean KBS, YTN
	Satcom 1-6	3743/1407H	up to 5	7/8	19(.465)	use unknown at this time
I702/176E	AFRTS	4177/973LHC	8TV, 12+radio	3/4	26(.694)	PowVu CA
	RFO Poly	4027/1123L	1TV	3/4	4(566)	SE spot beam
I701/180E	TNTV	11.060V	9	3/4	30(.000)	eastern spotbeam, pay TV tests
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)	Mediaguard CA, 1 ch FTA
	TVNZ	4195/955RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ	4178/972RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/feeds	4161/989RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	RFO-Canal+	4086/1064L	4TV, radio	5/6	13(.347)	east hemi 20.5 dBw, to be 15.5
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)	DMV/NTL early version,occ feds, typ ca
	TVNZ feeds	4044/1106R	1	3/4	5(.632)	SCPC, mixed CA and **FTA** feeds
	NZ Prime TV	4024/1126L	1	2/3	6(.876)	PowVu CA; Auckland net feeds
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)	CA, Leitch encoded
	Ioarana	3772/1378L	1	3/4	4(.566)	FTA SCPC; East Hemi Beam-Tahiti
	TVNZ	3846/1304R	1	3/4	5(.632)	SCPC, mixed CA & **FTA**, feeds
	10 Australia	37691381R	4	7/8	20(.000)	PowVu CA & **FTA; #3 TBN**

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

ASTRX D 1000CI. SCPC, MCPC, two CAM slots, auto search routine. Review SF#78 & #79. LTG Mason 61-3-9457 1222.
AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM Pty Ltd, 61-2-9939-4377.
Benjamin DB6600-CI. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Grundig DTR1100. Mfg by Panasat (SA), very similar to Panasat 630; out of production, Irdeto capable. See Av-COMM above.
Humax F1-CI. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).
Humax ICRI 5400. Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, review SF#76.
Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)
Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.
MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. Int. 61-2-9618-5777
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. Tricky to use.
Nokia 9200. When equipped with proper CAM, does Aurora, pay-TV services provided software has been "modified" with Dr Overflow or similar program was available from (www.BAKKERELECTRONICS.COM), now only from established users.
Nokia 9500/9600. Numerous versions for different world parts; not distributed in Pacific but assistance from Av-Comm Pty Ltd.
Nokia 9800. Latest single chip version, with CI and Irdeto capable. No software for Pacific, Asia; not recommended.
Pace DVS211. NDS CA (no FTA) for Star Asia, previously used for Indovision. (Solution 42, 61-2-9820-5962)
Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818)
Pace DVR500. Original DGT400 modified for NBC (PAS-2) affiliate use, with CAM equivalent to DGT400 but more reliable.
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.
Pacific Satellite DSR2000. Advises no longer current model; Clone of Mediastar D7 (see above)
Panasat 520/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370.
Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but no longer available in Australia.
Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH(below)- 222 out of production
Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review Nov. 1998. SATECH 61-3-9553-3399.
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
PowerCom. FTA, PowVu, NTSC, excellent sensitivity. NetSat 61-2-9687-9903.
PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). Scientific Atlanta 61-2-9452-3388.
Praxis 9800 ADP. FTA SCPC/MCPC, PowVu, analogue, positioner. SF review Dec '98; withdrawn from Pacific sale.
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-3749)
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above).
Skandia SK888 (aka DigiSkan-SMS). FTA MCPC, Irdeto CAM+software upgrade. Out of production; Skandia 61-3-9819-2466
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Aust 61-3-9553-3399.
Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, Aurora, exc. vendor support. Strong Aust 61-3-9553-3399.
Sky 21/SJ 3000ci. Claims "clone" Hyundai HSS800ci; if so, poor copy. Runs very hot, reportedly burns up smart cards
UEC642. Designed for Aurora (Irdeto), approved by Optus; limited other uses. Norsat 61-8-9451-8300.
UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers.
Xanadu. DVB compliant special receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)
Yuri HSS-100C. FTA, clone of Hyundai, V2.27 software custom to Australia (Nationwide-above).

Accessories:

Aurora smart cards. New v1.6 now available, 1.2 no longer available for RABS. Price now A$105, Sciteq 61-8-9306-3738; V1.8 available through Norsat 61-8-9451-8300 at A$107.50.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 7/8; pgm ch 11 and follow instructions (do not leave early!)

SatFACTS Pacific/Asian FTA ANALOGUE Watch: 15 April, 2001

BIRD/ Location	RF/IF & Polarity	Service	Errata
I703/57E	3808/1342R	Udaya TV	
	4052/1098R	WorldNet	VOA subcrs.
	4178/972L	MTA Inter.	
I604/602/60E	4166/984	various feeds	
I704/66E	3765/1385R	tests	
	4015/1135L	Mongolia	(SECAM)
PAS4/68.5E	3743/1407V	RTPi	(+ radio subcr)
	3864/1286V	BBC World	
	3907/1243H	Sony TV	Hindi
	4034/1116V	Doordan	(various)
	4087/1063H	CNNI	
	4110/1040H	TNT/Cartoon	
	4113/1037V	Series Ch.	
	4182/968H	MTV	
PAS7/68.5E	3470/1680V	test signal	
I.M1/75E	3980/1170V	various	(Madagascar)
ApStar 2R	3780/1370H	TV Malagasy	(SECAM)
Thaicom3/78E	3871/1279H	TVT	
	3760/1390V	Army TV	
	3685/1465V	MRTV	off air???
	3685/1465H	VTV	6.6, 7.02
	3616/1534V	ATN	
	3576/1574V	ATN Bangalr	Bengali
	3554/1596V	test card	
	3536/1614V	Punjabi TV	(occ service)
	3507/1643V	RAJ-TV	
	3489/1661H	Vasta Music	occ tests
	3465/1685V	RAJ-TV	
Expres 6A/80E	3675/1475R	RTR	(global beam)
InSat 2E/83E	3481/1669V	Sun TV	
	3562/1588V	Vijay/Asianet	aud. 5.5/6.6
	3599/1551V	JayaTV	
	3810/1340V	DD1-Tamil	"
	3850/1300V	DD1-National	"
	3929/1221V	DD2 Metro	"
	3970/1180V	Teluga 1	"
	3998/1152V	sport feeds	"
	4035/1115V	Sun TV	"
	4060/1090V	Surya/Sun TV	"
	4093/1057V	DD7	"
ChnStr1/87.5E	3880/1270H	occ feeds/ card	P4 NSW, Ntsc
ST1/88E	3550/1600V	test card	
	3582/1568V	Nila TV	(vintage TV)
Yamal 102/90E	3675/1475R	RTR1	P3 NSW
	3875/1275R	Orbita 1	
	3916/1234R	RTR II	
	3935/1215R	Orbita II	
MeSat-1/91.5E	3710/1440H	VTV1,2, 4	
	3880/1270H	RTM-1	
Gz 28/96.5	3675/1475R	RTR	inc +/- 3.7
Chinasat22/98	3900/1250H	tests	+ 3940/1210
InSat 2B/93.5E	4165/985H	India Metro	NSW on 3.7m
	4080/1070V	DD7 (Tamil)	
	4070/1080H	DD9	
	3970/1180V	DD9 (Kan.)	
	3882/1268V	DD1	
	3840/1310V	DD?	
	3762/1388V	DD4	
AsSat2/100.5E	3660/1490V	feeds, tests	
	3680/1470H	feeds	
	3860/1290V	feeds	

BIRD/ Location	RF/IF & Polarity	Service	Errata
(As2/100.5E)	3885/1265H	WorldNet	VOA subcrs
Exp. 9/103E	3675/1475R	RTR	inc +/- 2.1
	3875/1275R	Vrk Apt	
As3S/105.5E	3640/1510H	Asia Plus	China, 6.6
	3660/1490V	Zee TV	was 3980
	3680/1470H	CETV	
(temp FTA)	3800/1350H	Star Sport	NTSC
(temp FTA)	3840/1310H	Channel [V]	NTSC
(temp FTA)	3920/1230H	Phoenix Ch	NTSC
	4020/1130V	Sahara TV	6.2, 6.8
	4060/1090V	IndusVision	6.6, 7.2
	4100/1050V	PTV2/World	
Tkom1/108E	4000/1150H	tests	
PalapC2/113E	4160/990H	(France) TV5	
	4140/1010V	Brunei + feeds	
	4120/1030H	MTV Asia	
	4080/1070H	Herbalife	+ tests
	4040/1110H	CNBC	
	3970/1180V	CNNI	
	3840/1310H	TVRI	tests
	3742/1408V	RCTI	English subcr
AsSat1/122E	3677/1473V	Test card	3933/1217H
ChinS 6/125E	4085/1065V	feeds	seldom seen
JcSat3/128E	3768/1382V	feeds	occ., P5 NZ
	4085/1065V	test card	NTSC, 6.8
Ap1A/134E	4160/1050V	CETV	
	3980/1170V	CETV1	
	3900/1250V	CETV2	
Ap1A/138E	4160/990H	CCTV7	
G25/140E	3675/1475R	ORT Moscow	inc. +/- 4.9
	3875/1275R	feeds, tests	
LMAP2/142.5	3675/1475L	RTR Moscow	+/- 3 deg inc.
Gorizont 33	3675/1475R	tests	+/- 1 deg inc
	3875/1275R	RTR	audio 7.5
Ag2/146E	3787/1363H	GMA	P1/2 s. eqtr
Me2/148E	4080/1070H	test card	occ. use
PAS8/166.5E	3880/1270V	test card, feeds	not full time
	3865/1285H	Napa test card	not fulltime
PAS2/169E	3940/1240V	Napa test card	not full time
SpNet4/172E	3920/1230V	unknown video	
1802/174E	4166/984R	Feeds	
	4177/973R	Feeds	
I702/176E	4166/984R	Feeds	from 177E
	4187/963R	Occ. feeds	
I701/180E	4187/963R	Occ. feeds	
	3841/1309L	RFO	East Beam
	3845/1305R	Occ. feeds	inc. from USA
	3930/1220R	USA net feeds	**FTA** & ca
	3975/1175R	Occ. feeds	

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

Protecting yourself from residual current leakage

As our report on pages 12 to 14 warns, a perfectly "legal" (as in approved by Government for consumer use) satellite IRD employing a SMPS (switch mode power supply) can deliver a voltage "tingle" to anyone who bridges the gap between IRD and something approximating ground. Furthermore, any object electrically connected to the IRD's chassis (metal case) will also carry the "tingle voltage." In particular, this would include the LNB(f) in virtually all cases and the satellite (dish) antenna under some circumstances. How there is voltage on the chassis / case of an electronic appliance is not a subject to be covered here.

To startle, injure or kill you, there must be a voltage exceeding some nominal amount (it is variously argued that voltage, if AC, must be more than approximately 30). There must also be a flow of current. Voltage is a force, similar to pressure in a water system while current is how much of something goes past a certain point in a stated period of time. Think of current as the "amount of water" that flows in 1 second, 1 minute, 1 hour. Under varying circumstances, we can have lots of voltage and virtually no current, or very low voltage and lots of current. Voltage multiplied by current is power (watts) and it will be the "watts" that you feel when you touch a "live" chassis or case. There are various thresholds for voltage versus current which equate to differing effects on a human being.

The Australia (later New Zealand) Occupational Safety and Health Act 1984 establishes certain "limits" for human contact with electricity. These (published) limits are for an "average person" in a "typical" situation. The numbers from the University of Technology, Sydney:

"Category A - voltages less than 32VRMS 50 hertz (AC) or 115VDC
0.5 mA (1/2 of 1 milliamp, 1/2000th of an amp) - ("tingle") can be felt by contact
10 mA (1/100th of an amp) - muscle contraction, hard or impossible to let go (of source of electricity)
40 mA (1/25th of an amp) for 1 second - Ventricular fibrillation
5A and above - heart muscle clamps, tissue at point of contact burns"

An "average" person in a "typical" situation means very little. Neither may apply to you. "Average" means that you have no cuts or bruises or open wounds on your hands or feet. If an open wound on your finger (even a small cut) is the point of contact with the electrical circuit (or chassis on an IRD) or if you have skin abrasions on your leg (wearing short pants as many installers do) where your leg is in contact with a metal roof or other "ground," your susceptibility to an injuring or fatal shock goes up thousands of percent. Dry, callused skin provides a momentary barrier to the flow of electricity - that all important first second or two before the electricity penetrates the skin and breaks down the tissue. If the skin is not dry, there is no barrier and the first contact (through an open cut) is the equivalent of a *third-second* shock in the *first second* of contact. The University of Technology, Sydney, Faculty of Engineering in "Safety in Laboratory Work - A Code of Practice" warns, "*No voltage can be taken as absolutely safe.*" There are historical references to people who have taken their own lives by opening the skin (creating wounds) and inserting a 1.5 volt D-cell into wounds created on both wrists. A particularly gruesome (and difficult to imagine) report tells of a human who stuck the positive terminal of a single 1.5 volt D cell on his tongue and then in a bent over position allowed the negative terminal to come into contact with the head of his penis - he urinated (on purpose) and was electrocuted.

Moreover, while a "typical" human skin impedance would be 500 ohms, it may be much lower (therefore making the person more prone to deadly shocks from lower currents) on a ring finger (where metallic particles from the ring have become imbedded in the skin). And, while most tests have been done at 50 or 60 hertz AC, it is well known that at higher frequencies (such as one encounters in a SMPS power supply), the amount of voltage and current required to be lethal is significantly reduced. The Australian Defence Organisation (ADO) has recorded 150 incidents of electric shock resulting in death or injury between 1996 and 2000.

One protection is to use a RCD (Residual Current Device) with any situation that might create "ground leakage currents." The RCD works on the basis that what goes in must come out. It measures the amount of current flow to a device and then measures the amount returning to the AC source. If the amount going in is greater than the amount coming back to the AC (mains) outlet, it assumes there is "leakage" (flow of current to some other object). The RCD is portable, can be installed on a mains outlet and the IRD plugged into it. When it detects a difference of 5, 10, or 30 mils (variable amounts based upon RCD models) between inflow and outflow, it "trips" a relay or shut down circuit that turns off the power, typically so rapidly that a user cannot be injured before the circuit is disabled. RCDs are available at any electrical supply house. If you install satellite dishes, a RCD should be part of your tool box before you approach an IRD or LNB(f).

TUNING IN THE INDUSTRY'S TV PROGRAMME

SPACE Pacific, the Asia-Pacific industry membership trade association, has produced (and continues to produce) a series of one hour television programmes. These "SPACE Pacific Report" shows, hosted by Bob Cooper, cover a range of topics of interest to installers and enthusiasts. Show numbers and content are as follows: **#9901-** Spectrum Analyser techniques, **#9902-** Feeds and LNBs, **#9903-** Dish antenna designs and problems, **#9904-** The dish marketplace, and, "tiny parts," **#9905-** Dr Overflow (Nokia) software (Robin Colquhoun), **#9906-** How the uplink works (tour of RCA's Vernon Valley site), **#9907-** Uplink Two, including uplink transmitters, **#9908-** Digital Basics (Mark Long), **#9909-** Real World Installs (Mark Long), **#9910** - Installing a polar mount dish and signal level test equipment, **#9911** - "SPIN" (the hidden side of satellite). **#0012** - First Report from SPRSCS 2000 (recorded in Melbourne June 28, 29 - "Ideal IRDs," more), **#0013** - Second Report from SPRSCS 2000 (recorded in Melbourne June 29, 30 -"ABA Blackspot session"), **#0014** - Naughty Nokia from SPRSCS 2000; **#0015** - The DVB-T Tangle from SPRSCS 2000 (Eric Fien). "Report" is broadcast by Mediasat on Optus B3, 12.336Vt, ad-hoc channel 3(*) (Sr 30.000, FEC 2/3). The coming-weeks schedule: **Sunday April 15** - Show 9902, 0200-0300 UTC (1400 NZ, 1200 AEST, 0900 Western Australia; repeats 0700 UTC/7PM NZ, 5PM Sydney, 2PM Perth). **Sunday April 22** - Show 9903, same times as April 15; **Sunday April 29**- Show 9904, repeats same times as April 15; **Sunday May 06** - Show 9905, same times as Aoril 15; **Sunday May 13** - Show 9906, same times as April 15; **Sunday May 20** - Show 9907, same times as April 15; **Sunday May 27** - Show 9901, same time as April 15. (* - Mediasat may pre-empt showings, check other bouquet channels - if not on 3.) 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 are currently in "editing production." Sponsorship of SPACE Pacific Report. In general answer to queries - Av-Comm, Satech and Sciteq have contributed corporate funding to make possible the production of the first set of nine SPACE Pacific Report programmes. If interested in sponsoring future shows, contact Bob Cooper at skyking@clear.net.nz (64-9-406-0651).

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

WITH THE OBSERVERS

AT PRESS DEADLINE

Conflicting reports about ATVI "going-off-air" card (+3 radio subcarriers - below and p. 31 here) being on or off. STAR TV Hong Kong - it may be a cruel joke of paranoia but several Hong Kong reporters warning us to expect shut down of 7 of the 8 digital channels as early as April 13th (SF#76, p. 15).

AsiaSat 2/100.5E: "Reuters Singapore feeds appear 3907Hz erratically, Sr 5.632, 3/4 - was Reuters Hong Kong" (**Jenkins**, Aust). "Sport feeds 3736Vt, Sr 6.250, 3/4" (**B. Richards**, Aust).

AsiaSat 3/105.5E: "Zee TV Asia has moved from 3980Vt to 3660Vt, FTA PAL, audio 6.3, 6.48, 6.8" (**D. Leach**, NSW). Urdu TV Net previously occupied 3660Vt - ed. Indus Vision seems to be done testing, now regular programming 4060Vt, PAL" (Smythe, PNG). SABe is now officially SAB on 3742Vt.

Gorizont 25/140E: "RTR (Moscow + 8 hours) appeared briefly on 3875RHC in SECAM, gone as of 1 April" (**A. Kalapaski**, Thailand).

Gorizont 33/145E: "NTV, TNT-Russia have appeared on 3925RHC, FTA MPEG2, Sr 20.000, 3/4 VPID2305 APID 2308 and VPID 2306 APID 2309" (A. Kalapaski, Thailand).

Intelsat 701/ 180E: "Using 2.3m Paraclipse Hydro dish and 20 degree Zinwell linear LNB, have had success locking onto SCPC feeds here such as TVNZ 4041, Sr 4.632, 3/4" (**R. Anthony**, Aust).

Measat 2/ 148E: "Mediasat mux with Thai Global, Maharishi Open and TRT have shut down on 11.540Hz" (**Opac**, Aust).

Optus B1/160E: "TCN9 18 MHz swimming sport feed 12.678Hz, Sr 13.280, 7/8 appeared to be 4:2:2" (B. Richards, Aust). "12.405Vt, Sr 6.119, 3/4 NRL; 12.425Hz, Sr 6.110, 3/4 Astralinks SNG" (B. Richards, Aust).

Palapa C2M/113E: "ATVI has shut down on 3880Hz - card off air April 1" - see p. 31 here (**D. Pemberton**, Aust).

PanAmSat PAS2/169E: "Cricket live feeds 3992Vt, Sr 26.470, 7/8" (B. Richards, Aust). "Mediasat (Sydney) test card, others 3863Hz, Sr 6.110, 3/4" (B. Richards, Aust). "Unknown service NTL CA on 3961Vt, Sr 6.000, 3/4 with VPID 257, APID 308, PCR 8190" (B. Richards, Aust). "MBC South Korea has shutdown on 3981Hz SCPC" (Smythe, PNG). "New Korean MCPC 3768Hz, Sr 8.320, 3/4 with Service 1 CA, Service 2 KBS VPID 33, APID 36 and Service 3 YTN VPID 49, APID 52" (B. Richards, Aust). "Found ART/LBC/RAI/ANT testing Irdeto March 14th 9.12PM local time for 2 hours with announcement of May 1st switch to CA and addition of ART Sport and ART Movies (3836Vt)" (**J. Maher**, Aust).

PanAmSat PAS8/166.5E: "IHUG Internet service launched on 12.566Hz, Sr 27.500" (R. Anthony, Aust). "Arirang TV World 2 has moved from PAS-2 (3793Vt) to 3815Vt, Sr 4..400, 3/4 but remains mostly CA" (**Phillander**, Aust).

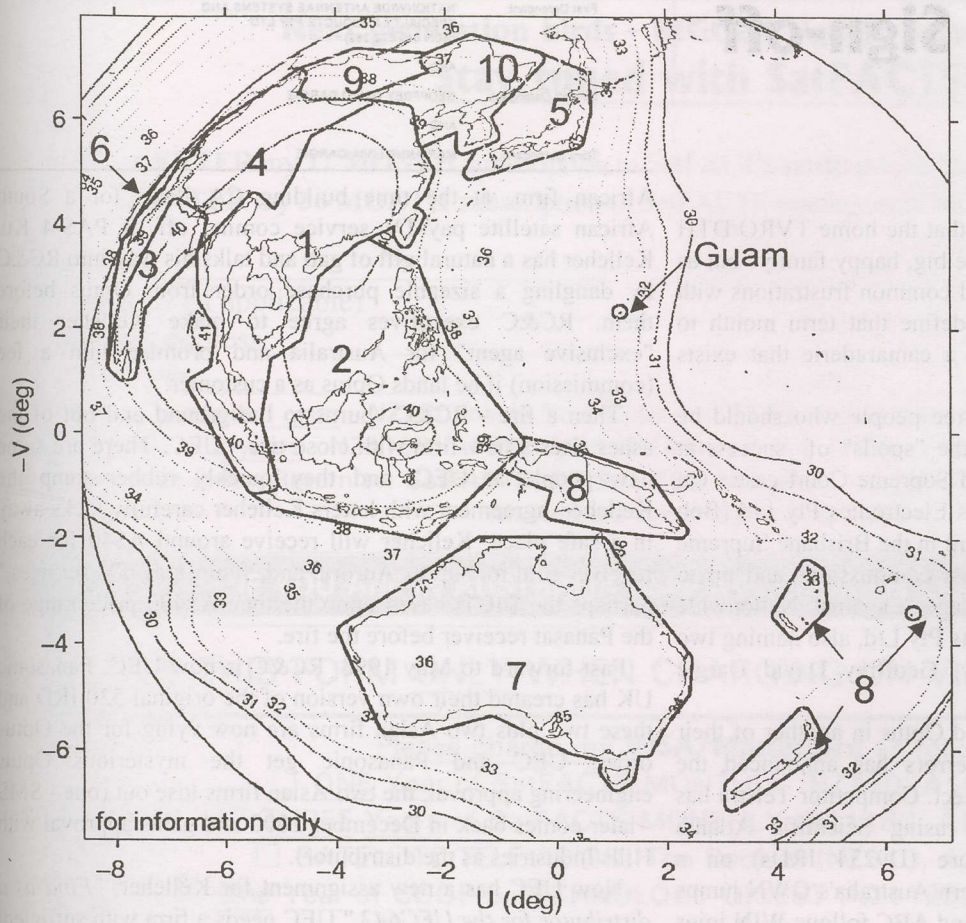
"*Adios but not good-bye?*" When ATVI shut down March 23 (Palapa C2M, 3880Hz analogue FTA) a flurry of negative comments stung the Howard Government for, "allowing this to happen." Shutdown occurred because operator 7-Network lost interest in money losing service. But there is a chance it, like the Phoenix, could rise from the ashes (p. 31, here).

Soapbox: New Internet discussion forum for contract installers working for Comet has been formed through Yahoo! Groups. Go to http://groups.yahoo.com/group/Vomet and follow instructions for joining. Site carries warning: "*For contracted installers to find what's news about Vomet. Vomet have actively discouraged contractors from communicating, hopefully this group will help contracts make anonymous contact with each other. Do not use your real e-mail address as they do watch this space!*" "Something is amiss at Boomerang TV. Cartoon Network/TCM are gone from PAS-8 Boomerang Ku band package and are replaced with a black screen. Customer rep told me they had their contract for Cartoon/TNT pulled very unexpectedly. They have yet to publish a reason" (R. Anthony, Aust). New Zealand's "The Listener" has ceased to carry Sky Network digital satellite programme channel listings, has also eliminated independent terrestrial TV stations - now carries only "national services" + five Sky terrestrial (UHF) channels. Several Chinese SCPC have added or modified radio service channels: 3806Vt,

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 May15th issue: May 3 by mail or 5PM NZ May 4th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

3813Vt, 3820Vt. "If DVB-T is confusing, here's a web site with tutorial: http://tpt.org/index.html. Click on 'Public Digital TV', then on sidebar click 'Other DTV resources' and when text appears, in first paragraph click on 'Digital TV: A Cringley Crash Course." (**J. Ebeling**, USA). "Benjamin DB6000, DB8000P and DB8000AP would not load SCTV from C2M but would load and play other Indonesian SCPC channels - until they created new software which fixes problem" (**S. Holzt**, antenne-cal@canl.nc). "Local TV station said they did not renew satellite contract with Optus because they now take feeds on fibre optic cable!" (B. Richards, Aust) "Received solicitation from Korean firm ShinWon Industry Co., Ltd. offering FTA digital IRDs at US$95 each and CI version at US$150 - in minimum lots of 500" (**P. Hadlow**, Aust). "Am I alone - vast improvement in CMT audio quality!" (**L. Mathews**, NZ). "Is Foxtel testing parallel NDS/Irdeto encryption on B3?" (**OE**, Qld).

C STANDARD BAND EIRP



Region	Spec. (dBw)
1	39
2	38
3	39
4	38
5	33
6	34
7	34
8	33
9	33
10	37
Guam	33
Honolulu	36

Note: With 53W TWTA

The ApStar series satellites (134, 138E) were launched in controversy because they "squatted" on geostationary spots without appropriate pre-clearance from the world regulating authorities. Alas, they stay put and have never been a factor in South Pacific region reception because their footprints go predominantly north. In 2003, a new ApStar (#5) is scheduled to 138E and as shown here 36 dBw (1.9m dish) to Australia, 33 dBw (2.7m dish) to New Zealand looks promising.

ATV(I) closure may not be permanent

The shut down of Australia's international "good will service" Australian Television International on March 23rd has drawn a flurry of non-complimentary reactions from Australian ex-pats (Australian citizens living overseas within the ATVI footprint) as well as foreign dignitaries (photo p. 29). ATVI began as an outreach service funded by the Australian government and operated by the national public network ABC. Two years ago the current Howard government slashed funding to ATVI and threatened to shut down the Australian short-wave service as well. A last minute reprieve saved the short-wave but at much reduced levels. ATVI was "spun off" (in the parlance of the business world) to an anxious commercial operator, Seven Network. When under ABC management, ATVI had rated very well with virtually everyone primarily because it showed Australian democracy at work, "warts and all" (then PM Paul Keating hurling insults at fellow members of Parliament was an eye opener for many Asians). 7-Net dumbed down the TV product, ultimately going to a 6 hour repeat schedule with heavy doses of Humphrey (the) Bear. Apparently 7 was unable to grasp that viewers overseas often living in less democratic countries appreciated the "honesty" of ATVI reports. 7 approached ATVI as if viewers were lower caste folks anxious to be entertained; ABC saw the viewers as higher caste anxious to be informed. Humphrey Bear neither informed nor entertained. But the programming was "cheap" as was the balance of the 7-Net ATVI schedule. There is at least a desire on the part of Government to reactivate ATVI. A fund of between A$10 and $15 million is apparently available for this purpose. A group calling itself Australian Vision International has attracted the interest of Foreign Minister Alexander Downer. AVI wants to do 24 hours a day, using ABC and SBS footage for news and return to the heavily documentary approach of ABC. Australia currently spends $100m a year of government funds to promote "education," currently the third largest export earner for the country. By slanting programming more towards education, AVI hope to talk government into a more generous funding arrangement. Now if they would move to a better C2M transponder (horizontal) all would be well.

AT Sign-off

SUPREME COURT OF QUEENSLAND

REGISTRY: Brisbane
NUMBER: S 2315 of 2001

Plaintiff:	ANTARES ELECTRONICS PTY LTD (ACN 009 968 530)
	AND
First Defendant:	NATIONWIDE ANTENNAE SYSTEMS AND SPECIALTY PRODUCTS PTY LTD (ACN 010 372 362)
	AND
Second Defendant:	GEOFFREY DAVID DARGIE
	AND
Third Defendant:	MARIANNE LIVIA DARGIE

Now we are suing one another

It would be a fantasy to suggest that the home TVRO/DTH industry in the South Pacific is "one big, happy family" but as we all share common problems and common frustrations with the "enemy" (however we might define that term month to month) there is at the very least a camaraderie that exists within our small industry group.

On that basis it hurts to see three people who should be getting along and jointly sharing the "spoils" of success at each other's throat in a Queensland Supreme Court case. On March 13 a firm known as Antares Electronics Pty Ltd (Bob Kelleher, principal) brought civil suit in the Brisbane Supreme Court seeking A$2.4 million in lost commissions and up to three times that amount in "damages" against Nationwide Antennae and Specialty (1) Products Pty Ltd, also naming two Nationwide Directors individually; Geoffrey David Dargie and Marianne Livia Dargie.

Some background. It is 1998 and Optus in another of their legendary management decision errors has announced the launch of the Aurora MPEG-2 project. Competitor Telstra has announced a companion project using Scientific Atlanta software (PowerVu) and hardware (D9234 IRDs) on a PanAmSat satellite (PAS-2). Western Australia's GWN jumps onto the Telstra offering and SBS and ABC follow; WIN joins after the fact.

Optus is under intense pressure to get Aurora rolling but they have a significant obstacle - there are no receivers available capable of doing the Irdeto conditional access system and the version of EPG they have chosen - anyplace, from anyone. You would think that in a firm as big and as diverse as Optus that somebody would have noticed this problem - but as we have all learned subsequently, Optus gets few accolades for being smart.

Enter a trade show in Sydney in February 1998. A small booth manned by one Bob Kelleher, a Brit born entrepreneur with a flair for new technology. Kelleher has a Grundig IRD in his display - it does MPEG-2 and Optus grabs him like a starving man chasing a Big Mac. Grundig is selling a "badged" version of the Panasat 520 and Panasat is a trade name of Panasonic UK. The manufacturer is RC&C, a South African firm, at the time building CA IRDs for a South African satellite pay-TV service coming off of PAS-4 Ku. Kelleher has a natural gift of gab and talks his way into RC&C by dangling a sizeable purchase order from Optus before them. RC&C executives agree to make Kelleher their "exclusive agent" for Australia and promise him a fee (commission) if he lands Optus as a customer.

Then a fire - RC&C burns to the ground and out of the ashes rises a new firm with close ties - UEC. There are some new people at UEC, and they quickly rubber-stamp the Kelleher agreement with letters Kelleher carefully locks away in a safe place. Kelleher will receive around A$40 for each receiver sold to "Optus Aurora, and, future pay-TV services," perhaps the $40 is based upon the then A$400 price range of the Panasat receiver before the fire.

Fast forward to May 1998. RC&C is now UEC, Panasonic UK has created their own version of the original 520 IRD and these two plus two Asian firms are now vying for the Optus order. UEC and Panasonic get the mysterious Optus engineering approval, the two Asian firms lose out (one - SMS - later comes back in December 2000 and gains approval with Hills Industries as the distributor).

Now UEC has a new assignment for Kelleher. "*Find us a distributor for the UEC642.*" UEC needs a firm with sufficient financial clout to fund the purchase of thousands of 642 IRDs. That means the firm chosen must be able to get an irrevocable letter of credit (LOC) from an Australian bank. Kelleher selects Nationwide Antennae and Specialty (sic) Products Company because (1) they are in his back yard, and, (2) principal Geoffrey Dargie is a bright person who happens to be married to an ex-Indonesian Dutch lady with excellent financial connections (the better to get the LOC required). Kelleher wants no part of the distributor business, but to assist Nationwide he arranges the LOCs after negotiating bank support for the project. Now the law suit. UEC agreed to pay Kelleher a commission for each IRD sold into Australia. Kelleher in his court suit alleges this "obligation" passed to Nationwide when they became the distributor for UEC. Kelleher does not name UEC, or Optus, in the Brisbane filed suit as defendants. That may change, especially as Optus is being sold to Singapore T and T.

Kelleher has to prove in court that Nationwide assumed the liability for the commission when they became the distributor. Marianne Dargie, the financial person at Nationwide and a legend in her own right, simply dismissed Kelleher as a non-entity. The Dargies have done well financially with their UEC "exclusive distributorship" buying new property, moving out of a $500,000 3 bedroom luxury 18th floor apartment at Dockside in Brisbane for flashier digs while forming new "closet" companies perhaps to confuse their money trails. Envy is a human trait and there are those who "envy" or "covet" the riches that seem to have flowed to the Dargies. Whether Robert Kelleher is so motivated or merely hopes to receive his entitlement to the spoils of Aurora only the court can determine.

1) **Specialty.** Pardon us for pointing this out - but according to The Concise Oxford Dictionary, "Specialty" is an American spelling of Speciality, *or* in proper English (Australian) "english," it has the unique meaning of, "*an instrument under seal; a sealed contract.*" Which means? That as the Dargies sat down to name their business, they erred by mis-spelling "Speciality" which Oxford says means, "*a special pursuit, product or operation to which a company or person gives special attention.*" They obviously intended speciality - they mistakenly said "an instrument under seal." Can you 'envy' a company that cannot spell its own name properly?

THE 2001 SATELLITE EXPLOSION IN THE PACIFIC/ASIA!

Next generation birds - BIGGER signals, smaller dishes?

Stay tuned with SatFACTS!

❑ **ENTER** my **12 MONTH** subscription to SatFACTS starting with May 15th issue (rates below)
❑ **ENTER** my **36 MONTH** subscription to SatFACTS starting with May 15th issue (rates below)

NAME _____
Company (if applicable) _____
Mailing address _____
Town/city _____ _____ Country _____

Amount to send: 1 year - **NZ**$70(inside New Zealand) /**A**$96 (inside Australia) /**US**$75 (outside of NZ and Australia) or 3 years - NZ$160/ A$220/ US$170 if by cheque. **VISA** or **Mastercard**? See form below and return with order. Return to: **SatFACTS, PO Box 330, Mangonui, Far North, New Zealand** or if by VISA or Mastercard fax to 64-9-406-1083

IF YOU ARE IN AUSTRALIA - See AV-COMM Pty Ltd Advert p. 30!

USE THIS FORM ONLY WHEN CHARGING ON VISA/MASTERCARD

Please charge my **VISA/Mastercard** as follows:
☐ ONE Year of SatFACTS MONTHLY (NZ$70, A$96, US$75)
☐ THREE Years of SatFACTS MONTHLY (NZ$160, A$220, US$170)
☐ SATELLITE TELEVISION: The Booklet (NZ$10, A$12, US$10)
☐ One Year of COOP'S TECHNOLOGY DIGEST (NZ$125, A$125, US$125)
Indicate charge card type: ☐ VISA ☐ Mastercard

Name (as it appears on **VISA / Mastercard**) _____
VISA/Mastercard Number __ __ __ __ - __ __ __ __ - __ __ __ __ - __ __ __ __
VISA/Mastercard expiration date _____

Instructions: If ordering by mail, return this complete card or a copy of same (to **SatFACTS, PO Box 330, Mangonui, Far North, New Zealand**); if order by FAX, send full card as a single sheet to **64-9-406-1083**

ALL COPIES OF SatFACTS Monthly are sent FAST POST - Airmail world-wide!

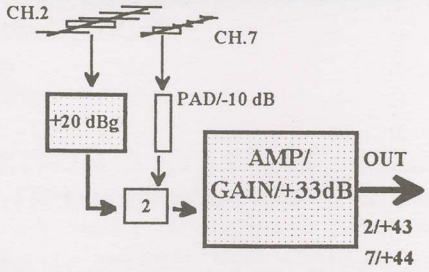
SUPPLEMENTAL MATERIALS from SatFACTS MONTHLY: Order Form

☐ **SATELLITE TELEVISION:** The Booklet. Excellent introduction to home dish ownership for the layman, including major contributions from the father of geostationary satellites - famed science fiction writer *Sir Arthur C. Clarke*. The perfect tool to help the satellite system seller explain home satellite TV to the consumer. From SPACE Pacific. NZ$10/ A$12 / US$10, airmail.

☐ **COOP's TECHNOLOGY DIGEST.** For the really serious enthusiast, investor, business person in satellite television and allied leading edge technologies. Ten issues each year, jam-packed with information you will not find anyplace else. "Coop" routinely culls more than 60 publications world-wide, terribly expensive newsletters, Internet and his hundreds of private contacts to keep you right at the leading edge of technology on the REAL changes underway in telecommunications. Conveniently issued near the **first of the month**, creating an excellent time-line-filler between the mid-month issues of SatFACTS. Now in the **7th year**, airmail world-wide. Normally NZ/A/US$250 per year - for SatFACTS subscribers special **50% discounted** price of NZ/A/US$125.

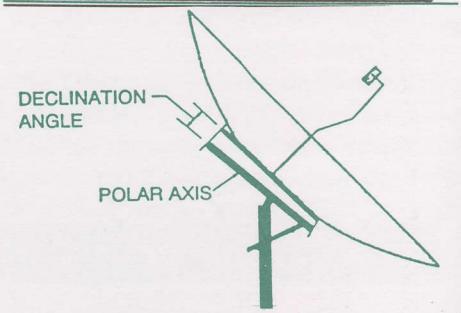
SPACE PACIFIC REFERENCE MATERIALS - order form below

TECH BULLETIN 9402: MATV Systems. One antenna (system) on the roof, amplifiers and cable to distribute off-air VHF and UHF channels, perhaps FM, perhaps a video channel, to the rooms of a home, motel, hotel or commercial building. How do you do it? And keep each channel clean, at the same level as all others, to each of the wall plate outlets? It is all here, from antenna system design to mixing channels together at the "headend," cable levels and distribution, analysing amplifiers versus larger (lower loss) cables, how to "tap off" the correct 60-70 dBuV signal to each outlet.



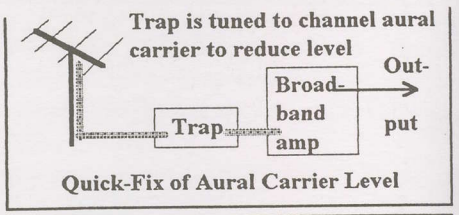
RE-BALANCING INPUTS

TECH BULLETIN 9404: **Home Satellite Dish Systems.** New to satellite? Uncomfortable with how all the pieces fit, telling a "good piece" from an inferior piece? How tracking mounts allow you to move the dish through the "Clarke Orbit Belt" to pick-off one satellite after another? How to interpret footprint maps from satellites? The difference between "analogue threshold" and "digital pixelations?" When to use (and not use!) a line amplifier? Confused by polarisation systems, what right hand circular from Intelsat requires and why? Or, why a vertical signal on a satellite that is on your western horizon is now horizontal to you! Learn the basics here.

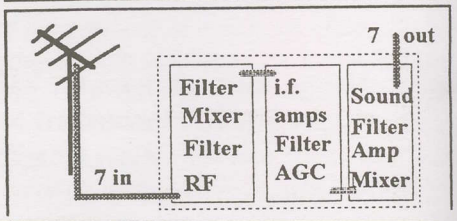


DECLINATION is an 'offset' that tips the dish **top** away from the polar axis arm.

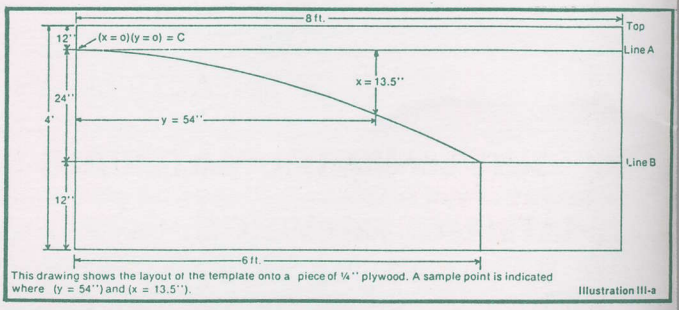
TECH BULLETIN 9405: **Satellite to Room Systems.** Mixing off-air terrestrial signals with off-satellite (FTA and CA) services such that standard TV sets with no extra set-top boxes can tune-in the full spectrum of services created by your "headend." The complete instruction is here. How to avoid channel-to-channel interference (adjacent channel), how to avoid terrestrial signal ingress (co-channel interference). Modifying FTA signals to make it possible for the standard TV set to handle adjacent channels (one right after another with no unused TV channels in between). Whether it is a large home, a motel/hotel or a multi-storey office building, this is your "how to do it" guide to bidding on and getting "the big jobs" that turn you from a part time learner to a full time professional.



Quick-Fix of Aural Carrier Level



NELSON PARABOLIC MANUAL: Only a really crazy person would build his or her own 13' dish - right? Well, there must be thousands of crazy people out there because this is "the Bible" of do-it-yourself dish constructors. It is tough, hard work using materials and skills you never even knew existed. But at the end, you will be a proud owner/user of a dish system which will outperform all but the very best of commercial dishes on C or Ku. Warning: This is not a toy and only the truly dedicated should try this!



This drawing shows the layout of the template onto a piece of ¼" plywood. A sample point is indicated where (y = 54") and (x = 13.5").

Illustration III-a

Instructions: Complete this form, return to SPACE Pacific (fax 64-9-406-1083) or PO Box 30, Mangonui, Far North, New Zealand
(Note: All orders shipped via surface or surface + air depending upon destination; allow time for delivery.)
Send me: ❑ TB9402 ($15); ❑ TB9404 ($15); ❑ TB9405 ($15); ❑ Nelson Parabolic Manual ($20)

My name _____ Company (if applicable) _____

Mailing address _____ Town/City _____

State/mail code _____ Country _____ e-mail contact _____

I wish to make payment by: ❑ cheque (enclosed - to SPACE Pacific); ❑ VISA (below); ❑ Mastercard

Card number: _ _ _ _ - _ _ _ _ - _ _ _ _ - _ _ _ _ expires _____

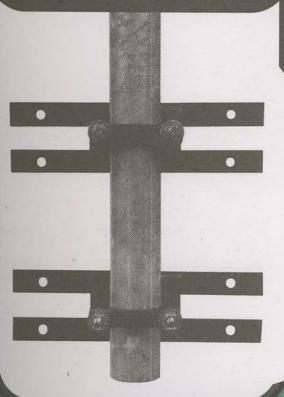
- UNIVERSAL COMPATIBLE TUNER 950-2150 MHz
- LOOP THROUGH TO ANALOGUE RECEIVER
- DiSEqC 1.0 LNB OR POSITIONER CONTROL
- EXTENDED SYMBOL RATE (2-45 Mbps)
- PID FUNCTION FOR VIDEO, AUDIO & PCR
- EPG/ TELETEXT DISPLAY
- TP SEARCH, NETWORK SEARCH AND FTA ONLY FUNCTION
- NTSC TO PAL AUTO CONVERTING
- RF MODULATOR (CH 21-69) PLL CONTROL)
- TV AND RADIO CHANNELS EDIT WITH MOVE, DELETE AND FAVOURITE FUNCTION.
- SOFTWARE UPDATE VIA RS-232 SERIAL DATA PORT.

NEW D7.5 MediaStar

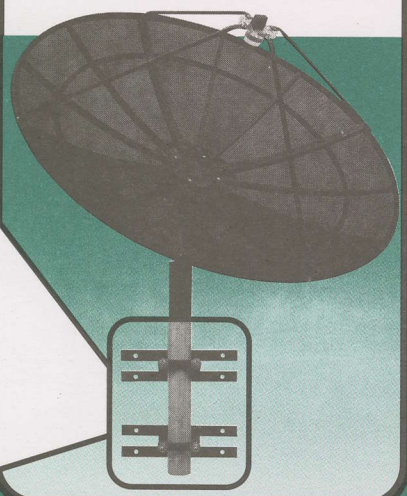
MCI
MediaStar Communications International
24 Bosci Road
Ingleburn NSW
2565 Australia

Tel: 61 2 9618 5777
Fax: 61 2 9618 5077
Opac@bigpond.com

ALL SUPPLIED WITH WALL BRACKETS



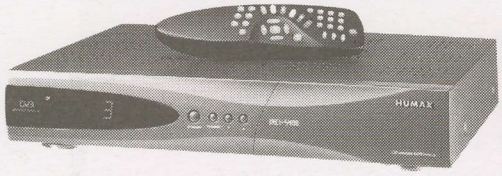
PSi
HIGH PERFORMANCE ANTENNA DISH



AVAILABLE IN

- 1.95m Quad Fixed mount
- 2.3m Quad Polar mount
- 3.1m Quad Polar mount

RG6 Tri shield 300 and 100m
ACTUATOR CABLE AVAILABLE

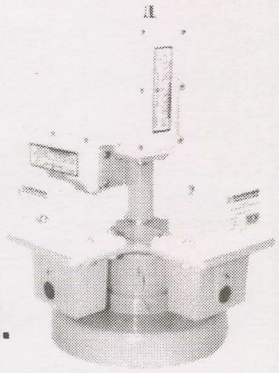


HUMAX

ADL

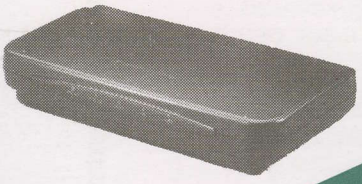
California Amplifier

GARDINER

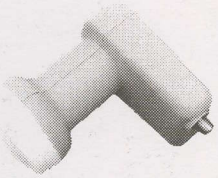


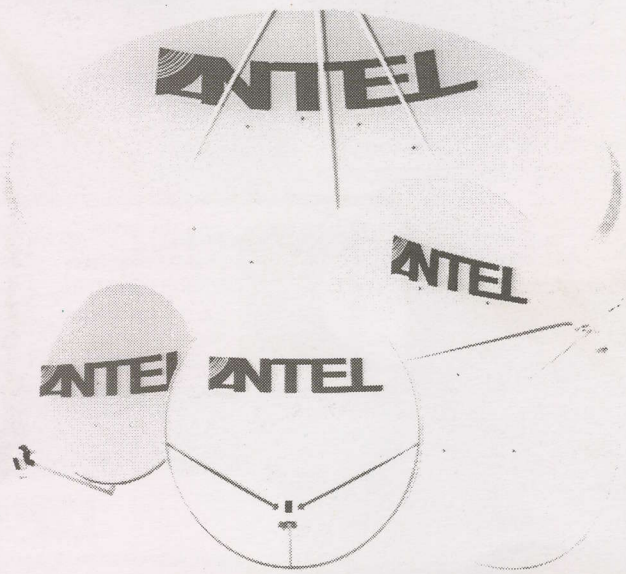
CYP

MICROELECTRONICS TECHNOLOGY INC.



Shop online at
http://www.sciteq.com.au





KTI KAUL-TRONICS, INC.

TM PSI

ANTEL

Trade supplier of quality products:

SCITEQ

PTY LTD ACN 009 235 090

Phone: +61 8 9306 3738 Fax:+61 8 9306 3737

sales@sciteq.com.au http://www.sciteq.com.au