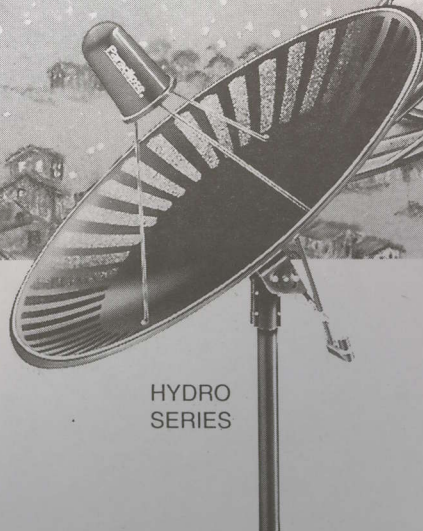


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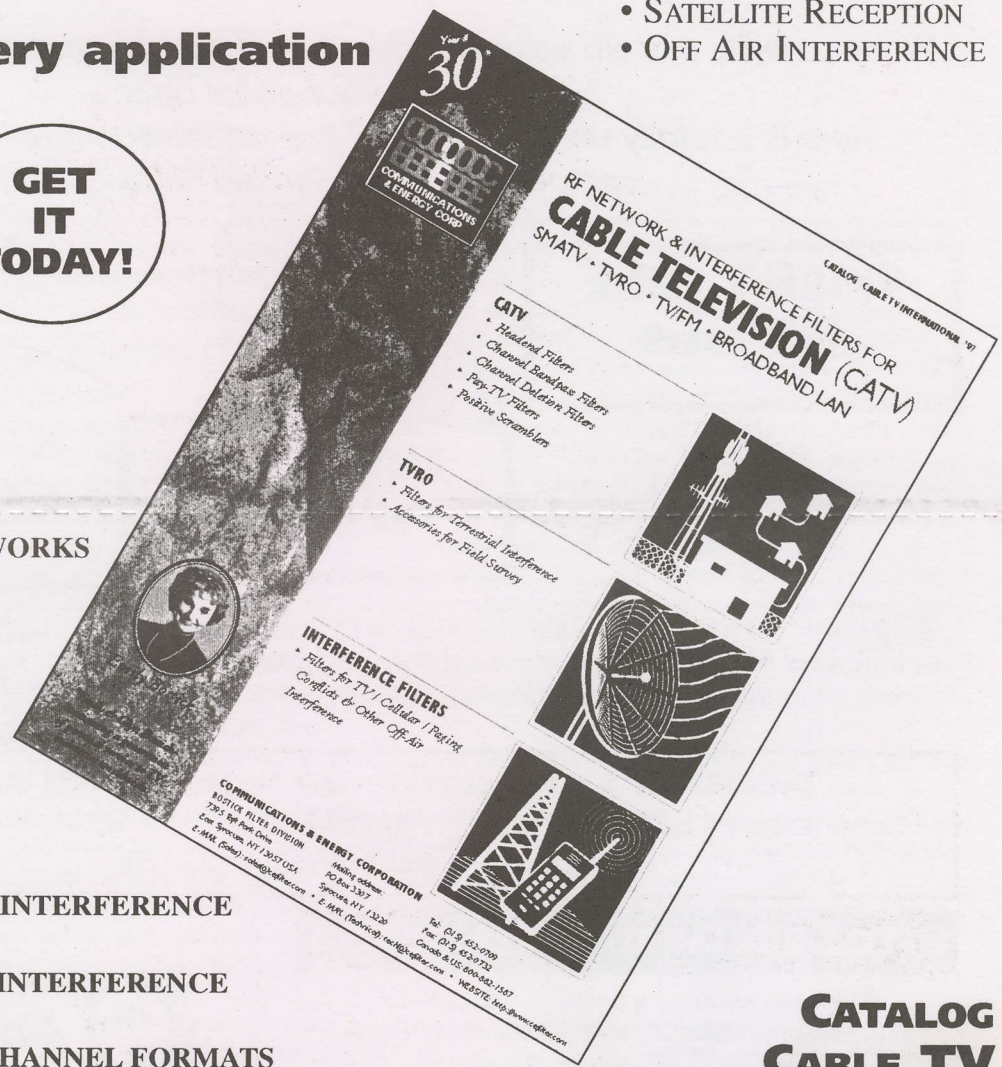
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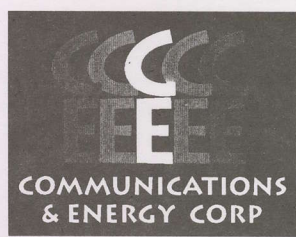
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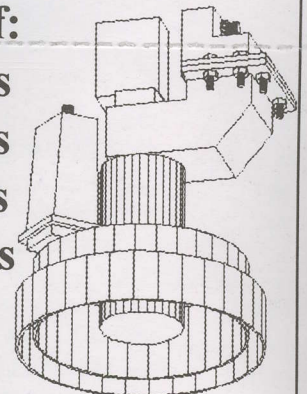
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This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages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

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

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COOP'S COMMENT

It was only 30 days back that we believed the launch loss of AsiaSat 3 would turn out to be the most important event of 1998 (overlooking it actually occurred very late in 1997). No more.

Almost everything about the Asia satellite world is coming apart at the seams. For example - satellite builder Space Systems /Loral in Palo Alto, California has laid off 9% (300 jobs) from its work force. How come, and why do we care? Because much hyped LaoStar 1 and 2 (high power Ku to 115E)

and M2A (super high power C plus X bands to 118E) have cancelled their contracts leaving behind partially built satellites and no dollars in the bank.

As Mark Long explains (p. 8, here), the loss of AsiaSat 3 presents unique problems to Rupert Murdoch's STAR TV plans. The transition from 5 channels of analogue programming for Indian cable on As1 to a single digital transponder (announced also for As1) has resulted in something approaching chaos and extreme bitterness towards Star in some quarters. In a thumb nail sketch: Murdoch set up ISkyB to deliver DTH to India via PAS-4 and actually put Ku test signals on the air. The Indian government, fearful that a "foreign entity" was setting out to take over the flow of information, education and entertainment through "offshore" and "foreign" transmission facilities, quickly proposed a law making "Ku DTH illegal." Implementation would be straight forward: Any hardware (LNB/Fs, feeds, receivers) capable of receiving Ku would be stopped at the border. Take away the ability of Indians to acquire receiving equipment for PAS-4 Ku, stop Murdoch dead in his tracks. This buys India time to deal with far more complex issues; who will be allowed to own and operate Ku DTH serving the country, what controls will there be on programming content, how will Indian cultures (and their 18 "primary" languages) be protected?

An Indian national election is scheduled for late February and one of the issues facing voters is which party (or coalition of political parties) will implement long term regulations that will establish ground rules for the future development of DTH there. In January, Murdoch forces began promoting "C-band DTH" and on AsiaSat 2 (3740/1410 Vt) late in January appeared a Star TV barker channel promoting an all-new Star TV (Indian) News service. Election coverage would feature prominently in the new channel's topics. Indian law prevents Star from going to AsiaSat from an Indian based uplink; the service goes through Indian Telecom from Delhi to Hong Kong, is then fed back to AsiaSat.

STAR TV is, of course, trying to influence Indian national opinion and government policy here. It is very unlikely that STAR TV can ever earn money (to date they have only lost money) without having full access to India. Country by country, nationalistic programme packages and even satellites have chipped away at the original potential for a successful STAR TV. What is left unserved is India (where Star's present analogue service does very well, but provides no significant revenue) and China. If India slips away from Murdoch, STAR TV as a broadcasting entity might well call it quits in Asia and revert back to being a wholesale programme provider only. All of this comes to a head this year. If it goes badly for Star, AsiaSat 3R when it launches could be without Star.

In Volume 4 ♦ Number 42

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Mark Long on Asia's Satellite Problems -p. 8

The CA "Game" -p. 14

Digital IRD Update 98-1 -p. 19

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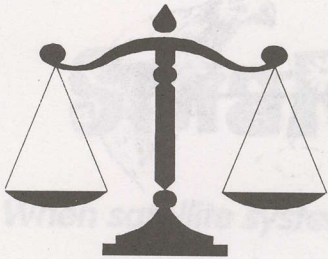
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-ON THE COVER-

Conditional access for digital TV delivery remains an engineering challenge. Contrary to the hype surrounding Irdeto, ViaAccess and other CA systems, all is not well. (p. 14)



February 15, 1998

**SBS Erotic?**

"I have just arrived back from Australia and have been pulled apart by a customs department looking through all of the SBS taped movies I brought back. This is not the first time this has happened. I have contacted SBS in Melbourne and they tell me they are 'going digital' about May or June. If I were to purchase a dish that would access SBS, would there be a footprint available to cover me here?"

Bruce Johnston, Wellington, NZ

Shame on SBS for showing those erotic movies! Or perhaps New Zealand customs figures "if it is foreign movies, they must be dirty." SBS on 'digital'. Yes, they are to be a part of the Aurora bouquets along with ABC (which of course would never show a dirty movie). Will one of the five planned national beams on Optus B3 reach Wellington? The answer is a conditional yes - conditioned on whether the transponder is run at full power (50 watts), and you have room for a large enough antenna. Based upon our limited experience with vertical-side national beam MPEG transponders to date, you will probably require a Ku-quality (solid, not mesh) dish and 0.6dB LNB; how big a dish? Hard to say yet but plan on at least 2.4m.

High Frequency Welders?

"I intend to install a 2.3m dish with SK888 receiver and single polarity LNB for the European Bouquet. However, a 'TIG' welder machine which I understand works at 'high frequency' is in the nearby house; could it produce interference with the satellite reception?"

Carlos Palacios, Genesis Satellite, Kings Park, NSW

Most high frequency welders function in the region between 30 and 45 MHz; far below either satellite TV or the L-band IF. How to check in advance? When the welder is operating, connect a standard UHF TV antenna through cable to an analogue receiver and pointing the antenna at the welder, tune through the satellite band with the receiver. What you should see is nothing more than the normal no-signal 'snow' on the screen. If some other type of signal appears, point the antenna away from the welder and if uncertain where the signal is coming from, ask them to turn it off to see if the signal goes away. Even if the welder does create some sort of interference, it would have to be VERY strong to cause any problems with satellite reception. To be extra sure, if possible install the dish so it does not look at, over or through the welder when pointing at AsiaSat 2.

Love It

"I love SatFACTS and wish I could read it 24 hours every day! How many back issues are available, and what will they cost me?"

Mark in Taiwan

A year's worth of back issues are priced the same as a year's subscription and they are shipped by airmail as well. Not every issue remains available, typically we select most recent 12 issues as available.

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

STOP! The MPEG-2 receivers advertised on side two of the front insert card (from AV-COMM Pty Ltd) have already sold out - within 24 hours of being available, but too late to stop the advertisement appearing in this issue!

Free to air sport programming? For the Pacific??? SPN (Sports Pacific Network) launched service 12 noon central Pacific time January 31st. That's the good news. The bad news is the SCPC signal level on Global I180 beam will be tough for anyone with a dish smaller than 3.7m. Full report, p. 6.

CFI is scheduled disappear from Palapa C2 (4160/IF990 Hz) to be replaced with TV5 from Paris March 4th. TV5 also appears within European bouquet on As2. Reason for change? CFI is to be restructured into a customised feed service only and leaving the DTH (broadcast) TV arena totally. TV5 plans to begin 1 hour per day of English subtitles (Le Journal) in May, plans to grow to 4 hours daily by end of 1998.

Publication point missed. We remembered Arthur C. Clarke's 80th birthday with an appropriate card, but neglected to advise our readers of the occasion. You might find www.acclarke.co.uk of interest in case you missed him on Discovery or CNBC late in December.

STAR TV's "last plan" for AsiaSat 3, before bird launch failed, was to move existing As1 analogue channels to As3 and augment (add to) those with digital platforms as well. Medium term (2 to 3 years), the analogue was to be phased out as more and more receive systems converted to digital. In January, Star made changes in AsiaSat 1 services: Star Sports (3860Vt) has dropped Hindi audio, Star Movies (3900Vt, 4060Vt) has dropped Chinese (Mandarin) audio and launched MPEG-2 on 3800Vt (28.100, 3/4) with Star TV test. For Mark Long's view on this, see p. 8 here.

MIH, parent of South African pay TV service on PAS-4, is investing in Asia (35% of Thailand's IBC), opening office in Hong Kong and looking for additional investments from India to China and south. Same firm also owns Irdeto, could become major player in competition to Murdoch's Star.

Free demo of Asia/Pacific Satellites on Disk Library available on Internet: For IBM format users <http://www.mlesat.net> and <http://www.mlesat.com>. Twenty-five new and scheduled satellites, 200 coverage maps, transponder frequency plans and much more.

Indovision telephone numbers: Tech help at 61-21-522-2793; sales at 61-2-526-9988.

Things that an wrong department. Some months ago an outfit named PSN (not SPN) was trying to test Ku-band coverage (11.500) on Palapa C2. For a test signal, they took the pair of Indovision C2 digital transponders (3500 and 3580 Hz) and up converted them to Ku for feeding to C2. Then, when they tried to receive the Ku signals the IRDs would not lock nor load. Why? The frequency of the multiplex is within the SI (system information) data stream. The SI told the receiver to tune to the C-band frequencies while the receiver was hopelessly trying to lock onto them in Ku. Net result? It did not work. Traps for young players. If someone does fire up the Asian beam Ku signals again on Palapa, try 11.500 if you are in northern or north-western Australia.

Nagano Olympic coverage? In analogue, I180 (3810/1340RHC), I174 (4187/963 and 4166/984RHC), I177 (4187/963 and 4166/984RHC), PAS-2 3780/1370 Vt (PAL). Digital? First time out for Olympics so there are no rules - try PAS-2 Hz 4137.5/1012.5 Msym 6.620 and 3/4.

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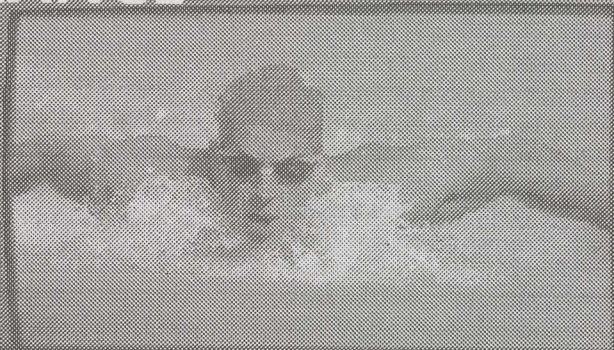
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Low Power FM Found

"January issue asks where Mr. Mather of Vexx Engineering has gone to. Those interested in low power, unlicensed FM band transmitters should try <http://radioinfo.co.nz/inform.htm>."

Wayne Garraway, Mainland Radio, Christchurch

Thank you, Wayne. Looking for a 300 mW (3/10th watt) FM transmitter capable of reaching 10km line of sight? Here's a starting place.

Our Subscription List Grows

"I have just been talking with Angela from Pacific Satellite who suggested I drop you a note regarding your SatFACTS publication. Is it available on email, Internet or only by conventional mail?"

John Titmuss, Principal Technical Officer
Telstra Mobile Satellite and Radio

This might be an appropriate point in time to file a short report. SatFACTS is now read in 50 countries world-wide with perhaps the most diverse reader list of any publication in the satellite field. This includes heads of major satellite programmers, leading equipment developers and software creators. Plus more than 1,000 satellite dish sales and installation firms. Our thanks to every reader for making SatFACTS such a "must-read" publication!

Chile To Move?

"I run a business here in Melbourne primarily selling dishes to the Spanish speaking community. When I saw TVN mentioned in your January issue, I immediately swung the dish to PAS-2. However, I have seen a notice for its American viewers saying it will move to PAS-5 in February. Does that effect us? I hope not as since I mentioned it to some Chilean friends, the phone has rung hot with potential dish sales!"

Frank Connolly, SPACE Satellite TV, Melbourne
TVN's PAS-5 announcement appears to be unrelated to their presence on PAS-2 (for which there has never been an adequate explanation other than possibly providing coverage to Easter Island [27.05S and 109.20]) which probably cannot be reached from the Ku beams of PAS-5 or other South American coverage satellites. Spanish language programming is also available FTA on the European (digital) Bouquet (As2, 100.5E) from Spain's RTVE

SPN Not Strong.

"The SPN service (1180, 4081 RHC, 4.730 and 3/4) does not make the grade here on a 3m dish. My analyser suggests it is just below threshold and should work OK on a 3.6m. Before we equip dishes with circular feeds, we need to be more certain of their longevity and the content."

Steffen Holz, Studio 7 SARL, Noumea, New Caledonia

Reports say a 3m works OK in Tahiti but apparently everywhere else requires a 3.7m or larger. Today Intelsat at 180 makes sense but after Orion 3 launches to 139E later this year, this would be preferable for most of us. See report p.6.

StarTV Asia?

"I have a chance to buy a Pace 211 out of India and can get the As1 service. What else will it receive?"

PJ Dingle, Darwin, NT

Absolutely nothing; software built-in makes it a Star only receiver (see SatFACTS September 1997).

HARDWARE EQUIPMENT PARTS

UPDATE

FEBRUARY 15, 1998

If your (Nokia, PowerVu) comes up with a video PID of 1FFF (or decimal 8191), this indicates there is NO video there; only non-video data. If you find you can directly enter a video PID (plus audio, PCR) and get reception after initially finding 1FFF/8191, tell us about it!

Nokia has restated their corporate policy: "We do not want Asia/Pacific business, we will not support receivers sold in this region, we are only interested in large orders for 100,000 receivers and up, and we have no software model designed for Asia and the Pacific." SatFACTS has been "instructed" not to accept Nokia advertising from sources serving this part of the world. What a crock of s!#*.

Analogue is hardly dead. Palcom has released new model SL-7700RP with 500 programmable memory channels, on screen programmable RF modulator for PAL B/G (+I, M, D and K), English + French + Arabic on screen display, built-in antenna positioners for both azimuth and elevation, twin RF inputs with a pair of polarizer connections, 4 SCARTS plus RCA video (great!) and audio outputs, 4 decoder outputs (2 SCART and 2 RCA with 16 pre-selected decoder configurations). Whew. Not done yet - 27 and 18 MHz bandwidth plus low threshold settings, 5 (including super wide) audio bands with 50, 75ns, J17 and HiFi1600 processing. The best is saved for last - pricing is significantly lower than 7900 benchmark receiver.

Space Systems/Loral has announced shutting down construction of three major Asia/Pacific satellites. Severe financial strains in SE Asia have resulted in high powered Ku band Laostar 1 and 2, and Indonesia's M2A getting the axe. Laostar 1 was to be launched to 115E latter half this year, Laostar 2 would follow to same location early 1999. M2A was super power (.6m receive antenna C) (+ X band) bird scheduled to 118E first half 1999. Both projects are cash strapped, birds may be sold to another operator (work on both is significantly underway) or held on shelf for reactivation if SE Asian economy rebounds.

AsiaSat 3R will rush-build a replacement with a hoped for launch date out 12 to 15 months from now (i.e., by midyear 1999). No, AsiaSat 4 will not be used as a replacement.

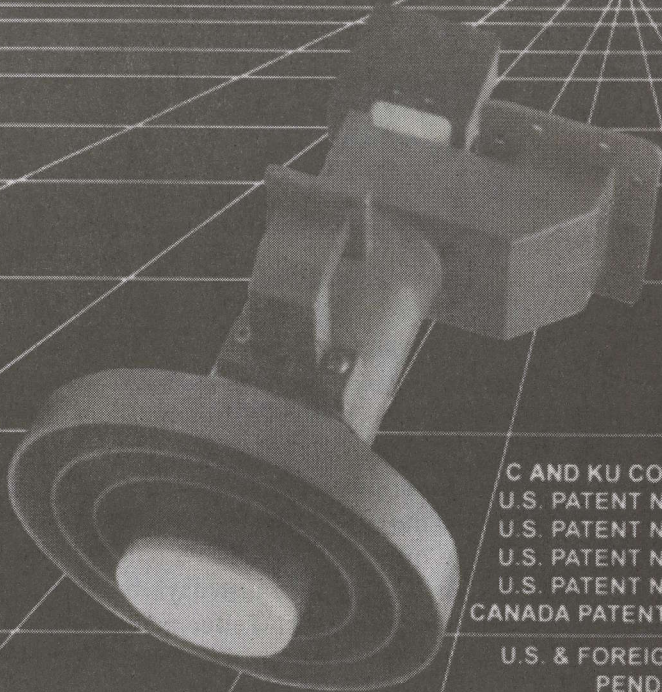
Mabuhay (Agila II) at 144E, as predicted in SatFACTS for December (p. 4) has moved to 146E. Satellite's Ku portion at 144E potentially could destroy usefulness of Japan's Superbird C at 144E. Japan remains concerned, believes their N-SAT at 146 is still in jeopardy. Agila's "hot Bird" (Ku + C) design makes siting difficult, especially at Ku where satellites need to be up to 4 degrees apart. Moving further east to 148 sits it down squarely on top of Measat 2. Increasingly, it appears owner MPSC rushed to orbit without proper engineering planning and now is stuck with a high performance bird in orbit they cannot safely turn on without creating havoc for others.

Subtitling? Pace says their DSR 200P IRD has software capable of providing multiple-language subtitles for digital transmissions but Irdeto does not want to rework it for use in a free to air environment. Who cares? TV5 and other European bouquet members would like to develop a way to translate for Chinese, English, Bahasa and other Asian languages. Unfortunately, it does not exist (teletext page 800 approaches are ruled out for a variety of sound reasons).

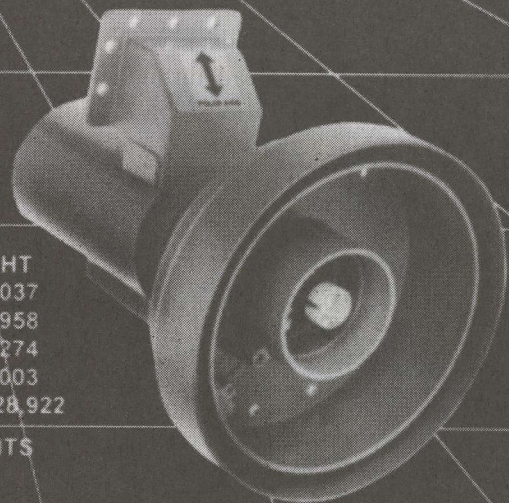
El Nino Effect. Heavy rains in northern California February 3 caused significant PanAmSat PAS-2 California bouquet uplink signal reduction resulting in most Pacific dishes losing service. Uplink power control was "maxed out" and operator had "no authority to go beyond set limits" to compensate for increased rain attenuation.

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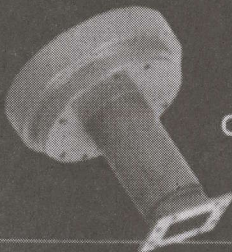
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SPORTS PACIFIC NETWORK IS FREE TO AIR ON INTELSAT 180!

There is confusion, some in Nauru suggest it is "chaos" but the Pacific Rim region's first all sports, advertising supported *free to air* satellite television programmer is on the air! SPN (Sports Pacific Network) is a curious initiative headquartered on a Pacific Island nation best known for its phosphate concentrates and recent-past problems with too much money, too quickly for its fewer than 5,000 residents.

SPN is using a 4.6m Andrew (brand) dish and a 160 watt C-band uplink transmitter to access Intelsat at 180E (4081/IF1069 right hand circular) with an MPEG-2 digital signal that is then spread throughout the entire Pacific (including the Rim nations) on a Global beam. SPN programming launched January 31 at 12 noon CPT (Central Pacific Time) with a 12 hour per day schedule. Cable TV systems, and terrestrial broadcasters from Taiwan south through the Pacific to New Zealand and Australia were "on line" waiting to feed the SPN programming to an anxious and waiting viewer clientele. The service is dedicated to remaining "FTA" and anyone with the appropriate receiving equipment is encouraged to tune-in.

If there is a major problem, it is the level of signal coming back down on 4081 RHC from 180E. The global pattern combined with the relatively small power level of the SCPC transmission mandates that smaller dishes previously adequate for analogue video from I180 will simply not have sufficient gain to make this circuit work reliably. The smallest practical dish size will vary slightly with location within the Global beam pattern of I701, but a 4.5m is a logical cut-off. SPN recommends a 6m dish size (see below).

What is SPN?

A brochure produced by the firm states, "*SPN gives the Pacific an opportunity* to find its own voice and helps address the sporting needs of the region as we move into the 21st century. SPN will endeavour to promote the culture of the Pacific. On Nauru, we believe that SPN offers us our best chance yet of preserving and treasuring our heritage while embracing the new challenges of a rapidly changing world. SPN has been set up by the Nauru Olympic Committee with the assistance of the Government of Nauru."



"*SPN will give the region's sporting man and woman an extraordinary opportunity to reveal their talents and achievements to a potential audience of millions. SPN programming seeks to originate, develop and encourage sports programs from the entire Pacific region.*"

Well, not quite perhaps. SatFACTS talked with General Manager Brandon Telfer just days before the service began regular operations. Telfer admitted that while they knew the global Intelsat footprint included New Zealand and Australia, "we have not factored those two countries into our initial marketing plan." Interpretation?

SPN signed on with cable TV affiliates on Guam, Saipan, Palau and Samoa. Shortly, they anticipated cable systems in Taiwan and elsewhere to join the network while broadcasters from The Cooks and New Caledonia were also tipped to carry day segments on local TV. New Zealand and Australia, by Telfer's knowledge, did not represent as good an opportunity to achieve carriage "because of the plurality of media outlets and services already operating there." He added, "we do see a good market in Southeast Asia as well based upon the strength of our programming schedule."

The service has set aside ten minutes out of each broadcast hour for commercials. Six of those ten minutes are advertisements which SPN provides and all affiliates must agree to carry the six minutes of SPN commercials without editing. The remaining four minutes can be "sold" by the cable or broadcast system

Technical Parameters for SPN

Transmitted from Intelsat 701 at 180E, in transponder T36 "upper first" at an assigned frequency of 4081.05 (4081) MHz right hand circular (IF 1068.95 MHz). Megabyte rate of 4.730, FEC of 3/4, QPSK format with a video bandwidth of 9 MHz. For cable and commercial installations, a 6 metre size dish is recommended. SPN suggests the "Hyundai HSS series of MPEG-2 receivers" for reception; a Nokia e3 also works well.

JANUARY 31

PNG/Guam Nauru/Fiji Samoa/Niue

1000	1200	1300	Opening Special
1030	1230	1330	Presidential Address
1040	1240	1340	Pacific Images
1100	1300	1400	Rugby: Dubai Sevens
1300	1500	1600	Football: Aussie Rules Live from Nauru

DON'T Panic ...but

If you read this report before February 21, you will find only test bars on SPN. The service operated for the week of January 31 to February 6 and then closed down. This is temporary and service is scheduled to restart at 1200 CPT (central Pacific Time; 1PM NZST, 11AM AEDST) the 21st. Reason? The reality of how difficult it is to make a receive terminal work in remote locations (Palau and others) sunk in after a week's transmission. SPN agreed that until more locations are properly receiving the service, they would postpone full-time (daily) operation. Readers on Pacific Islands in particular are encouraged to report to SatFACTS how SPN is being used in your area (many affiliates are terrestrial TV stations).

The SPN schedule during the first week provided an enticing array of Pacific images ranging from backlot Aussie rules football on Nauru to excellent footage imported from American Samoa, PNG and many other Pacific locales. The irony in SPN is that it is backed and funded by the Nauru Olympic Committee, originates on an island with only a few thousand inhabitants, and is setting out to create an electronic forum for all of the Pacific. That larger, more experienced media leaders in the Pacific (such as New Zealand's TVNZ) did not recognise the opportunity (or responsibility) to create such a service speaks volumes about the presumed prestige of the larger Pacific countries. SPN sees a need and is filling it - and they deserve our support.

operator to local sponsors. On a full network basis, the commercials sell for Australian \$350 for 30 seconds initially. (1)

Sporting events to be covered are not totally clear in the advance information (see above) nor from the early days of telecasting. Telfer says that while "Sports" is a part of their name, the network will also be producing "cultural event" coverage for the Pacific as well. French? He says some day part will be devoted to French language coverage when they have affiliates on line in the French speaking regions of the Pacific. He is hopeful that because I1701 reaches the west coast of the United States that an enterprising cable system programme distributor will one day extend their coverage over a US domestic satellite to regions of North America where there are significant Pacific Islanders residing. Pacific Arts Festivals in the Solomon Islands will be a midyear coverage subject as will events in Samoa, The Cooks and Tonga.

SPN has invested in what they call "the very latest Panasonic digital technology" for their Nauru studio and editing suites. They will produce live (sports bulletins at 12 noon [1PM NZST, 11AM Australian eastern] and 6PM) and from tape initially. Initial broadcast material will come from their studio, from tape previously shot and edited, and from satellite links to regions of the Pacific. Expansion planned for the future includes portable uplinks to be transported around the Pacific

where events are occurring, to feed the raw programming material back to Nauru for polishing before being relinked (live or from tape) back out through the 4081 SCPC service channel.

Commentary

What we have here is a bold initiative with potentially several million dollars invested to get a brand new concept in regional television operational for the Pacific region. The choice of Intelsat at 180 may make the best sense today, but we would be quick to point out to SPN that by late this year they will have other options which if followed would significantly improve their audience reach in the target market zone. Primary to this will be the new Orion 3 C-band and Ku-band coverage from 139E. Orion's 33 dBw footprint will come close to duplicating the Intelsat I180 coverage but with an on ground signal increase of 7 dB (see SF December 1997, p. 2). If SPN chose to switch to the Orion Ku-band from 139E, dishes as small as 1.2m would fly in the central Pacific while nobody within the Pacific proper would require a dish in excess of 2m. As sellers and installers of home and professional dish systems, we can all "help" SPN with their future plans by making them aware that with more signal on the ground (whether C-band or Ku) their audience reach will significantly grow.

The SPN concept is a good one and it behoves everyone in the satellite trade in the Pacific to make an extra effort to see that this type of service is not only successful, but is so successful that others come on line over the next few years. We wanted FTA sports and movies and now we have half of that package. Support it well so that one day the other half happens as well!

1/ Brandon Telfer, General Manager at SPN, PO Box 7, Nauru, Central Pacific. Tel ++674-444-3895; Fax ++674-444-3893. Advertising representation by Kookaburra Event Marketing & Management Pty Ltd, Suite 118, Goldsbrough Building, 243 Pyrmont St., Pyrmont NSW 2009 Australia; Tel ++61-2-9566-1277; Fax ++61-2-8566-1151. Email Kooka@laccess.com.au

New "Birds" to Fly in the Face of a Falling Economy

by Mark Long in Thailand

Despite the economic crises that affected monetary systems and financial institutions throughout the Asia/Pacific region in the second half of last year, many international and regional satellite operators continue to forge ahead with their respective plans to dramatically expand satellite capacity for the Asia/Pacific region. In all fairness it should be noted that most of these operators originally conceived their plans during better economic times, when stable currency exchange rates and annual economic growth figures of 8 to 10 percent were the norm. When local economies began struggling to fight off last year's financial "Big Chill," many analysts started to wonder if the voracious demand for satellite capacity in this part of the world would actually materialize as previously anticipated. They were reminded twice in late 1997, however, that all those satellites may go up but that doesn't necessarily mean that they will stay there.

Last October, the Indian Space Research Organization (ISRO) found itself suddenly scrambling for satellite capacity when its newest satellite, Insat 2D, lost earth lock and went tumbling out of control. Suddenly, India was faced with a dramatic shortfall in capacity for its domestic communications network. The solution was to buy the in-orbit Arabsat 1-C satellite, which had become surplus to the Arabsat organization's needs due to the launch of two new second generation spacecraft, and move it to a new home at 55 degrees east longitude.

The "glitch that stole AsiaSat's Christmas" occurred on December 25, 1997, when a Russian Proton K launch vehicle carrying Asia's newest satellite into space failed six hours and twenty minutes into the flight due to a separation malfunction which sent AsiaSat's newest spacecraft tumbling helplessly out of control. The fourth stage of the launch vehicle's second burn was designed to last 110 seconds, but it cut off prematurely after just one second, thus stranding the AsiaSat 3 satellite in an errant orbit which will eventually bring it crashing back down to earth. Now AsiaSat too is suddenly looking to lay its hands on a new satellite at short notice.

These days no one is anticipating an Asia/Pacific transponder glut any time soon. It stands to reason, however, that given the huge number of satellites scheduled for launch between now and the end of the millennium, there will be more satellite capacity over the Asia/Pacific region than what the local markets by themselves can support. The anticipated launch of new national and regional cable and DTH ventures and an ever-expanding Internet can be expected to help sustain growth to some extent. However, it will be tough going for some of the national and regional systems to make headway if their local econo-

mies continue to be depressed. The following report provides an overview of the region's fledgling satellite systems and the markets in which they hope to fly.

The Big Boys Make Their Moves

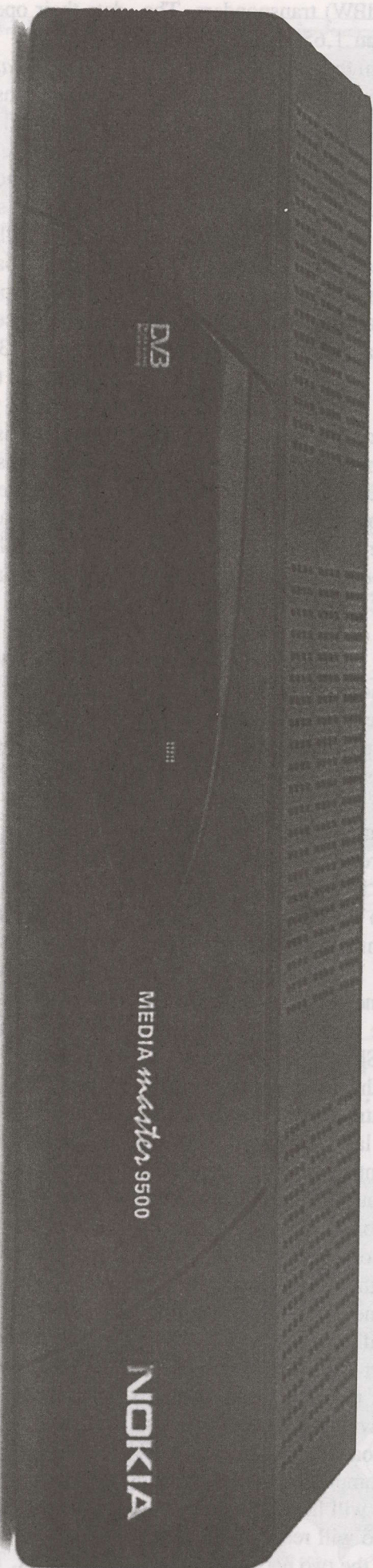
The difficulties currently faced by regional satellite operators such as AsiaSat, as well as the national satellite operators located in the economically depressed countries of Southeast Asia, is giving the major international satellite operators an unprecedented opportunity to make dramatic inroads into the marketplace. INTELSAT, for example, intends to launch two new satellites later this year—as well as a third in early 1999—for service in the Asia/Pacific region. INTELSAT APR (Insat 2E), which will be positioned at 83 degrees east longitude, will feature a regional C-band beam that stretches from mainland Asia to Australia that will produce a minimum of 36 dBW within its -3 dB contour. INTELSAT also has the option of using its forthcoming Intelsat 805 spacecraft at 33 degrees east longitude, where it would serve customers throughout an area stretching from southern Africa to eastern Asia. Meanwhile, INTELSAT's KTV Hot Bird, which is destined for an early 1999 launch to 95 degrees east longitude, will carry a diversified high-power Ku-band payload specifically designed to provide digital DTH services within the region.

With the collocation of PAS-7 with PAS-4 at 68.5 degrees east longitude later this year, PanAmSat will have additional C-band AND Ku-band capacity which it can offer to customers in the Asia/Pacific region. One advantage of PanAmSat's Indian Ocean collocation gambit: an attractive existing "neighborhood" of regional TV programmers who are already using the PAS-4 satellite at 68.5 degrees east longitude. As an encore performance, PAS-8 will be launched to 166 degrees east longitude before the end of the year to provide PanAmSat with some much-needed room for expansion in the Pacific Rim area.

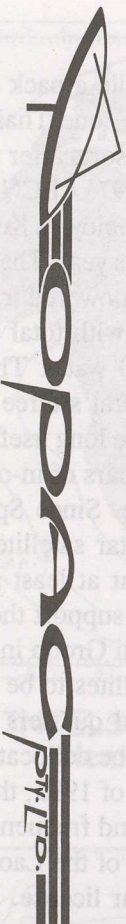
Orion Network Systems also has plans to enter the fray with the launch of its Orion 3 satellite to 139 degrees east longitude before the end of 1998. Orion Network Systems Asia Pacific Corporation, a wholly owned subsidiary of Orion Network Systems, Inc., is responsible for building, launching, and operating Orion 3 as well as the marketing of satellite and network services in Asia and the Pacific Rim. The Orion 3 satellite will provide coverage to the major Asia/Pacific markets including Korea, China, India, Japan, Australia, Southeast Asia, New Zealand, Oceania, and Hawaii.

Orion 3 is a Hughes HS-601 HP three-axis stabilized satellite equipped with ten C-band (33 to 37 dBW) and

The Nokia Mediamaster DVB 9500 S.



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thirty-three Ku-band (44 to 53 dBW) transponders. The spacecraft will provide more than 1,650 MHz of bandwidth: approximately 360 MHz in the C-band (3.4 to 3.6 GHz) spectrum and 1,296 MHz in the Ku-band (12.25 to 12.75 & 11.45 to 11.7 GHz) frequency range.

Facing Off Against the Goliaths

It's no surprise that the expansion plans of the "big boys" are a major headache for the smaller regional satellite companies, all of which have major debts in U.S. dollars to pay back to foreign bankers. At the same time, most of these companies have transponder leasing agreements with national customers that call for fixed payments in unstable local currencies.

Big Trouble In Little Thailand. The Kingdom of Thailand has the dubious distinction of being the first financial domino to fall last year in Southeast Asia. The economic crisis has hit Thailand's telecom industry particularly hard. Telecom stock prices have tumbled and the "flotation" of the Thai baht has resulted in a 50 percent devaluation of the national currency, a virtual disaster.

In August of 1997, Thaicom operator Shinawatra Satellite was forced to pull the plug on digital DTH operator Thai Sky, leaving thousands of home satellite TV viewers in the dark. Shinawatra made the move because Thai Sky was a year in arrears on lease payments for use of one and a half Ku-band transponders. If recent news reports are correct, Thai Sky is not the only Thaicom customer that is perilously close to defaulting on its transponder leasing obligations. What's more, Shinawatra's plans for providing digital DTH services into India in partnership with the Modhi Group have also been thwarted by yet another change in the Indian government which has relegated parliamentary debate of a new Broadcasting Bill to the back burner, at least for the time being. After reconsidering its options in light of the unanticipated delay, the Modhi Group has abandoned Shinawatra in favour of a new partnership agreement with Space Systems/Loral.

These events forced Shinawatra to postpone the launch of its Thaicom 4 satellite from later this year to the year 2000 at the earliest. The recent lease of C-band transponders on Thaicom 3 to various Indian TV broadcasters, Thai TV-5's new international service and the government of Vietnam were welcome news. What's more, Shinawatra may benefit from the loss of AsiaSat 3 because, in Thaicom 3, it has one of the few operational satellites that could provide medium-powered C-band capacity for customers with short-track requirements.

Shinawatra Satellite wasn't the only Thai company forced to come to quick terms with the region's financial crisis. Rival Thai cable TV broadcasters IBC and UTV have announced that the two companies will merge later this year. Although the merger will help both companies stem the flow of red ink, it also will result in the loss of several hundred jobs locally as the two networks consoli-

date their operations.

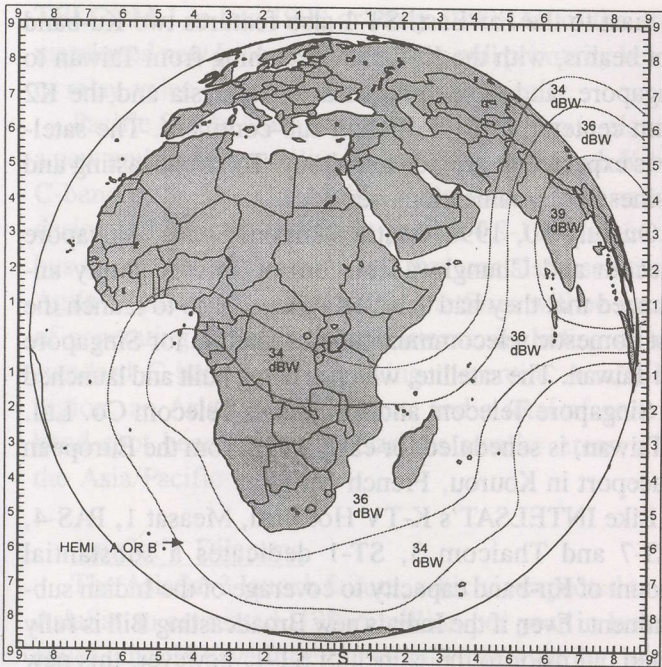
The L-Star Satellite System. Despite a pack of financial problems besetting the Kingdom, one Thai satellite company did experience a re-birth of sorts after undergoing a massive reorganization in late 1997. ABCN of Bangkok, Thailand is now on schedule to deploy its Ku-band L-Star satellite system beginning later this year. The L-STAR satellites will each have sixteen high powered transponders for Ku-band broadcast services, with total on-board transmitter power in excess of 3,600 watts. The spacecraft are based on Space Systems/Loral's three axis stabilized FS-1300 bus which can achieve long useful orbital lifetimes, in this case an optional 2 years of in-orbit storage plus 12 years of operational life. Since Space Systems/Loral is a co-owner in the L-Star satellite project, there is considerable speculation that at least some capacity on the system will be used to support the company's DTH partnership with the Modhi Group in India.

Plans call for the two L-Star satellites to be launched by Arianespace in the first and third quarters of 1998, respectively. The two spacecraft will be collocated at 126 degrees east longitude. In November of 1995, this orbital position as well as operational Ku-band frequencies were granted to ABCN by the government of the Lao People's Democratic Republic under a 30-year license.

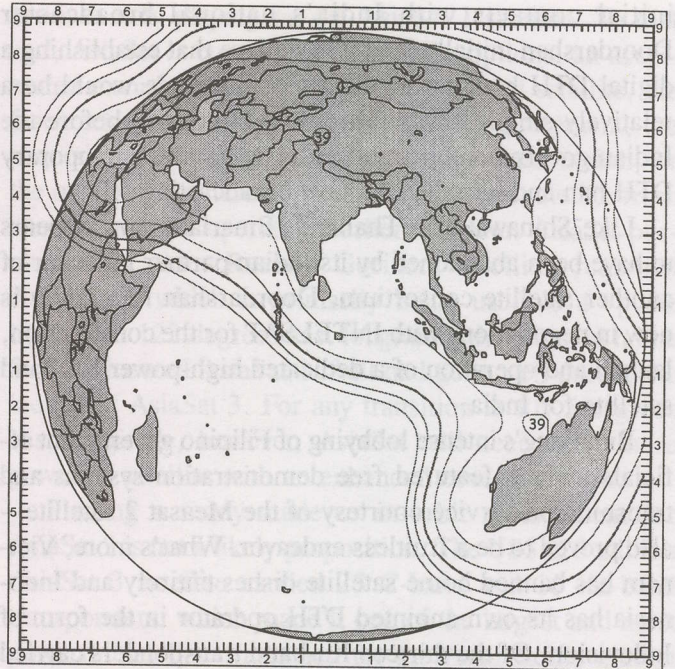
The configuration, installation and operation of ABCN's Tracking, Telemetry & Command (TT&C) stations and the Satellite Control Centre (SCC) is already underway in Vientiane, Laos under the direction of Telesat Canada. Secondary TT&C and SCC facilities for the L-STAR satellite system will also be developed in Perth, Australia.

The L-STAR satellite system will generate three primary beams: the West beam will provide signals to the Indian sub-continent, including India, Bangladesh, Nepal, Pakistan and Sri Lanka; the East beam will reach Eastern China, Hong Kong, Korea and Taiwan; and the Central beam will cover Thailand, Lao PDR, western Malaysia, Singapore, Cambodia, Vietnam and southern China. The total coverage area of these three beams will encompass approximately two billion people and 280 million television households, large portions of which currently receive only limited local broadcast television. ABCN plans to provide a wide range of digital subscription and pay-per view TV channels directly to homes equipped with small and affordable 18-to 24-inch dishes. To meet the growing demand for advanced telecommunication services, ABCN will also provide an array of high-speed, broadband, direct-to-user Internet access and multimedia on-line services.

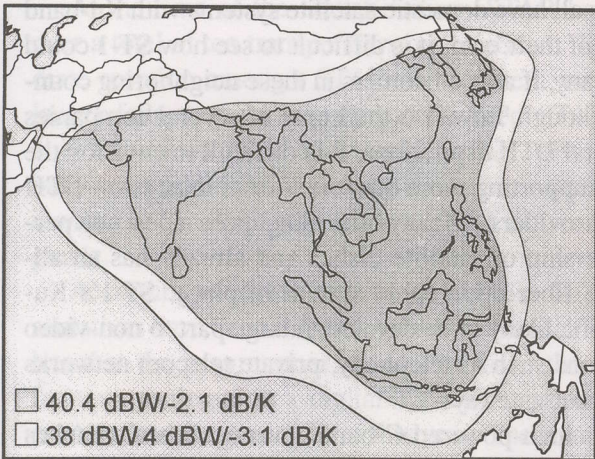
Measat 3: To Be or Not To Be? Operator Binariang Bhd Sdn originally designed its Measat system so that it could be a major provider of digital DTH services in a variety of overseas markets, including Australia, India, Indonesia, The Philippines, and Vietnam. The company's



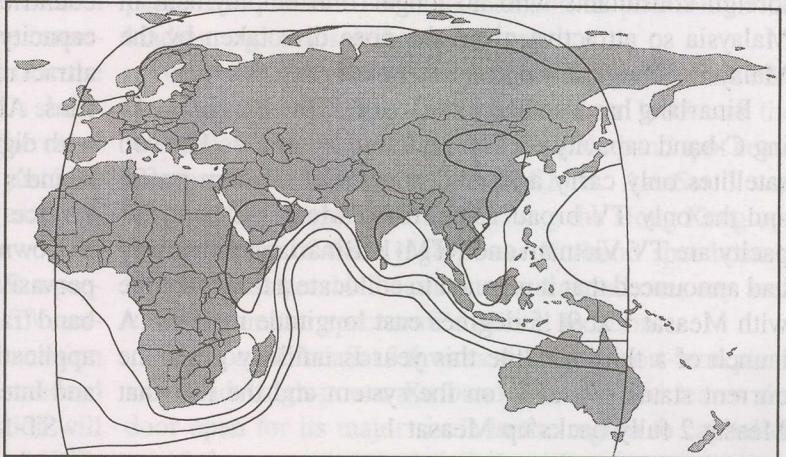
INTELSAT 805 - 33 East Hemispheric Beams



Intelsat APR - 83 East Wide Beam EIRP contours: 38, 37, 36, 35, 34 dBW



ST-1 C-band Coverage 88 degrees East Longitude

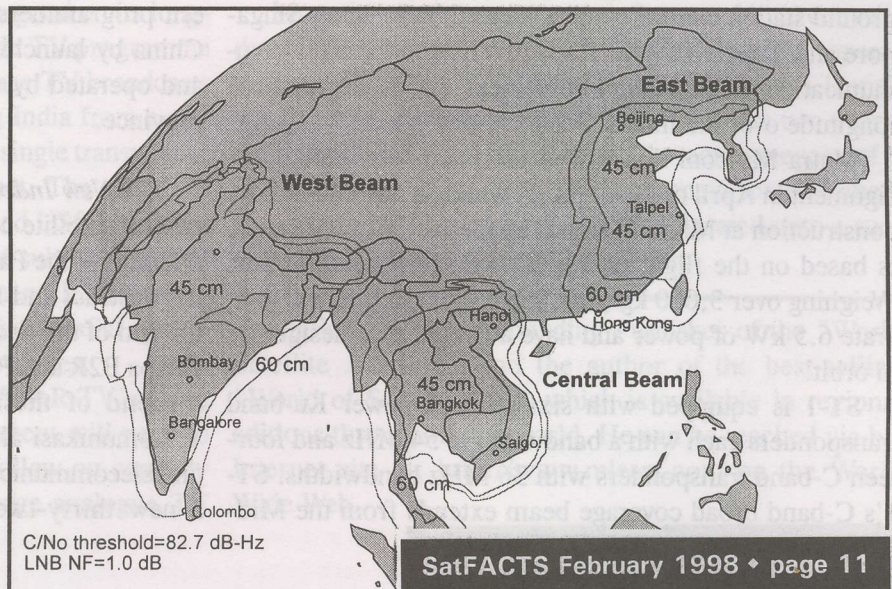


PAS-7 C-band Downlink Beam EIRP contours: 36, 35, 34 & 33 dBW

L-Star Ku-Band Spot Beams

126 degrees East Longitude

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C/No threshold=82.7 dB-Hz
LNB NF=1.0 dB

initial contacts with India's national broadcaster Doordarshan initially lead it to believe that establishing a digital DTH bouquet in India's marketplace would be a relatively simple affair. That was, of course, before the Indian government generated riots by issuing a temporary DTH ban and introduced a new broadcasting bill.

Like Shinawatra in Thailand, Binariang now appears to have been abandoned by its Indian partner in favour of another satellite consortium. Doordarshan reportedly is now in negotiations with INTELSAT for the construction, launch and operation of a dedicated high-power Ku-band satellite for India.

Binariang's intense lobbying of Filipino government officials—which featured free demonstration systems and transmission service courtesy of the Measat 2 satellite—also proved to be a fruitless endeavor. What's more, Vietnam has banned home satellite dishes entirely and Indonesia has its own anointed DTH operator in the form of Indovision. Of the thirteen Ku-band transponders carried by Measat 1 and 2, only three are used to deliver the Astro TV digital package to Malaysian DTH subscribers. Binariang's Astro TV division in Kuala Lumpur was recently rocked by a rash of lay-offs and a mass exodus of foreign consultants who no longer find employment in Malaysia so attractive given the nose dive taken by the Malaysian Ringgit during recent months.

Binariang has also had its share of difficulties in booking C-band capacity on Measat 1 and Measat 2. The two satellites only carry a limited amount of telecom traffic and the only TV broadcasters using Measat C-band capacity are TV Vietnam and RTM-1. Binariang previously had announced that it planned to collocate a third satellite with Measat 1 at 91.5 degrees east longitude in 1998. A launch of a third satellite this year is unlikely given the current status of traffic on the system and the fact that Measat 2 fully backs up Measat 1.

The ST-1 Satellite System. The ST-1 satellite system now under development will be jointly owned and operated by Singapore Telecom and the Chunghwa Telecommunications Ltd. of Taiwan. The system will consist of ground station control centers located in Selantar, Singapore and Taipei, Taiwan, respectively, and the ST-1 communication satellite that will be located at 88 degrees east longitude over the Indian Ocean.

Matra Marconi Space won the prime contracting assignment in April of 1996. ST-1, which is currently under construction at Matra Marconi Space facilities in France, is based on the flight proven EUROSTAR satellite bus. Weighing over 3,000 kg (6,600 lb.), the satellite will generate 6.5 kW of power and have a twelve year design life in orbit.

ST-1 is equipped with sixteen high-power Ku-band transponders each with a bandwidth of 54 MHz and fourteen C-band transponders with 36 MHz bandwidths. ST-1's C-band broad coverage beam extends from the Mid-

dle East to the Far East. ST-1 also features two Ku-band spot beams, with the K1 beam stretching from Taiwan to Singapore, and from Indonesia to Malaysia and the K2 beam centered over the Indian sub-continent. The satellite is expected to provide telephony, TV broadcasting and business communications services.

On July 30, 1996, Matra Marconi Space, Singapore Telecom and Chunghwa Telecom of Taiwan jointly announced that they had selected Arianespace to launch the first domestic telecommunications satellite for Singapore and Taiwan. The satellite, which is being built and launched for Singapore Telecom and Chunghwa Telecom Co. Ltd. of Taiwan, is scheduled for early 1998 from the European Spaceport in Kourou, French Guyana.

Like INTELSAT's K-TV Hot Bird, Measat 1, PAS-4, PAS-7 and Thaicom 3, ST-1 dedicates a substantial amount of Ku-band capacity to coverage of the Indian sub-continent. Even if the India's new Broadcasting Bill is fully sorted out prior to the launch of ST-1, however, this new satellite system will find the competition for Indian customers to be fierce. Meanwhile ST-1's other Ku-band beam is restricted to covering Indonesia, Malaysia, The Philippines, Taiwan, and Singapore. As the former three countries all have domestic satellite systems with Ku-band capacity of their own, it is difficult to see how ST-1 could attract many, if any, customers in these neighboring countries. Although Taiwan is the home of several companies with digital DTH aspirations, it is difficult to envision the island's supporting more than one—or at most two—DTH service providers. Meanwhile, Singapore does not permit ownership of satellite dishes and already has an all-pervasive fiber-optic cable system in place. ST-1's Ku-band traffic likely to be devoted in large part to non-video applications such as telephony, private telecom networks and Internet gateways.

ST-1's high-powered C-band coverage beam stretches from India and across Mainland China all the way to the Koreas and Japan. The satellite therefore may be an attractive from a technical point of view to TV customers using Apstar 1 and other lower powered C-band satellites in the region. From a political viewpoint, however, western programmers may be reluctant to risk the wrath of China by launching services on a satellite that is owned and operated by what China considers to be a renegade province.

The New Indonesian Satellite Systems. The most successful satellite company in Southeast Asia is Satelindo, operator of the Palapa satellite system. Satelindo will need to construct and launch at least two new satellites before the end of the decade to replace the highly active C-band Palapa B2R and Palapa B4 satellites which will soon reach the end of their mission lifetimes. Indonesia's PT Telkomunikasi also has contracted with Lockheed Martin Telecommunications to build and Arianespace to launch a new thirty-two transponder C-band satellite called

TELCOM 1 in late 1998 or early 1999. All of the aforementioned new Indonesian satellites will primarily be used to relay voice and data services domestically.

Pacific Satelit Nusantara of Indonesia also is planning a new multimedia satellite that would include both X-band C-band payloads. The Multi-Media Asia (M2A) satellite design is based on the flight proven FS-1300 spacecraft bus from Space Systems/Loral that was also used for the Agila 2 spacecraft. The satellite platform will be capable of generating multiple beam patterns, including a broad standard C-band beam covering the entire Asia/Pacific region, an Asian X-band beam, and a total of seven C-band spot beams covering various smaller areas within the Asia/Pacific region.

AsiaSat's Dilemma

The AsiaSat 3 launch failure, which is expected to cost AsiaSat an estimated US\$65 million per year in lost revenues, should have little immediate effect on the company's ability to conduct business. Only ten percent of AsiaSat 3's capacity had been pre-booked by new customers. In the long run, however, the situation could become a critical issue for AsiaSat's number one customer: STAR TV.

At the time of the launch failure, STAR had control over a total of ten transponders on AsiaSat 1. The immediate reaction amongst STAR management was that the launch failure would only marginally affect STAR's short-term expansion plans and would, in fact, give the company some additional breathing room to consider just how it wants to handle the transition at 105.5 degrees east longitude.

According to recent reports out of India, STAR representatives have been informing their Indian cable TV outlets that the programmer expects to make the transition from an analogue to a digital TV transmission standard on AsiaSat 1 beginning later this year. The transition will include STAR TV subsidizing the cost of the digital IRDs for those cable TV headends which are currently equipped with the analogue version of the STAR Movies decoder.

The move to digital, at least for coverage of the Indian market, will save STAR a considerable amount in transponder rental fees. STAR can still make good on its long-standing promise to maintain an analogue TV programme feed by continuing their Chinese-language TV broadcasts in an analogue format, while switching India from a six-transponder analogue configuration to a single transponder carrying the STAR India digital bouquet. The switch to digital would save STAR TV an estimated US\$ 10 million a year even after factoring in the cost of subsidizing IRD distribution within the Indian sub-continent. It also represents a net loss of US\$ 12 million for the AsiaSat system in future yearly transponder leasing revenues.

So is there a future for analogue in STAR TV's game plan? As time goes on, STAR management will need to receive AsiaSat's full assurance that follow-on capacity will be available for its Chinese-language analogue TV

services now playing on the AsiaSat 1 satellite. To that end, AsiaSat is currently exploring its options: an accelerated manufacturing plan for the AsiaSat 4 satellite, the fast-track construction of an AsiaSat 3 replacement, the acquisition of a satellite already under construction, or the outright purchase of an existing in-orbit satellite from another satellite operator. Earlier this year, AsiaSat purchased an older Russian Gorizont satellite, renamed AsiaSat G, which is primarily being used as a "place holder" at 122 degrees east longitude, the planned home for a re-located AsiaSat 1 if all had gone well during the launch of AsiaSat 3. For any transition at 105.5 degrees east longitude, however, AsiaSat will need a far more powerful satellite with an enhanced coverage beam.

Finding a ready-made or in-orbit replacement for AsiaSat 3 is not a likely proposition. The US\$ 220 million AsiaSat 3 satellite carried 28 C-band and 16 Ku-band transponders, which made it one of the largest and most powerful satellites launched for the Asia/Pacific market ever. What's more, the spacecraft's powerful C-band footprint covered 50 countries across Asia, the Middle East, Australia and the Commonwealth of Independent States and also would have provided the high-power Ku-band capacity that AsiaSat needs to maintain its position as the leading regional satellite operator.

One of the major disappointments that marred the otherwise successful launch of AsiaSat 2 in 1995 was the lower-than-expected performance of its Ku-band spot beam transponders covering Mainland China. AsiaSat 3 was supposed to change all that by giving the Hong Kong operator a total of three high-power Ku-band spot beams, including a steerable beam that be directed over any area visible from the spacecraft's orbital location.

The loss of AsiaSat 3 thwarts AsiaSat's short-term plans to provide high-power Ku-band services and leaves the door open for its major rivals in the region to capitalize on this important gap in AsiaSat's regional coverage. Asia Pacific Satellite Telecommunications Co. Ltd., for example, recently applied for regulatory permission to begin providing digital DTH services into the People's Republic of China from the Ku-band side of Apstar 2R.

More than two years ago, AsiaSat was able to consolidate its position as the premiere regional satellite operator after its Hong Kong rival Apstar suffered a launch which set its expansion plans back more than two years. It is now AsiaSat's turn to suffer the consequences of a launch failure as its many rivals compete for customers that otherwise would have naturally migrated onto a successfully launched AsiaSat 3 platform.

Mark Long is the Founding Publisher of the "World Satellite Almanac" and the author of the best-selling "World of Satellite TV," which is available in regional editions throughout the world. He can be reached via his Internet site at: <http://www.mlesat.com> on the World Wide Web.

CONDITIONAL ACCESS - IN TROUBLE?

SatFACTS for January (p. 1) mentioned continuing reports concerning the "busting of Irdeto" conditional access services now operating in Europe. Piracy of analogue services, protected by various video encryption routines, is rampant throughout Europe; monthly magazines openly advertise "Pirate Cards" for gaining non-approved (as in no payment to the programmer) access to a wide range of services from adult to family, sport to education. In the digital conditional access (CA) world, one firm seems currently to be the leader with a host of also rans. Two of our primary sources for this report are noted below (1).

Has Irdeto been "broken" in Europe? Peter Illes declined to answer the question. Tim Brewer suggests:

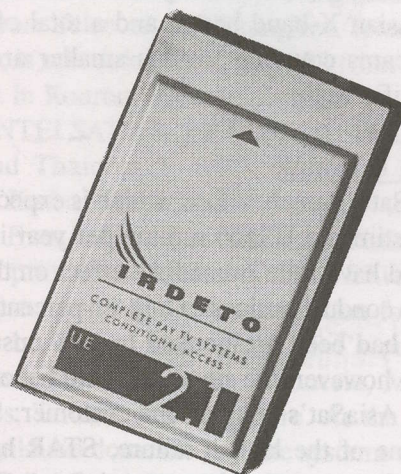
"My advice is the buyer beware. The Irdeto system has several levels of encryption available and for some unknown reason in Germany they kept the same key for over two years, instead of regularly changing it as is the practice with most pay-TV operators. Anytime they wish they could change the key, and zap, down go the buyers of all bootleg SCs and modified d-boxes. The Irdeto system is very secure and each operator has his own verifier code, different from all others. (Unfortunately, with Irdeto) it is not possible to receive more than one pay-TV source without changing smart cards and if a code is broken (by pirates), the operator can download new SW (software) to all legitimate IRDs via satellite or cable."

Is it not possible that in Germany they have 'tolerated' the d-box piracy 'solution' because the service has been such a miserable failure in the marketplace that pirate viewers are better than no viewers at all?

"Good comment and you are right - Germany is up to its neck in digital wars between competing media barons as well as against the EU's antimonopoly commission. It is my belief Germany will drop the Irdeto CA system as soon as they have their own system fully developed by Beta-Teknik (which, by the way, is 'Irdeto based' but not Irdeto)."

So how does Irdeto work, and how does it command so much attention in the IRD and programmer marketplace?

Irdeto is a Dutch based firm primarily (now) owned by the same people who operate pay-TV in South Africa and the Middle East (MIH). Irdeto competes with News Datacom (NDS) in the conditional access marketplace. To date, NDS (owned by the Murdoch empire) has been



Digital's premier conditional access watchdog - the IIRDETO 'CAM' (conditional access module)

the clear leader in analogue encryption systems but a lesser player in digital.

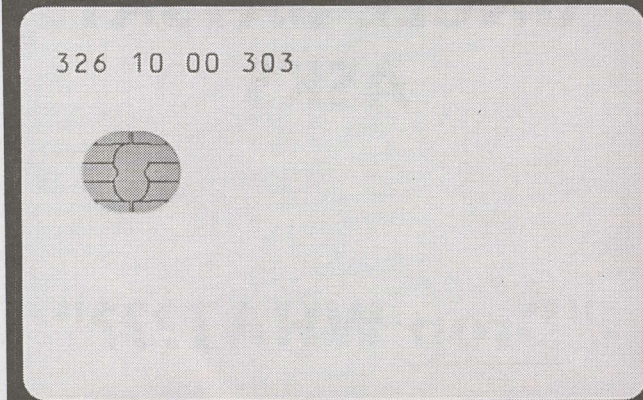
Irdeto licenses individual receiver manufacturers to build IRDs using their CA system. According to Peter Illes, *"It is surprising how many companies* come to us with only analogue experience and expect to be licensed for our CA system. We require a demonstrated ability to build functional (digital) IRDs; we are not about to license someone working out of a garage, for example. We look closely at the company itself."

There are approximately ten firms licensed at this time. About which Tim Brewer adds:

"When your receiver design has Irdeto included, it adds a considerable cost burden to the unit. The exact amount per unit varies as a function of the number you will produce of a particular model since the design and certification process has to be amortised over a production run," a subject we shall return to.

"After accepting the company as a client" says Illes, "we then require that each receiver go through Design

1/ Sources include Tim Brewer of Asia Digital Broadcast Ltd. (London, UK) and Peter Illes of Irdeto Consultants (Sydney, NSW). Statements and quotations not accredited are largely from European "pirate" sources who have talked with us on condition that their names would not be identified.



MAGIC in plastic - conditional access card (French Telecom ViaAccess system for Space TV Taiwan)



DIFFERENT on screen messages for different faults (Hallmark via Measat, Malaysia)

Verification Testing (DVT). When the design is approved, it receives Irdeto Certification. Once we are doing business with a company, we look at each receiver product for the company as a stand alone application." Receivers are certified in Belgium and the process can take several months. Irdeto requirements are rigid, and as Tim Brewer notes:

"Irdeto will not approve any receiver that has the ability to run a (second) CA system other than their own. This is why some European firms have created the so-called Common Interface CAM (conditional access module). With a common interface, the user of the receiver can plug in either an Irdeto CAM or some other CAM as required by the programmer's selection of a conditional access system."

The common interface (CI) is perhaps a manufacturer response to the high costs of including Irdeto. Tim Brewer suggests, "The premium per unit for CA and APi, recovery of the integration cost, and any additional hardware required (CAM, special chip, additional memory for the APi, modem and so on) can run from a low of (US)\$10 to a high of \$100."

A receiver with a CAM slot becomes Irdeto only when the CAM is installed. Peter Illes on the CAM part:

"Our CAMs come from a (CAM) nominated manufacturer. They go directly to the receiver manufacturer, or to the programmer client in some instances. In all cases, the CAM is a part of the overall (Irdeto) inventory."

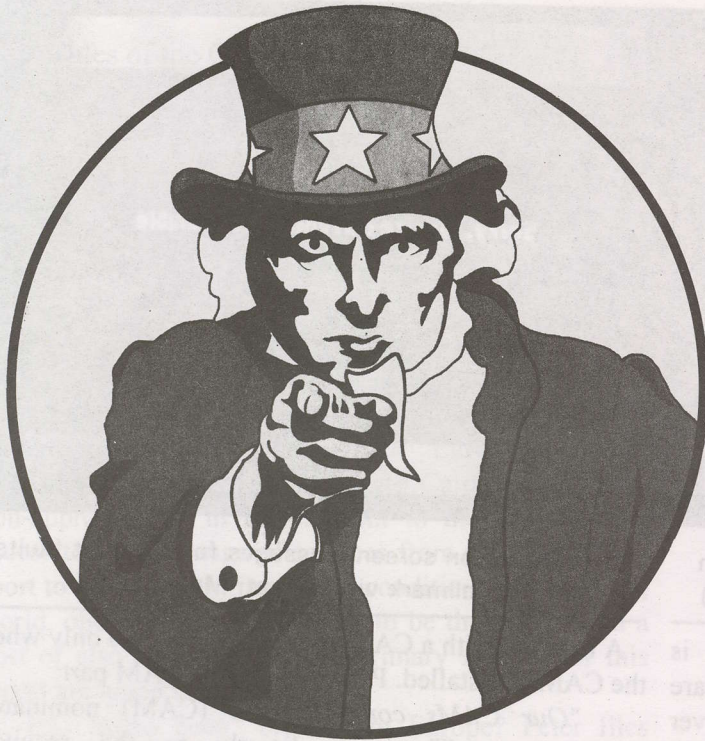
So what, exactly, is it that Irdeto sells? A CAM? Actually, the CAM is only a tool to implement the particular (and exclusive to Irdeto) software technology they have created. There are layers to Irdeto licensing. The obvious part is the CAM and the CA card. Not so obvious is the relationship to the programme supplier and his uplink equipment source.

Peter Illes. "We interface with the compression equipment supplier. Some of our programmer licensees buy (uplinking) hardware which includes a specific interface for the Irdeto data stream. In other cases, we supply the interfaces." Illes also explains how a programmer might take steps to protect his product (the secured programming). "Irdeto does cards as a part of the package. Some of our programmer clients build in an

-continues on page 18-

CODE	ON-SCREEN MESSAGE	EXPLANATION
E00	Service not scrambled	Is not currently scrambled
E01	Please insert CA module	Module missing or improperly inserted
E02	CA Module EEPROM failure	CAM's EEPROM defective
E03	CA Module failure	CAM hardware error
E04	Please insert smart card	Card missing, improperly inserted in CAM
E05	Unknown card	Smart card invalid and rejected
E34	Service is currently scrambled	Unknown error (E30 - authentication error)
E37	Service unknown	Service not found (not in data stream)
E40	Decoder memory full	Fatal error created during over air upgrade

Representative sampling of on-screen error codes for IRDETO system as employed in Australia for Galaxy. Each CA approach has its own error code system and meanings may not be evident without checking receiver manual.



UNCLE BAYSAT ASKS

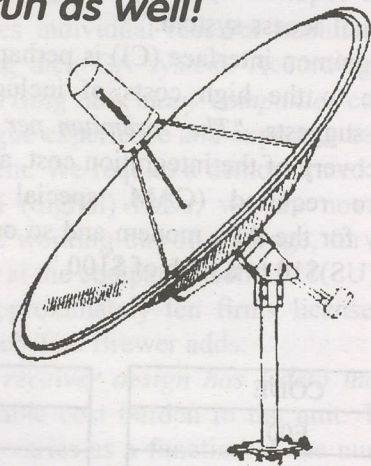
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'insurance policy' fund to cover the possibility their cards will need to be wholesale replaced. This is optional, Irdeto does not demand it. You cannot compare the analogue (Videocrypt) system to the Irdeto (digital) card system.

"Analogue cards are replaced because the programmer's security system requires a change in the encryption algorithm. Digital cards are based upon keys which are transmitted over the air. The advantage to digital (Irdeto) is that new key numbers can be transmitted through the air and the Irdeto equipped units do not require a card replacement to be updated. The transmitted key is the secret to Irdeto. In a key based system, there is no requirement to change the card unless the key numbers have been discovered. In this event, the system with which the key numbers work (i.e., the basic level of the Irdeto encryption) requires replacement. A card change in an Irdeto system signifies a major change in the service operating parameters."

The concept being the Common Interface is this. The consumer purchases an IRD without a CAM, obtains the required CAM from the programmer (or elsewhere) which turns the IRD into a receiver specifically for one service. First there is the IRD which in theory can receive any MPEG-2 service. Second is the CAM which narrows the receiver's use down to a bouquet which utilises a card technically compatible with the CAM. Finally, the CA card. To change service, you need a new card (if the additional service uses the same CAM), or a new CAM plus new card (if the additional card only works with a different format CAM). A receiver which only accepts one version of CAM (such as the Pace DGT-400 used by Galaxy) cannot be used with a new service that requires another breed of CAM (and card).

Brewer's firm ADB like others with Irdeto licenses sees this problem has not solving itself with CI.

"This sounds like a good idea, but in the end it pushes up IRD pricing and it is not all that easy to make all operator systems work inside the same IRD. The DVB and MPEG specifications have wide 'windows' and different encoders may not allow a simpler IRD to work with them.

"This is a problem we run into frequently as we are running a very integrated IRD that depends heavily upon software support. A firm that increases the amount of hardware in the design (such as Nokia) would certainly make all of these variables work easier, but the price goes up and the most basic battle we face daily is demands for a cheaper IRD. Then each new twist in software makes the hardware more complicated. Developments such as OpenTV applications, more modem capacity require more memory and this quickly becomes more cost.

"In theory, any Irdeto IRD should be able to handle FTA services as well. In practice, this is not so; for

example, try using receiving FTA services on an Irdeto Open TV menu."

On the matter of FTA, Peter Illes suggests that any reception requirements other than the processing of an Irdeto conditional access service "creates special considerations" for the receiver designer. If Irdeto's DVT engineers find a receiver is having Irdeto processing problems because of the FTA ability the designer has included, Irdeto will quickly urge that FTA be removed "if they want certification."

"This is all very price driven" notes Brewer. "We have a new FTA box in the works that does SCPC, MCPC, provides a scanning menu to locate, lock on and store any FTA channel, sort out the favourites and do all of this without finding and entering PIDs or using special menus. But where is the market? Europe has only enthusiasts who are asking for such a receiver and we are geared up for minimum production runs of 2,500; perhaps too large for the FTA market."

What about pricing? Brewer believes the present benchmark for SCPC/MCPC receivers that do only FTA is in the region of US\$250 per IRD in container load lots (1,100 region). Nobody should confuse that level of maximum discount with the price a regional distributor or local dealer must get for the same product after it has filtered down through the distribution channels, collecting overhead, taxes, duties and shipping costs at each level.

IRDs equipped with some form of conditional access (including a CAM) are upwards of US\$100 more per IRD, even in the same quantities.

By the end of this calendar year, some anticipate an Irdeto IRD equipped unit with OpenTV platform, 2Mb flash RAM plus 4 Mb of DRAM, LED display and dual stereo outputs could be under US\$300 in very large quantities. By midyear 1999, US\$250. And when these IRDs end up in the hands of the consumer, they will still have a minimum cost in the range of US\$450-500. Translate that to your local currency and you have a grasp on what sort of marketing problems face the programmers.

Which becomes the major challenge for the growth of digital DTH over the balance of 1998 and all of 1999. How does a programmer build a sizeable subscription base when the cost of being equipped for digital at the consumer level hovers around US\$600 (Irdeto or similar IRD, antenna, mount, LNBF, cable and installation)? There are three choices:

1) Consumers agree to pay this high cost to access digital DTH, in addition to monthly subscription fees;

2) The programmer somehow subsidises the up front equipment cost in return for the consumer's agreement to take the service;

3) The programmer actually pays the cost of the hardware just to get the viewers on line.

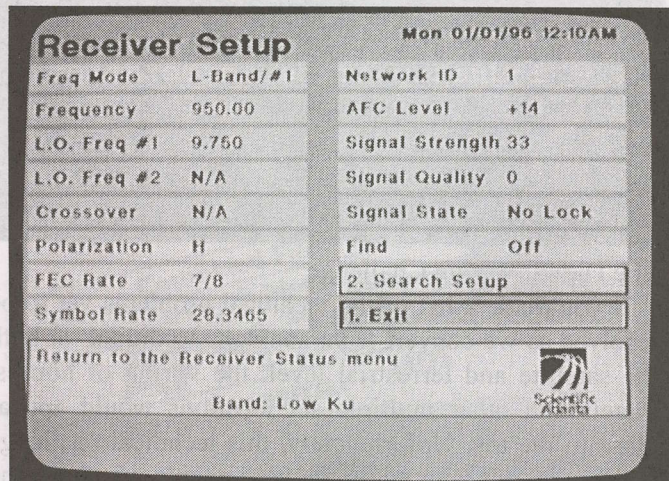
The right answer is not easy to find as numerous DTH firms are learning in the real world.

DIGITAL IRD UPDATE 98-1

Scientific Atlanta is shipping new model D9225 through programmers to cable affiliates. The unit's real price is unknown but TNT/Cartoon offered it to affiliates for US\$1,000 early in January. The software is easier to use, but only one audio channel (L and R) is provided. In other SA reports, the GWN D9234s are going in although slowly in Western Australia. Government RTIF vouchers valued at A\$750 for consumer rebates arrived in the hands of previously registered GWN BMAC users February 1st (see Coop's Technology Digest [CTD], February 25 for an extensive review of the Australian Aurora and Telstra competition). Old news update: Auckland SatFACTS reader Francis Kosmalski, who had his D9223 zapped by a bootloader sequence December 14th (see SF January, Letters, p. 2) reports SA Sydney failed to properly reinstall his software early in January. Result? Ship the IRD *back* to Australia (at Kosmalski's expense, of course) for another try. SA's excuse? To blame Kosmalski for getting his receiver "zapped" in the first place.

Hyundai Version 5 software, which includes a new-to-Hyundai L-band tuner, is being superseded by a replacement model. As CTD for January 21 reported, there are sensitivity problems with the new tuner and it is not possible to replace the new tuner with the older tuner without also modifying the software. The new software gets high marks for ease of use, and an excellent reception quality on-screen metering system. When all of this sorts out, we'll have a review.

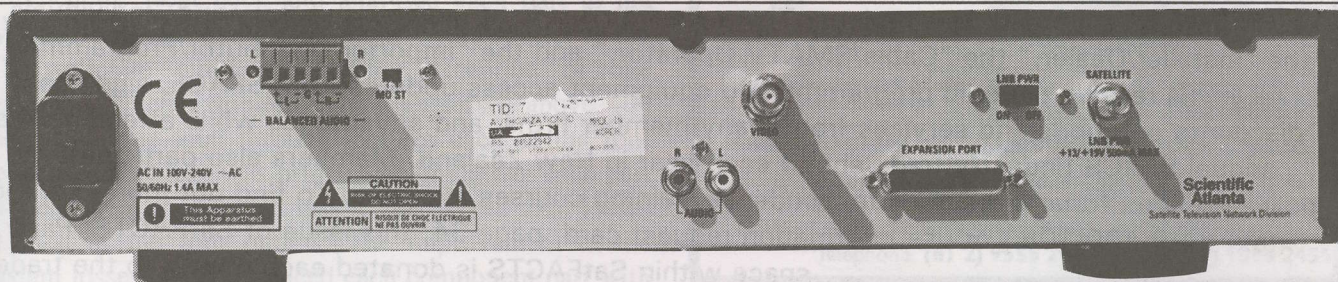
OPAC (tel 61-2-9584-1233, fax 61-2-9584-1452) has announced the D7-MediaStar receiver which should be available as you receive this issue. Generally described as, "The same features as a Nokia (no CAM capability)," it claims SCPC/MCPC from 2 to 36 Msps, direct channel selection from menu (as with Nokia), 1 second response time when changing channels, memory storage for 200 video and 100 audio channels (and no channel overwrite), automatic search and downloading, 22 kHz switch, PID menu, stereo audio (L, R remote switchable), audio and video out of RCA jacks plus twin



"Windows 95-like software" look is apparent in SA's lower cost D9225 IRD for cable and SMATV

SCART, PAL-G (UHF) modulator. And ... according to OPAC's Jacob Keness NTSC/PAL auto switching with no NTSC glitch including NTSC converted to PAL 60 hertz. The unit, claimed to be from Korea, is said to have the same threshold as the Nokia 9200/9600 units. Suggested user price will be A\$995, including 22% tax. Yes, you can expect a review here in SatFACTS.

STAR TV's India services (AsiaSat 1, 4 analogue channels), are converting to digital. Yes, this would have happened on AsiaSat 3 had it survived. The conversion involves running both digital and analogue until some quantity of Pace 211M IRDs are in place in Indian cable TV headends. DTH viewers there have been offered the opportunity to swap out existing Star Movie analogue decoders for the 211M for Rs.3000 although Star retains actual ownership of the 211M. Cable operators already carrying the four Star channels are offered 211Ms at the same Rs.3000 per IRD price; 211Ms to new locations are being quoted in the Rs.27,000-30,000 region. Zee TV may also become a part of this package. The initial Pace receivers are being imported from the UK; the master Pace distributor in India, C-NET, has announced plans to do final assembly of the receivers in India, perhaps as early as April.



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The Digital Wiring Challenge

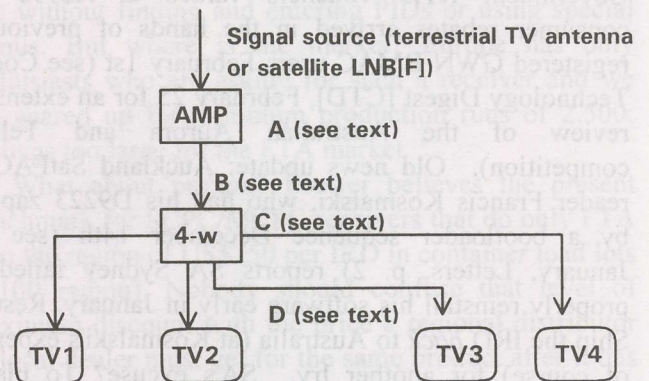
If you made a list of the technical problems yet to be resolved as we convert from analogue to digital at both the satellite and terrestrial level, the wiring of houses, motels and other multiple set locations would appear close to the top. Unfortunately, this technical challenge is being all but ignored by the very people who have the most to lose if it is not properly solved; the bouquet programmers.

Here is the challenge in a nutshell:

1) Satellite receivers function between 950 and something approximating 2,100 MHz. They do this because the LNB(F), at the antenna, frequency converts the Ku (or C) band signals to what is known as L-band (or, 950 MHz up to around 2,100). This lower frequency makes it possible for standard (quality) coaxial cable to transport the LNB output to the receiver over distances that average 20 to 50 metres in length.

2) Houses (motels) that have been previously wired for two or more (multiple TV) sets use RG-59 or RG-6 or perhaps RG-11 coaxial cable, signal splitters, connectors and on occasion an amplifier to distribute standard VHF (bands I and III) and UHF (bands IV and V) signals from a common antenna.

In the diagram (right) is a simplistic 4 outlet "master antenna system" including a line amplifier. While this system might work properly to distribute VHF and UHF TV signals to four TVs, it is guaranteed not to be compatible with distributing L-band (satellite) signals. The trouble spots start at the line amplifier and continue



throughout the full system up to and including the cable fitting to the TV sets.

A - A terrestrial TV line amplifier covers the frequency range of 40(+) MHz to something near 800 MHz. L-band is 950 MHz to 2,100 MHz.

B - Connectors used for terrestrial installations are often PAL plugs or connections are 'hard wired' by attaching the centre conductor and coax shield to slip-in positions on the equipment.

C - The signal splitter is at best designed to work to 800 MHz and the component parts inside are in no way designed to function through L-band.

D - The cable will simply not work if it is any of the following: (1) Any form of RG-59, (2) Any form of RG-6 with less than a full over wrapped foil shield plus at least a 40% braid shield on top of the foil wrap shield,

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Frequency	TV#1 (8 metres)	TV#2 (13 m)	TV#3 (11 m)	TV#4 (19m)
100 MHz	10 dB	11 dB	11 dB	12 dB
400	13 dB	14 dB	14 dB	15 dB
800	16 dB	19 dB(*)	17 dB	19 dB
1,200	22 dB	25 dB(*)	23 dB	29 dB
1,600	28 dB	40 dB+(*)	31 dB	36 dB
2,000	38 dB	40 dB+(*)	40 dB+	40 dB+

Above table shows losses between input to the 4 way splitter (diagram, p. 20) and the flush mounting wall plate outlet for a newly installed home

distribution system utilising PAL connectors, a 4-way splitter, wall plates supplied by a name brand parts company and RG-6 cable with a non overlapping foil shield covered by a 30% copper braid. * indicates wallplate problem accounting for unusually high loss at this location.

(3) Any form of RG-11 with less than a full foil plus braid shield.

What these requirements add up to is a wholesale replacement (or wiring over the top) of previously installed terrestrial distribution systems. Even the common flush mounting wall plates (with a female PAL fitting on them) which many installers use to provide a convenient TV wire "jack point" simply will not work at frequencies above 800 MHz (many, in fact, do not work properly above 300 MHz).

Working or not working is a function of loss. A PAL family fitting that loses 2 dB of signal at 1,200 megahertz is not a good choice. A piece of coaxial cable that contains such a poorly designed shield that it leaks signal out of the cable is a bad choice. A signal splitter adding 15 or 20 dB of loss where there should be 8 dB of signal reduction is a poor selection.

We selected a home distribution installation newly wired by a local electrician (he also selected the parts from his normal suppliers) and applied a test signal at the input to the 4-way splitter. We then took a spectrum analyser and read the signal levels at discrete frequencies from 100 to 2,000 megahertz at the four wall plate outputs in the home. The results are shown in the table at the top. Where the signal losses should have been under 20 dB in the worst case (TV set # 4) they were in excess of 40 dB at 2,000 megahertz (2 GHz).

Then we went back and analysed each part in the system from the input at the initial 4-way splitter to the TV wallplate outlets. With the exception of one wallplate which exhibited very high losses above 400 megahertz, the total through loss for each of the four separate outlet legs was primarily cumulative; each part in the system contributed loss to the overall total losses at each of the four outlets. The improvement in the system losses, as we replaced each component part with L-band rated hardware, is detailed in the next table.

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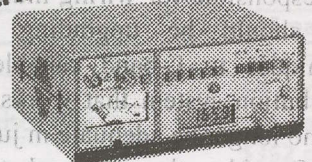
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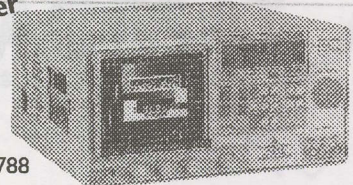
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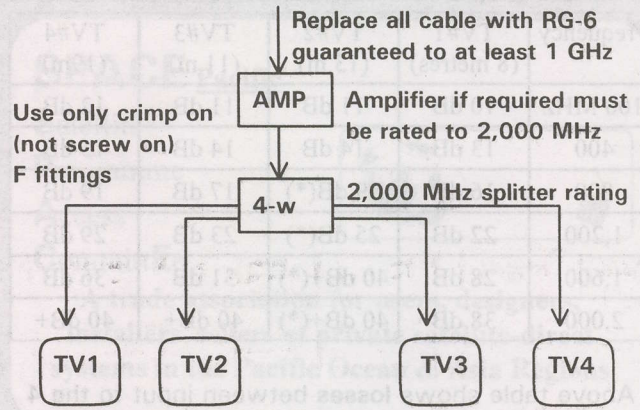
Frequency	TV#1 (8 metres)	TV#2 (13 m)	TV#3 (11 m)	TV#4 (19m)
100 MHz	9 dB	9 dB	9 dB	10 dB
400	10 dB	10 dB	10 dB	11 dB
800	12 dB	12 dB	12 dB	13 dB
1,200	14 dB	14 dB <td 14 dB	15 dB	
1,600	16 dB	16 dB	16 dB	17 dB
2,000	18 dB	18 dB	18 dB	19 dB

PAL socket wall plates simply will not work at L-band and in our rewiring they were replaced with F fitting wallplates (table after L-band requiring).

If you believe that we are entering a period when the transition from analogue to digital, and from terrestrial to satellite delivery will eventually be complete, and you are responsible for wiring multiple TV outlet locations, you should be upgrading your components and techniques to L-band capable installations. A home distribution system that works marginally at 800 MHz will no longer be adequate in just a few years time.

Consider the proposal to deliver both existing terrestrial TV and satellite TV via MCPC bouquets in the years ahead. Today, for a house with two or more TVs to enjoy the terrestrial reception, each TV set is connected to the aerial through a simple distribution system (as diagrammed on p. 20). An analogue TV set is relatively forgiving if the distribution system feeding it signal is badly balanced (as to signal levels and the impedance of connecting parts). A wide range of analogue TV sets is available to consumers producing varying levels of reception quality; a bargain priced \$150 TV set produces pictures simply by connecting it to some type of aerial and turning it on.

If terrestrial TV is delivered in digital form through multiple outlet distribution systems, the consumer faces a decision. Purchase a new digital terrestrial receiver, or, purchase a digital set-top converter that will allow continued use of the analogue TV receiver. In both situations, the quality of the in house distribution system will have to be upgraded to handle the far more complex digital waveforms.



If you MUST use wallplates, F fittings ONLY

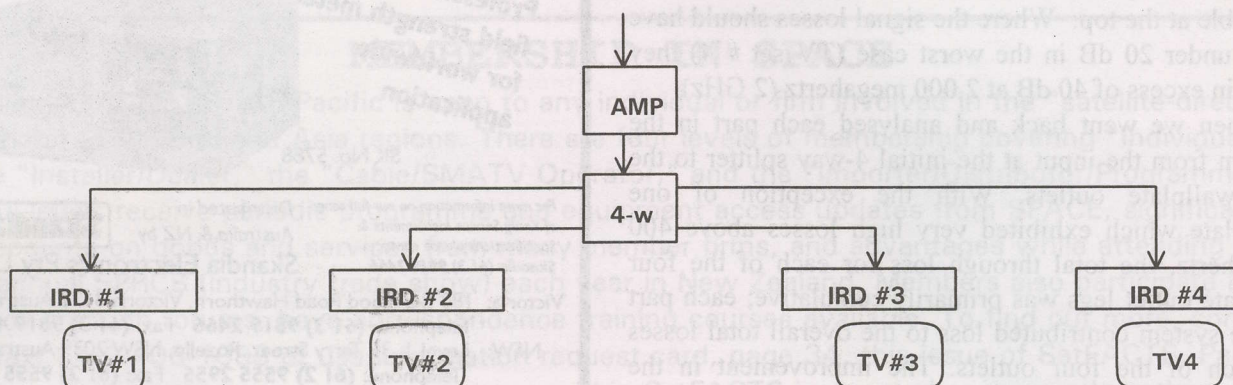
Consider now the (New Zealand proposal) to shift all free to air terrestrial networks to the Sky Network digital bouquet. Instantly, each TV set in a multiple set home or facility will require its own IRD (below) to receive what is presently free to air terrestrial television. There are two serious challenges here:

1) The cost of the IRDs. A bargain priced \$150 TV set in the kitchen will require an IRD - likely to remain in the region of US\$500 and up (consumer cost) for several years into the future.

2) The existing multiple-set distribution system will require replacing with an L-band capable system.

A home with four TV sets will be facing an expenditure upwards of US\$2,200 just to acquire the new IRDs and to rewire for L-band distribution. Add to that the cost of the DTH antenna, LNBF, mount, cable and installation and you quickly have a cost that will not appeal to the majority of consumers. *A home will no longer be able to add an additional TV unless an IRD is also added.*

These are serious problems for pay-TV planners who are trying to make their DTH bouquets appealing to attract the largest possible subscription base. In the USA, DTH home receiving systems now sell to consumers in the US\$200 range with a significant "subsidy" paid to the manufacturer of the IRDs by the programmer who hopes to make up the subsidy through programming subscription revenues. We have some interesting challenges ahead in the Pacific and Asia.



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Comtex 1.2 dB LNBF	\$50 each
1.2 Metre Channel Master Dishes	\$300 each
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Actuator QARL 3036 (Heavy Duty)	\$96 each
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American RE Max 18"	\$64 each
American RE Max 12"	\$56 each
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Gardiner C Band 23 Degree LNB	\$75 each
Zintech ZC-D11 LNB	\$35 each
Norsat 1000 Model 1512B LNB	\$650 each
Thomson Video Crypt Receiver SRD8	\$50 each
Norsat 3000 Model 3530 LNB	\$850 each
WP4U Dual Polarity LNBF	\$78 each
Acesat 90 Degree LNB 1.2dB	\$60 each
Chaparral Sidekick 11 C Band 20 Degree	\$50 each
California Amplifier LNB 0.8	\$80 each
Norsat KU Band PLL LNB - 1109B	\$688 each
Norsat 1211 LNB	\$750 each
Norsat 1508B LNB	\$960 each
Prime Focus LNB Dual Port (OMT) - Chaparral	\$80 each
C Band Single Feed Linear (Taiwan - Grey)	\$40 each
Prime KU Band Polarators	\$48 each

Super Feed	\$70 each
Linear Circular C Band Feed (White)	\$50 each
Linear C Band Polariser	\$70 each
Gardiner C Band Dual Port Feedhorn	\$70 each
WR75 KU Band Feeds	\$70 each
C-120 Feeds (Cast)	\$15 each
C-120 Feeds (Bronze)	\$25 each
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ADL 4 Port Feed	\$362 each
WAY AS788 Receivers	\$70 each
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2.1 Metre AMS Dish Skins	400 each
2.4 Metre Paraclipse Solid Dish	\$450 each
2.6 Metre Paraclipse Mesh Dish	\$395 each
2.7 Metre Solid Skins	\$240 each
3.0 Metre Skandia Mesh Dish	\$550 each
Actuator HARL 3024	\$70 each
Actuator HARL 3018	\$65 each
Superjack HARL 3012	\$89 each
SuperJack SAC2000	\$97 each
Norsat 4706B LNB	\$260 each
Norsat 5215G LNB	\$115 each
Norsat 8115 LNB	\$480 each
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SatFACTS Pacific/Asian Region Orbit Watch: 15 February 1998

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Analogue Free-to-Air 57E to 80E

Sun Music	57E/703 1395R
RTNC	1352R
Tests	1305L
Gemini	1220R
AsiaNet	1170R
WorldNet	1095R
TVi	1025R
Muslim	975L
ESPN Feeds	64E/801 1134R
E-TV	1093/L
Gemini	1055/L
CFI Test	66E/704 1140L
Home TV	68.8/Pas4 Vt1310
ABN	Hz/1365
Sony TV (Hindi)	Hz/1240
Doordar & Iran TV	Vt/1116
CNNI	Hz/1065
TNT/Cart.	Hz/1040
MTV Asia	Hz/965
ZJTV	76/Ap2R 1390Vt
TVT	78.5/Th3 1280/Vt
Army TV	1390/Vt
ViJay TV	1480/Hz
RAJ-TV	1510Vt
VTV4	1540/Hz
TK Rossija	80/Exprs. 1475RHC
Feeds	1315RHC
VTV4+	1275RHC
ACT/TB3	1225/RHC
TV Center	1025/RHC

Anal. Free-to-Air 80E to 113E

Russia 3	80/Exprs 1025R
RTR 1	90/S6 1475R
Orbita I	1275R
RTR II	1234R
Orbita II	1215R
VTV4	91.5/Me1 Hz/1440
RTM1	1270/Hz
DD.10	93.5/In2b 1010/Vt
DD.1	1160/Hz
DD7	1095/Vt
DD9	1080/Hz
DD.7 (T)	1070/Vt
DD.9(K)	1180/Vt
DD.5(T)	1256/Vt
DD.1	1268/Vt
DD.	1310/Vt
DDMMBI	1338/Vt
DD.4	1388/Vt
ORT 1	96.5/S14 1475R
Madagas-car	1325R
Tv Azer.	1275R
ERTU Egypt	100.4/As2 1508/Hz
TV Shopping	1490/Vt
Mongolia, Iran/plus	1470/Hz
Star News	1410/Vt
Feeds	1290/Vt
WorldNet	1265/Hz
CCTV4	1190/Hz
RTPi	1170/Vt
RTR	103/S21 1475R
Vrk/Apt	1275R
CFI (TV5)	113/C2 990/Hz

Anal. Free-to-Air 113E to 148E

Brunei, feeds	113/C2 1010/Vt
MTV Asia	1030/Hz
TPI	1070/Hz
TV Indosiar	1090/Vt
ABN	1110/Hz
ANteve	1130/Vt
CNNI	1177/Vt
SCTV	1190/Hz
GMA	1240/Hz
TV3	1250/Vt
ATV(7) Australia	1270/Hz
TVRI	1310/Hz
Gujarat +	1350/Hz
RCTI	1408/Vt
CNBC	1530/Hz
Test Card	128/Jc3 1070Vt
CETV SD	134/Ap1A 1330Hz
CETV2	1250/Vt
CETV1	1170/Vt
CNNI	138/Ap1 1170/Vt
CCTV7	990/Hz
Orbita-I	140/S7 1475R
NTV	1425R
ORT1	145/S16 1475R
RTR Russia	1275R
Test Card	148/Me2 1070/Hz

Worldstar Radio Sat

Asiastar 1 to 105E (12/98); downlink 1.451-1.492 (GHz). Audio channel capacity: 576 @ 16Kbit/s.

An. Free-to-Air 150E to 180E

RCTI	150/C1 990/Hz
CNNI	169/Pas2 1183/Hz
CNN Feeds	1155/Hz
NHK	1114/Hz
Olympics	1370/Vt
TV Shopping	1400/Hz
Feeds	174/I802 984R
Feeds	973R
Feeds	177/I702 984R
Feeds	963R
Feeds	180/I701 1430R
Olympics	1340R
Feeds	1175R
RFO	1105R
Feeds	1020L

PALAPA C1 150.5E

RCTI	990Hz
Tests	1030Hz
Tests	1140Hz
Tests	1220Hz
Tests	1330Hz
Tests	1360Hz

Encrypted Analogue

Discov. India	68.8/Pas4 1365/Vt
ESPN	1290/Hz
ESPN (d) *	113/C2 1030/Hz
HBO Asia (d) *	1150/Hz
Discovery (d) *	1430/Hz

* scheduled to close by March 30, 1998

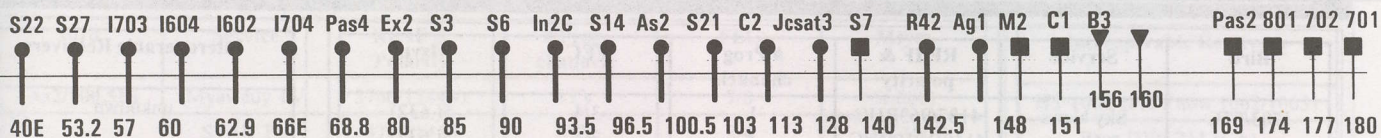
NON MPEG-2 DIGITAL SERVICES

People's Net (GI 1.5)	113/C2 1220/Hz
RPN-9 (SA 1.5)	142/G2 1225L
Fox/Prime (SA 1.5)	169/Pas2/ 1161/Vt
Filipino Channel (GI 1.5)	1314/Hz

(a) B-MAC encrypted, no access available; (c) MPEG encrypted, access may be possible; (d) B-MAC, access for DTH possible some geographic areas.

FEBRUARY ALERT

AsiaSat G (122E), 3675 LHC for Moscow 6 programming; Palapa C1 (150.5E) Hz in particular (check 4160/990 [RCTI] to confirm you have found correct satellite). Best Apstar 2R (76.5E) source: 3760/1390 Vt; Thaicom 3 (78.5) check 3650/1500Hz. Indian election coverage? As2, 3740/1410 Vt PAL. Western Australians, Asians should checkout 55E for signs of InSat 2R. Check C2 990Hz March 4th for CFI to TV5 changeover.



**OPTUS B3
156E
(Ku only)**

ABC WA	1358/Vt B-MAC
Imparja	1355/Vt B-MAC
GWN	1300/Vt B-MAC
Net 9, Sky	1233/Vt B-Mac
Austar test Mpeg2	1389/HZ
Optus test Mpeg2	1326/HZ
Aurora Mpeg test	1264/HZ
Imparja N.T.	1214/HZ B-MAC
Aurora Mpeg test	1169/Vt
Galaxy	1137/HZ Irdeto Mpeg 2
Galaxy	1073/HZ Irdeto Mpeg 2

Optus A3/152E(a)

ATN7png	1297/Vt
ATN7png	1430/Vt

a/occasional use

**Palapa C2 Ku
(seen South
equator)/113E**

Test bars	11.148/Vt
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**MeaSat 2
148E**

Tests	1070Hz*
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* Colour bars , audio 6.8;
C-band covers Aust, NZ

**OPTUS B1
160E
(Ku only)**

Data	1402/HZ
QSTV	1377/HZ B-Mac
SE ABC HACBSS	1370/Vt B-Mac
SE SBS HACBSS	1344/Vt B-Mac
NE SBS HACBSS	1339/HZ B-Mac
NE ABC HACBSS	1313/HZ B-Mac
Sky Channel	1296/Vt B-Mac
ABC Radio	1276/HZ (digital)
OmniCast	1270/Vt (FM/FM)
ABC feeds	1247/HZ Pal
Sky Nz (sport)	1245/Vt VidCrypt
Net 9 feeds	1220H B-MAC
Sky Nz (Orange)	1218/Vt VidCrypt
Net 10	1182/Vt E-Pal
Net 9	1180/HZ E-Pal
Net 10 feeds	1155/Vt Pal
QTQ9	1145/Vt
Net 7	1120/Vt E-Pal
Net 9 feeds	1091/Vt Pal
Aurora MPEG-2	1076/HZ (tests)
CAA air to ground	1009/Vt Nbfm

**PAS-2
169E
(C + Ku)**

CCTV	1433.5/Vt (Sa9223)
Napa feed	1407/HZ
Value Ch.	1400/Vt
Discovery PowerVu	1374/HZ (Sa9223)
Olympics	1370/Vt
AB Asia, feeds	1335/Vt
ABS/CBN	1314Hz (GI 1.5)
Baccarat	1290/Vt
WCE-TV, feeds	1250/Vt
MPEG-2 PowerVu	1249/HZ (Sa9223)
CNN+ (1/2Tr)	1183/HZ
FoxSports	1160/Vt (SA 1.5)
Feeds	1150/HZ
NHK	1115/HZ
Feeds	1105/Vt
Napa feed	1065/Vt
NBC Mux MPEG	1057Vt (Philips)
MPEG-2 PowerVu HonKong	1002Vt (Sa9223)
TCS Sing.	967/HZ

PAS-2 Ku

GWN	12.263V
MediNet	12.286V
Telstra Bendigo	12.300V
Napa TC	12.415V
HiLife	12.582H
MTV Asia	12.604H (MPEG)
ABC Interchge	12.629, 638, 646 Vt

**Intelsat 801
174E**

Feeds	963R
Feeds	984R

**Intelsat 702
177E**

Feeds	963R
AFRTS	973L (PowVu)
Feeds	984R
Space TV Sys	12.612H (MPEG)

**Intelsat 513
177W**

Feeds	963
Feeds	984

(513 Ku)

Service	RF Freq.
US Nets	10.980V
NBC	11.015V
Feeds	10.510V

Ku Services

Intelsat Ku band services shown here are boresighted to Japan and nearby Asia, have not been reported south of equator.

TDRS5 / 174.3W

Fuji TV	1305 Hz
BBC World	1163Hz MPEG

**Intelsat 701
180E(W)**

TVNZ	955/Dmv 3000
TVNZ	964/Dmv
TVNZ	972/Dmv
TVNZ	980/Dmv
TVNZ	988/Dmv
Occ Vid.	1,020**
TVNZ	1,030
SPN	1,069
RFO Tahiti	1,105
SCPC	1,126
SCPC	1,136
Vidip/e	1,220
Feeds	1,254
NHK(e), NBC	1,270
TVNZ	1,293/e
Olympic	1,340
10 Oz MCPC	1,385 (PwRvu)
CNN USA	1,430
Baccar.	1,439 **

* RHC & LHC
** LHC only
e/ encryption

(701 Ku)

NHK	11.135H
CBS	11.475H
CNN	11.508H

UPCOMING SATELLITE LAUNCHES

Sinosat 1 (destination uncertain) to "February"
ChinaSat 1 to 87.5E (?) now March
Gorizont 33 (last of series) to unknown
destination - now "March"

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

Bird	Service	RF/IF & polarity	# Prog channels	FEC	Msym
I703/57E	Sky News	4187/963RHC	1	3/4	5(.632)
		4140/1010RHC	1	3/4	5(.632)
I704/66E	CFI	4055/1095RHC	4	3/4	27(.500)
	Indian bouquet	4068/1082LHC	2(?)	1/2	7(.100)
PAS4/68.5E	ART/RAI, BBC	3966/1184Vt	2	3/4	5(.632)
	TVSN	3743/1407Hz	6	3/4	21(.800)
	CCTV	3716/1434 Hz	6	3/4	19(.850)
Thaicom 3 78.5E	UTV	3920/1230 Hz	6TV (#1)	3/4	27(.500)
	UTV/MCOT	3880/1270 Hz	8TV (#2)	3/4	27(.500)
Measat 1/91.5	India Bouquet	12284/12346Vt	10+TV?	7/8	30(.000)
As2/100.5E	Chinese tests	12.295Hz	1TV	2/3	6(.103)
		12.329Hz	1TV (BTV 1)	1/2	6(.930)
As2/100.5E	Laos TV	4143/1007Hz	1TV	2/3	2(889)
	European Bouquet	4000/1150 Hz	6TV, 12 radio (#3)	3/4	28(.125)
	Hubei TV (HBTV Main)	3854/1296 Hz	2	3/4	4(.418)
	Hunan TV (SRTC)	3847/1303 Hz	1	3/4	4(.418)
	Guandong TV (GDTV)	3840/1310 Hz	1	3/4	4(.418)
	Inner Mongolia TV Zizhiqu	3828/1322 Hz	2	3/4	8(.397) (1-China) (2-Mongolia)
	APTU London	3800/1350 Hz	1	3/4	5(.631)
	BBC Radio	3793/1357 Hz	?	?	?
	WTN Jerusalem/London	3790/1360 Hz	1	3/4	5(.631)
	WTN London	3786/1364Hz	1	3/4	5(.631)
	WTN HK	3775/1375 Hz	1	3/4	5(.631)
	Liaoning TV (Service 2)	3734/1416 Hz	1	3/4	4(.418)
	Jiangxi TV (JX Sat TV)	3727/1423 Hz	1	3/4	4(.418)
	Fujian TV (SETV)	3720/1430 Hz	1	3/4	4(.418)
	Quinghai TV Zenghou	3713/1437 Hz	1	3/4	4(.418)
	Henan TV Main	3706/1444 Hz	1	3/4	4(.418)
As2/100.5E	Sky Racing	4020/1135Vt	3TV	1/2	18(.000)
	EMTV	4006/1144Vt	1TV, 2 radio	3/4	5(.632)
	Hallmark/KIBC	3940/1210Vt	2TV	2/3	26(.655)
	STAR TV (Hong Kong)	3900/1250 Vt	5TV (#4)	3/4	28(.100)
	Hei Long Jiang	3834/1316Vt	1TV	3/4	4(.418)
	JSTV	3827/1323Vt	1TV	3/4	4(.418)
	AHTV	3820/1330Vt	1TV	3/4	4(.418)
	"QQQ" China (Shaanxi)	3813/1337 Vt	1, 1 Radio	3/4	4(.418)
	Guangxi GXTV	3806/1345Vt	1, 1 Radio	3/4	4(.418)
	Eastern TV Taiwan	3785/1365 Vt	5TV (#5)	3/4	18(.000)

Interoperable Receivers
unknown
N163/17X/2X, HS-100C
HS-100C, e3
e3
(MPEG-2, Iredeto) (CA)
Pv9223, N163/2X, HS-100C
HS-100C, Philips, probably others (some chs now CA)
HS-100C, Philips, probably others (some chs now CA)
Philips
HS100C, e3
HS-100C, N163, e3
DMV, HS-100C, Gng, N163, /17X/2X, N2000, P400, P500, Pn520/630, Sk888
HS-100C, N163/17X/2X, N2000, Ph3950/11
HS-100C, N163/17X/2X, N2000, Ph3950/11
HS-100C, N163/17X/2X, N2000, Ph3950/11
HS-100C, N163/17X/2X, N2000, Ph3950/11
DMV, HS-100C, N163 /17X/2X
(Comstream ABR200/202)
DMV, HS-100C, N163/17X/ 2X
DMV, HS-100C, N163/17X/2X
DMV, HS-100C, N163/173/2X
HS-100C, N163/17X/2X, N2000, Ph3950/11
HS-100C, N163/N17X/2X, N2000, Ph3950/11
HS-100C, N163/17X/2X, N2000, Ph3950/11
HS-100C, N163/17X/2X, N2000, Ph3950/11
HS-100C, N163/17X/2X, N2000, Ph3950/11
Pace DVS-211 (CA)
HS-100C, N163, Pv9234
HS-100C (2.05), e3 (V5.0)
HS-100C, Pace DVS211(CA), DMV, N163*/17X+/2X
HS-100C, e3
HS-100C, e3
HS-100C, e3
HS-100C, N163/17X/2X, N2000, Ph3950/11
HS-100C, N163/17X/2X, N2000, Pv9223 (CA)

Bird	Service	RF/IF & Polarity	# Prog. channels	FEC	Msym
(As2/100.5E)	Myawady TV	3766/1384Vt	1TV	7/8	5(.080)
	STAR TV Hong Kong	3700/1450 Vt	8TV (#6)	3/4	28(.100)
C2/113E	Tests	11.500Hz	multiple TV	7/8	26(850)
	Star Indovision	3500/1650Hz 3580/1570Hz	20 TV (#7)	7/8	26(.850)
	Indovision	3460/1690Hz	6TV	7/8	21(000)
	MegaTV	3780/1370Vt	5TV (#8)	3/4	27(.500)
Thaicom 1/120E	Thailand terres.	4120/1030Vt	6TV	2/3	27(.500)
APIA/134E	AXN	4060/1090Vt	4	7/8	28(.330)
API/138E	Reuters	3732/1418Vt	1TV, data	3/4	5(.632)
Palapa C1/150.5	Indovision	4117/1033Hz	10TV	7/8	26(.850)
Optus B3 156E	Galaxy	12.438Hz 12.373Hz	20+TV (#9)	3/4	29(.473)
	Aurora Test	12.469Vt	3+ TV	2/3	30(.000)
	Aurora Test	12.564Hz	up to 6TV	2/3	30(.000)
	Optus Vision	12.626 Hz	16TV, 8 radio (#9A)	3/4	29(.473)
	Austar	12.689Hz	tests-up to 10TV	3/4	29(.473)
Optus B1 160E	Aurora (MPEG test)	12.377Hz	5+ TV (#10)	2/3	30(.000) [27(.500)]
PAS-2 169E	ABC Interchange	12.646 (.638, .629)Vt	1 TV (each)	3/4	6(.980)
	Telstra Bendigo	12.300Vt	3TV, 2 radio	1/2	10(.138)
	Mediasat	12.286Vt	1TV	3/4	6(.610)
	GWN Perth	12.263Vt	2TV, radio	1/2	13(.404)
	MTV Asia	12.605Hz	8TV	1/2	22(.490)
	Hong Kong PowerVu	4148/1002 Vt	8TV (#12)	2/3	24(.430)
	NBC Hong Kong	4093/1057 Vt	7TV (#13)	3/4	29(.473)
	JET Singapore	3962/1188 Vt	2TV (1-Ntsc, 2-Pal)	1/2	13(.740)
	ESPN (USA)	3860/1290Vt	4TV, 2 control	7/8	26(.470)
	CCTV China PoerVu	3716.5/ 1433.5 Vt	5TV (#14)	3/4	19(.850)
	TCS Singapore	4183/967 Hz	2TV (#15)	1/2	6(.620)
	ITJ-Japan	4.174/976 Hz	1 TV	3/4	5(.632)
	AAR-ART/ RAI Int	4153/997 Hz	3TV (#16)	3/4	5(.632)
	Olympic Feeds	4138/1012Hz	1TV	3/4	6(.620)
	PAS-2 feeds	3940/1210 Hz	2TV(NTSC)	2/3	6(.620)
	California PowerVu	3901/1249Hz	8TV (#17)	3/4	30(.800)
	Disney/Aust.	3804/1346Hz	1TV	5/6	21(.093)
	Discovery Singapore	3776/1374 Hz	7TV (#18)	3/4	21(.093)
	Satcom 1-6	3743/1407Hz	6TV	7/8	19(.465)
	Unknown test	3718/1432 Hz	3TV	2/3	6(.620)
1702/177E	AFRTS	4177/973 LHC	8TV, 12 radio & data (#19)	3/4	28(.000)
	SPACE TV Systems	12.612/1312 Hz	13TV, 11 radio (#20)	3/4	26(.694)

Interoperable Receivers
HS-100C (PIDs now 1062/1063)
Pace DVS-211 (CA), N163/17X/2X
Pace DVS-211 (CA)
Pace DVS-211 (CA)
Pace DVS-211 (FTA?)
N2X/DVS-211(CA)
unknown
unknown
N163/17X/2X
same as 3580 C2
Gng, P400, P500, Pn520, + Pn630, Sk888 (c)
e3, HS100C
e3, HS100C
(when testing is over, only IRDs with CAM)
e3, HS100C, P400, P500, PN630
N163/17X/2X, Pv9223, HS-100C
Pv9223, Hs100C, e3
Pv9223/9234, (CA)
Pv9223, HS100C, e3 (some CA)
Pv9223/9234, HS100C, e3 (CA)
Unknown- Asia beam only
Pv9223, HS-100C(*), N2X* (some FTA)
HS-100C, Gng, N163/17X/2X, P400 (b), P500, Pn520, Pn630, Sk888
Pv9223 (CA)
Pv9223 (CA)
Pv9223, HS-100C, N163/17X/2X (FTA)
Pv9223, HS-100C N17X/2X (FTA)
HS-100C
HS-100C, Pv9223, N17X/2X, (continues FTA)
HS-100C, e3
Pv9223, N2X, HS-100C
Pv9223, HS-100C (*) N17X/2X (*), (some FTA)
Pv9223 (CA)
Pv9223, HS100C, N2X (occasionally Ch. 2 FTA)
Pv9223(CA)
e3
Pv9223 (CA)
XTCCDTV200 (All but 1 now CA)

Bird	Service	RF/IF & polar.	# Prog. Chs	FEC	Msym
1701/180E	TVNZ Gennet (feeds)	4195/955RHC	1TV(CA)	3/4	5(.632)
		4186/964	(BBC Gennet)		
		4178/972	1TV(CA)		
		4170/980	(APT/TV/Tokyo+)		
	Americas(radio)	4175/975LHC	3+ radio (?)	2/3	3(.680)
	TVNZ CRY	4120/1030RHC	1TV	3/4	5(.632)
	Canal Plus (test)	4091/1059LHC	1TV (?)	3/4	34(.368)
	SPN Nauru	4081/1069RHC	1TV	3/4	4(.730)
	TVNZTL	3857/1293RHC	MTV Europe	3/4	5(.632)
	10 Australia	3765/1385RHC	6TV	7/8	29(.900)

Interoperable Receivers
DMV, HS100C, N17X, 2X, e3 (for non CA channels when active: not all channels active all of the time)
e3, (CA)
(see TVNZ above)
MPEG 1.5, CA
HS-100C. e3
HS100C. e3 (now CA)
Hs100C. e3, Pv9223 (4ch CA)

Bouquets: 1)Thailand UTV: (1) CNN, (2) TTV, (3) ESPN, (4) HBO, (5) Ch. 5, (6) itv; 2) Thailand UTV/MCOT: (1)MCOT, (2) UTV Sports (3) test, (4) TTV News, (5) test, (6) Live, (7) Channel B, (8) Discovery; 3) European Bouquet. (1) Deutsche Welle, (2) MCM, (3) RAI International, (4) RTVE, (5) TV5 Paris, (6) [when operating] Deutsche Welle special programme channel with MediaNet VBI included [lines 10-15, requires DMV M2/Pro/Txt board inserted in 3000 series receiver]; Radio (1) DW#1 (stereo), (2) DW#2 (stereo), (3) DW#3 (stereo), (4) YLE (left) & RCI (right), (5) SRI (l) & WRN (r), (6) REE, (7) DW#1 (stereo), (8) DW#2 (stereo), (9) DW#1 (stereo), (10) NN RA6, (11) NN RA8; 4) STAR TV Hong Kong. (Now all but [5] apparently CA) (1) Sky News London, (2) Sports Contribution, (3) Channel [V] International, (4) Star Movies Japan [NTSC], (5) Star Plus Japan [NTSC]; 5) Eastern TV Taiwan. (1) "U1" [movies], (2) "U2" [news], (3) "U3" [sport, cartoons, general entertainment], (4) "Rock TV", (5) Rock TV [FTA, No audio]; 6) STAR TV Hong Kong. (1) Channel 6, (2) ESPN Contributory, (3) Racing Ch., (4) Star Movies SEA, (5) Star Chinese, (6) NBC, (7) CNBC, (8) Sky News, (9) VIVA Cinema; 7) Indovision. (1) HBO Asia, (2) STAR Movies SEA, (3) Film Indonesia, (4) MGM Gold, (5) ESPN Asia, (6) STAR Sport, (8) Channel 'V' International, (9) Channel 'V' Asia, (10) RCTI, (11) STAR +, (12) Discovery, (13) STAR Movies and NBC Asia, (14) Phoenix Chinese, (15) CNN, (16) BBC World, (17) CNBC, (18) Cartoon + TNT, (19) Preview 1, (20) Preview 2; 8) MegaTV. (1) CNNI, (2) Discovery, (3) ESPN Asia, (4) HBO Asia, (5) Cartoon + TNT, (6) MGM Gold, (7) Cinemax (6-7 may not be operating); 9) Galaxy. Presently 20+ programme channels. 9A) Optus Vision tests of 16 programme channels, programming decisions to be finalised; 10) Aurora. (1) SBS NT, (2)SBS NE, (3)SBS, (4) Sky News, (5) ABC WA ;12) Hong Kong PowerVu. (1) CTN 1, (2) CTN II, (3) TVBI Hong Kong, other feeds [NTSC], (4) TNT/Caroons [PAL], (5) Ad-hoc II [NTSC], (6) ABN, (7) CTN II, (8) CTN; 13) NBC Hong Kong. (1) CNBC, (2) CNBC Mandarin A, (3) NBC Asia, (4) colour bars, occasional feeds, (5) CNBC Mandarin B (6) NBC "2" Asia/Taiwan, (7) Colour bars, "future" use; 14) CCTV China. (1) CCTV4, (2) CCTV3, (3) CCTV 9, (4) CCTV4, (5) CCTV5, (6) CCTV8, (7) CCTV tests; 15) TCS Singapore. (1) TCS Test, (2) TCS Default [repeats channel 1]; 16) SCPC3. (1) ad-hoc use, (2) AAR/ART, (3) RAI International; 17) California PowerVu. (1) CMT(NTSC), (2) CBS feeds, others including CTV Canada (NTSC), (3) ATN Asia TV Network(NTSC), (4) EWTN (NTSC) global Catholic radio, ch. 2, (5) BBC World (NTSC), (6) Bloomberg Financial (NTSC), (7) Golf Channel (NTSC), (8) Chile(NTSC); 18) Discovery. (1) Disc. Aust/NZ, (2) Disc. default, (3) Disc. Japan, (4) Disc. SE Asia, (5) Disc. Taiwan, (6) Disc. Philippines, (7) Disc. China; 19) AFRTS. (1) News, Sports [ACII, CW, RR, 9.6 kbps, TV], (2) Spectrum [Urban, 64 kbps], (3) AFN Pacific [TV], (4) Channel 1 - Mirror [TV], (5) AFN Korea [contingency, 1.536, TV], (6) The Jim Lambert Test Channel [!!!], (7) EPG, voiceline, (8) EPG, u/i voiceline, (9) AFN Atlantic [Top 40, HR, NPR, TV], (10) AFN Americas [Top 40, TV], (11) AC1, (12) Country, (13) Adult Rock, (14) NPR [US National Public Radio], (15) Urban, (16) Pure Gold, (17) Top 40, (18) Hard Rock (19) Contingency. 20) SPACE Systems (177E, Ku) claims to be back on the air with 11 CA Taiwan TV programming sources, 11 radio channels plus North American sourced adult channels Erotica and Exxtasy (all CA), and, Thai TV 5 International FTA (loads as Ch 301). Acer Computer receivers are said to now be available along with one year subscription cards that will function through December 31, 1998.

MPEG-2 DVB RECEIVERS: [Data here is believed accurate; we assume no responsibility for errors in this volatile area!]

DMV/NTL 3000. Skandia Electronics Pty Ltd (tel 61-3-9819-2466)
Grundig (Gng) DTR1100 (badged Panasat 630, believed no longer in production). Av-Comm Pty Ltd (tel 61-2-9949-7417)
Hyundai-TV/Com. Model HSS-100C is officially available from Skandia Electronics (tel 61-3-9819-2466), and Bay Satellite TV Ltd (tel 64-6-843-5296). Current version of chips 2.26. Skandia is the master distributor and other sources are reportedly through Asia.
Hyundai HSS-100B/G. New January 1998; software version 5.0, see HSS-100C sources.
Nokia 9500 S (V1.63). This version is no longer available although it has ability to identify Msym and FEC parameters of unknown carriers. (V1.7X) was a German language "d-Box" version originally imported by OPAC; it functioned with the same parameters as the V1.63. (V2.X; 2.233/e3, 2.034 and others perhaps not yet identified) are current (after June/July) software versions that allow virtually unlimited stacking of bouquets and programmers and for at least the 2.233 version also allows limited red menu correction of NTSC glitch (see SF#36, p. 6). e3 is current Asia-Pacific factory version. Factory supplied sources known include: AV-COMM Pty Ltd (Tel 61-2-9949-7417); SCITEQ (61-8-9306-3738); Telsat (64-6-356-2749). AV-COMM also has macro-command IR remote that expedites 'red menu' operations for e3 version 9500 S. (see SF#36, p. 32); plug-in module for auto red menu NTSC (SF#41, p. 19).
Nokia "d-box" (V1.7X) suitable for C-band use. Instructions, on-screen prompts may be in German. Be careful when buying this one!
PACE DVS-211. Officially available only through Sky (racing) Australia (Bob Pankhurst tel 61-2-9451-0888).
PACE DGT400. Through Galaxy offices, Australia (will not work on FTA if receiver has been over-air software upgraded [parental]).
PACE DVR-500. Bay Satellite TV Ltd. (tel 64-6-843-5296); also supplied by NBC to affiliates.
Panasat 520 (Pn520). OPAC Pty Ltd (tel 61-2-584-1233); **no longer available.**
Panasat 630 (Pn630). Antares Satellite (61-7-3205-7574) stocks spares for 520, 630 models; **no longer available**
UEC 642. A notation - The (642) is currently available in test quantities only through Antares Satellite (see Panasat 630 above)
PowerVu D9223, 9225, 9234. Scientific-Atlanta (Sydney) Tel 61-2-9452-3388; BaySat (tel 64-6-843-5296), Telsat (64-6-356-2749)
 Note: SA D9223 receivers are RISKY to use for enthusiast purposes because of susceptibility to software overwrite during "boot-loading" sequence. Model 9234 is currently be distributed in Western Australia for GWN reception under "RTIF": subsidy programme.
Samsung VS-2000 (ver 1.31). Pacific Satellite (tel 61-7-3344-3883)
SK888. Skandia Electronics Pty Ltd. (tel 61-3-9819-2466)
XTC CDTV200. (For Space TV Systems); only source James Tzeng at (USA/tel) + + 1-714-529-9988 or fax + + 1-714-529-9989

WITH THE OBSERVERS

AT PRESS DEADLINE

Television signals, possibly another in a series of tests, are appearing on Palapa C1 at 150.5E. Try 4160/990 Hz for Indonesia network RCTI (which does include significant English language programming [stereo audio 6.6, 7.2; mono 7.9 at 75 nanoseconds pre-emphasis]). This is the ex CFI powerhouse transponder.

Unverified reports persist that Paris based Canal + service is nearing launch date in the Pacific utilising Intelsat 180. A Tahitian source says "The service could start as soon as March. According to CANAL +, their programmes will be available throughout the Pacific on a global beam using MPEG-2. The programming will consist of 1 sport channel and 3 movie channels of which 1 would be 'blue' (adult) films. The projected cost is US\$60 per month with the user providing his or her own reception equipment." From a separate source, SatFACTS understand the service will utilise Thomson receivers and smart card technology, probably the French Telecom Access format.

There are several warnings here. First, CANAL + admits they have not cleared "copyrights" for any Pacific sites other than French Polynesia, New Caledonia and 'some' other French territories. That IRDs might end up outside of those regions is assumed. Second, the power level will be a critical factor. It is convenient to compare signal levels from RFO (I180, 4045/1105 or transponder 36) because of their claimed Global pattern. The story goes - "if RFO is clean on your dish, any digital bouquet originating from Tahiti would also be clean." Perhaps, but no guarantees. RFO, for its supposed "global" pattern, is far stronger than a global (26 dBw) level would produce. The assumption in Tahiti is that CANAL + will end up using left hand circular polarisation, perhaps close to the RFO frequency (which is RHC), and SatFACTS is advised "for a few days at least, the service will not turn on the conditional access." A reminder: While there seems to be plenty of detail about all of this, no CANAL + confirmation is available.

Existing subscribers to the Indovision B-MAC package (Palapa C2) are being told "ESPN, Discovery and HBO will cease to be available in this format by March 30th." The TNT/Cartoon service stopped last October although the reason for being shut off was only recently explained (involving disagreements with Malaysian authorities objecting to TNT movie content). Analogue subscribers are being told to invest in a new wideband digital-ready LNB, and a new feed (wideband - described in Indonesia as a "Jumbo"). The Indovision operating situation has been badly damaged by the currency crisis in Asia and one report (direct from an Indovision spokesperson) says the Cakrawarta 1 S-band satellite, while now tested and ready for operation from 107E, will not be put into service "at this time." Reported cost of the



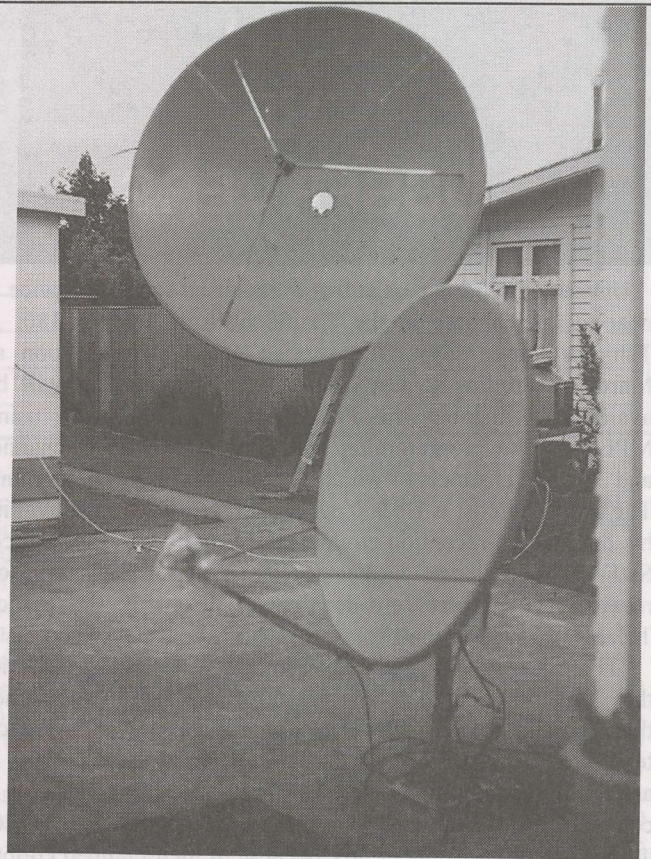
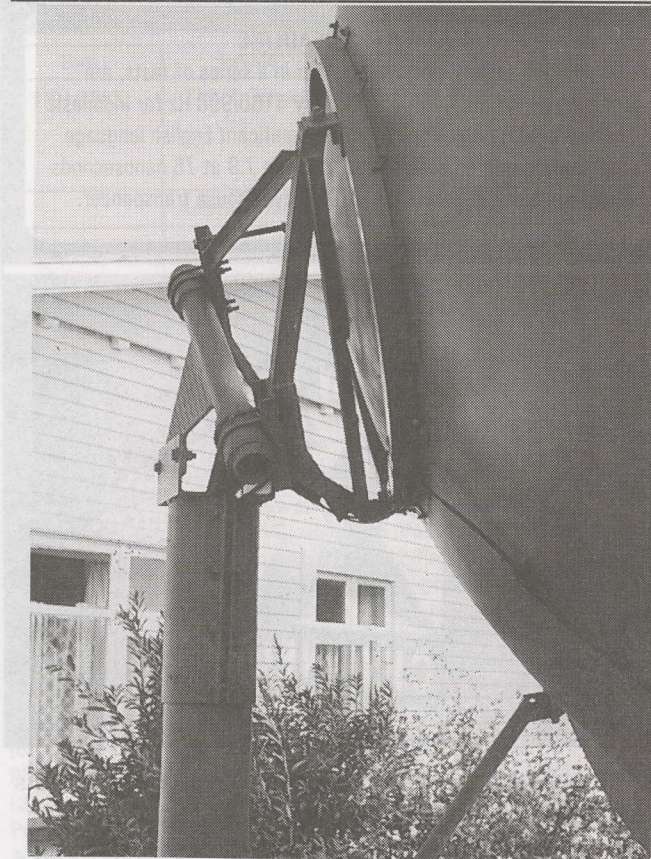
STAR News Channel, created for coverage of India's national election, in FTA PAL on AsiaSat 2, 3740/1410 Vt. Service is fed from Delhi to Hong Kong, back to As2 for cable distribution in India.

new C2 digital software all-channel package from Indovision (25 channels now, 40 'promised' by May) will be equivalent to US\$500 per year. Not everything you hear or read (even here) concerning Indovision will be "gospel" simply because they seem to be inventing new business plans almost daily. Observer **D. Morris** (Thailand), reporting on a recent trip to Jakarta, notes, "There will *never* be any activity on S-band. In Jakarta, even people in the satellite (dealer) business are very badly informed about bands and frequencies. The 'story' when I was there said starting in May everyone would switch to new 60 cm dishes and Ku band!" Basically, anything you hear about Indovision could be true but only *after* it happens!

Steffen Holzt (Studio 7 SARL; tel 687-438156)L reports his firm is now officially sole agency for the SKY Racing service from As2 in New Caledonia. A 2.5m dish is required there, the decoder and the annual (private, home) subscription fee is quoted in Australian dollars (see SF September 1997, p. 12).

AsiaSat G (as in Gorizont) at 122E is reported with a test signal at 3.680 LHC; SF understands Moscow 6, the most popular Russian TV channel, will begin service on this transponder shortly. For those finding Russian TV more and more complex to locate, this would be excellent news.

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for March 15th issue: March 3 by mail (use form appearing page 34), or 5PM NZST March 4th if by fax to 64-9-406-1083.



UNIQUE polar mount created by Keith Browning (Browning's Electronic Services, Dannevirke, NZ [64-6-374-6322]) for 3m Andrews dish. Browning used nylon bearing to allow orbit tracking and fabricated the mount locally. To protect the ex-commercial service antenna, dish was reduced to bare metal, precoated with sprayed on vinyl etch base coat covered with two part epoxy applied with a roller.



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Thaicom 3 (78.5E) has so many temporary users that a daily update is required. They claim 60% of their transponders have been leased but there is no sign of *any* permanent (video) users at presstime. **David Leach (NSW)** reports colour bars at 3610/1540 Hz and 3650/1500 Hz as well. As **Mark Long** reports in this issue (p. 8), the Asian economies are in bad shape and programming plans are being significantly set back as a result. Leach also reports P5 signals at an elevation of less than 5 degrees from Apstar 2R (76.5E) and notes Chinese ZJTV (3760/1390 Hz).

Several observers report inclined orbit Gorizont 25 (103E) seems to have increased transmission power by as much as 3 dB on 3675/1475 RHC.

Vidiplex transmissions on I180 from the ABC/CBS/NBC networks (3930/1220 RHC) have been encrypted using a form of line cut, rotate and shuffle. Thus ends the previously available "USA Direct" services and Australia's Channel 9 admits it is responsible for the change, citing "copyright reasons."

Ernie Wright (Bathurst, NSW) reports GWN appearing in clear analogue on Optus B1 (12.448) along with portions of the Constitutional Convention coverage on 12.425.

Peter Cook (Qld) and others report three days of FTA Star TV bouquet service on As2 3900 Vt. Normal CA Star Movies, Channel V gave those who caught the reception with a brief look at both of these normally forbidden services. He wonders what problems, if any, Hyundai HSS-100C users have had with this receiver on PAS-2 Ku.

Dennis Ditcham (WA) reports Bloomberg Information TV on 3885 Hz As2. Actually, Bloomberg and many other programmer sources are used *within* the USIA WorldNet service on this frequency.

Observer **Bob Darragh** (PNG) is searching for a dealer who handles Wegener satellite receivers; if you can help, fax 675-982-1211.

About the Thai 5 FTA digital channel buried within the 177E Space Systems package on Ku. **Steffen Holzt** (New Caledonia) reports it works there on a 2.5m dish or larger and notes, "for some reason you need quite a bit of headroom above threshold to make this one work." **Steve Rouse** (NSW) reports the following channels loaded on his Nokia e3 when he checked 177E as we requested last month: Ch. 201, Ch 202, Ch 203, Ch 204, Ch 205, Ch 206, Ch 207, Ch 208, Ch 301, Ch 3801, Ch 3802, Ch 3803 and Ch 3804. The 301 channel is Thai 5 TV in FTA PAL and is the only one that is not CA. There are also 11 radio channels that load (501 - 511). This with a 2.3m mesh KTI dish, Chaparral Co-rotor II + and for Ku a Norsat 4000 750 kHz 0.6 dB LNB. Observer **Paul Deabreu** (NSW) with a Perfect-10 3 metre mesh dish, Precision PM-93 C/Ku LNB and Hyundai HSS-100C receiver finds Thai 5 Global Network reception indicating 5.5-6.2 dB on his receiver's signal level meter.

Optus Vision tests (Optus B3, 12.564 Hz) continue but to no particular schedule. Most of the programme channels when testing are image frozen although The Disney Channel is on occasions seen (FTA) with video and audio and strangely (Australian) Network 7 teletext.

Indonesia's RTM1, 3820/1330 Vt Palapa C2 has terminated there and moved to Measat 1 (3880 Hz). With possible termination of Discovery, ESPN and HBO also on C2, this satellite may be quite barren within 90 days! (It is one thing when new satellites are cancelled; quite something again when existing satellites are suddenly little used.)

Russia's Express 6 and Gorizont 24 both continue to be at 80E although recent reports tell of virtually no transmissions from Express.

CATV GRADE ANALOGUES FOR SALE

Scientific Atlanta 9708 cable quality rack mount L-band (950-1450) receivers recently used for TNT/Cartoons until they went digital. NZ\$750.

Yes, it does B-MAC as well for what that is worth!

GI DSR 1500 similar to SA 9708, but also does Digicipher 1.5 (i.e., ABS/CBN); NZ\$1,500.

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Company _____
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OUTBACK TESTERS WANTED

Installer/dealers located in rural Australian areas who would like to assist us in testing the new UEC 642 MPEG-2 receivers on the new AURORA Platform are asked to contact as below. We are looking for experienced digital equipment people working in hot, or hot + humid areas to help us determine the strengths and weakness of a new digital receiver.

ANTARES Electronics Pty Ltd.

phone 07-3205-7574

fax 07-3205-4049

AT

Sign-off

Who's The Bad Guy?

A four page critical report appearing in Coop's Technology Digest (January 21) suggested that Optus may have gone over the top in attacking regional telecaster GWN in a letter written by Optus on January 8th. Shortly we heard from an Optus exec who clearly was unhappy with the report.

So who is the 'bad guy' in the increasingly messy disagreement that surrounds the launch of GWN on a Telstra PAS-2 Ku platform? Here are the facts as we see them.

Optus created Aurora to provide a carefully planned (they hoped) system for converting the existing HACBSS B-MAC regional telecasters to digital. For whatever reason, Imparja (in letters written September 12 and October 16) and GWN (in public press statements released in October and November) selected Telstra's Scientific Atlanta format service using PAS-2 Ku.

Now GWN is being accused of being disloyal to the Australian flag for selecting PAS-2 and Imparja's lady boss Corallie Ferguson appears to have dug herself into a fox hole hopeful that she can hibernate until this ugly situation is forgotten.

Aurora in the interim has taken the offensive and is claiming Corallie never "officially" said she was going with PAS-2 and that GWN on PAS-2 will suffer from malnutrition because of too few megabytes of bandwidth.

There is an issue larger than whether Corallie released a statement she now says she did not, or whether GWN made a stupid decision to go with a bandwidth constricted SA created PowerVu service. That issue is the IRD choice or choices faced by Optus as they try to bring Aurora on line.

An IRD for Aurora will be similar in function to an IRD for Galaxy. It will have a CAM (or something approximating a CAM), it will have conditional access including a smart card, and it will allow the Aurora programmer (Optus) to select which programming goes to each Aurora receiver. The most optimistic projection of "how many IRDs" during the first 12 months of Aurora operation (roughly June-July 1998 forward) says 15,000. In the digital TV world, where manufacturers can

cram 1,100 IRDs into a 40 foot sea container, 15,000 is not a very healthy order. It is not, for example, an order large enough to allow Optus to dictate customised operational features. The IRD for Optus must come very close to being an "off the shelf design" unless Optus is willing to pay 20-30% more for each IRD to have custom software (and companion chip technology) built-in.

In US dollar terms, these will be \$350 region IRDs when they hit the shore in 40 foot containers. By the time you get these to the dealer's shop with duties, taxes, transportation and layer by layer mark-ups, we will be looking at no less than Australian \$750 per IRD.

15,000 IRDs (Optus persists in calling them "decoders" which is perhaps a better term for consumers) split between several suppliers is a worry. Optus tells us they would like "3 or 4 separate receivers to be approved (by Optus) for sale." The problem with this approach is service and backup after the sale. If there were 4 approved IRD suppliers and each one captures 25% of the market, each would sell 3,750 units; something less than 4 container loads. Given that Irdeto conditional access would require each receiver supplier to get Irdeto approval before the product could be sold, we are almost guaranteed that at least the first year or two all four competitors would look and operate in a very similar fashion. Which suggests the IRD firm that creates the best marketing programme, and has the best dealer incentives will capture the lion's share of the market.

Why is that likely? Because in most HACBSS regions, there is only one installing dealer. He either handles one brand and one brand only, or he handles all four. Human nature being what it is, he will push the brand that makes him the most money and creates the fewest service headaches. Which means one firm walks away with the bulk of the business and 2 or 3 others end up getting far less than an equal market share.

Which takes us down the road to mid 1999 and beyond. The 3rd and 4th place IRD suppliers have probably sold a few thousand in the best case, not over an 1,000 in the worst case. And they are disenchanted with the poor performance in the Australian marketplace and leaving for more promising continents.

What happens to the people who did buy their product? IRD manufacturer support has gone away, the dealer has no incentive to fix broken units and the consumer is stuck with a "decoder" that does not decode and cannot find anyone that even cares.

Optus could get a very bad name over all of this; they will still be there long after the IRD manufacturer has left. Ooops.

COOP'S PERSONAL RECOMMENDATIONS

D9223 Users: Stay away from AFRTS, (177E), ABC Interchange (PAS-2 Ku), America's Radio (180E). If you see an on screen message that mentions the word "bootloader" quickly determine if it is a "warning" of a bootloading *coming*, or a bootloading *in progress*. If "coming," bail out - instantly. If "in progress," pray that you are not being zapped (it is not safe to bail out once bootloading begins). If you are zapped, do not - NOT - admit to SA you were on a bootloading when your "receiver *mysteriously* quit." Honesty is the best policy - except when dealing with SA. When they get honest, we'll get honest.

SCPC Reception: Hyundai or Nokia are proven performers; nothing else is. The Hyundai is not as "nifty" in performance as the Nokia e3 family but Nokia no longer provides service backup to either the Pacific or Asia while Hyundai has demonstrated they do care about after sale support.

Star TV Programming: Is highly over rated and over hyped. If you have a choice between Star movies and somebody else's, *take somebody else's*. Same with sport and general entertainment ("Plus"). Star was first, but they are badly over priced and terribly difficult to deal with. They are not the be all, end all.

SPACE TV Systems (Taiwan): Don't have anything to do with them until they clean up their act. Do not send them money, do not show any interest in their programming.

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VISA/Mastercard expiration date _____

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- 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 *Arthur C. Clarke*. The perfect tool to help the satellite system seller explain home satellite TV to the layman 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 5th year, airmail world-wide. Normally NZ/A/US\$250 per year - for SatFACTS subscribers special **50% discounted** price of NZ/A/US\$125.

OBSERVER REPORTING FORM - Due March 4

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

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

Your Name _____
Town/City _____
Make/size dish _____ LNB _____ Receiver _____
Bonus Word Entry: _____ on page _____

January bonus word - jennet (p. 24)

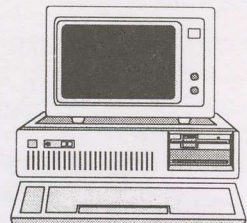
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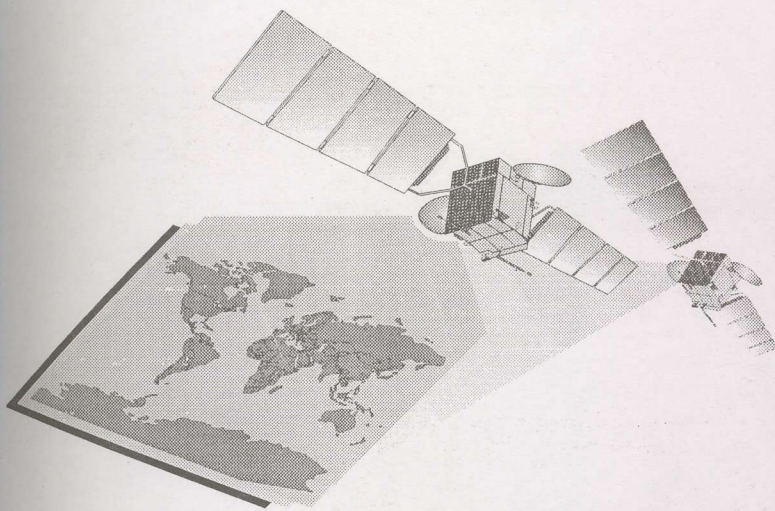
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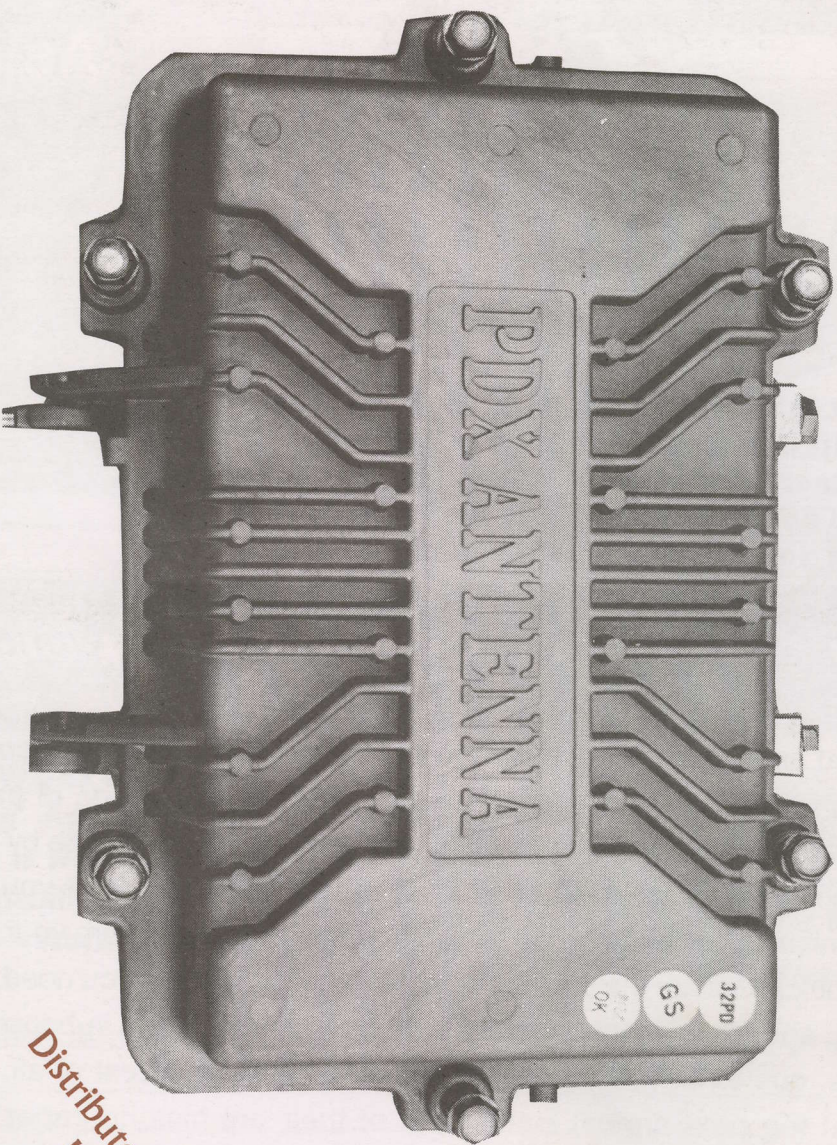
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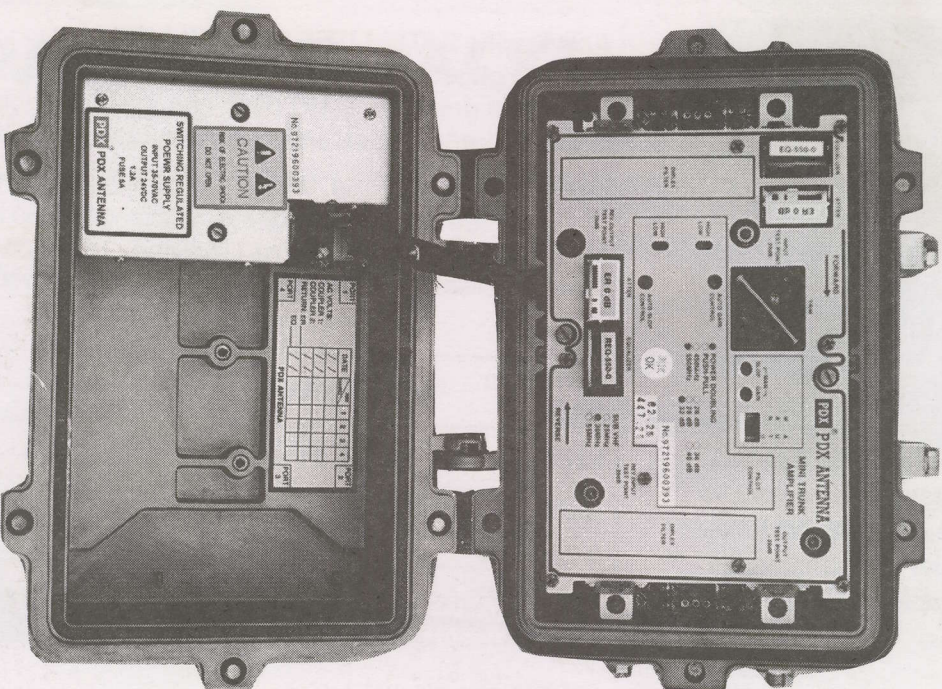
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