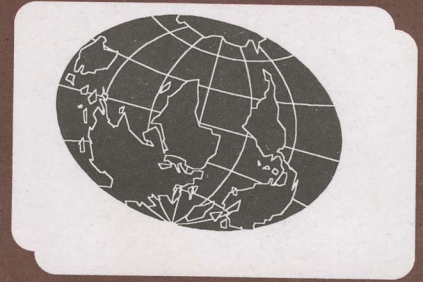


15-01-97 9AM

Bob Cooper's

JANUARY 15 1997

SatFACTS



MONTHLY

Reporting on "The World" of satellite television in the Pacific Ocean Region

IN THIS ISSUE

**MEASAT
PUSHES
THE ENVELOPE**

**INCLINED
ORBIT
TRACKING**

**HUGHES
INTERNET
OPPORTUNITY**

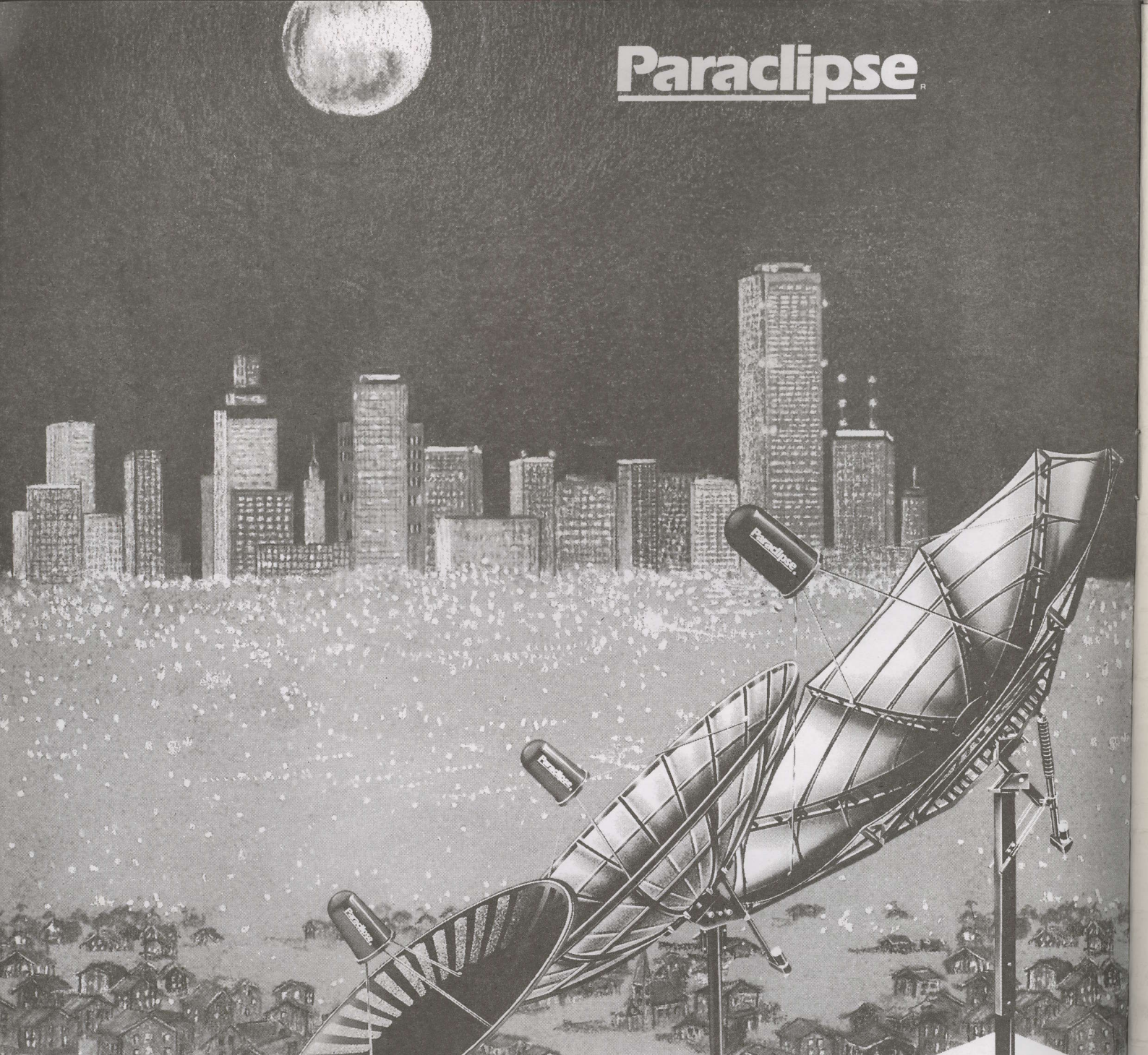
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Vol. 3 ♦ No. 29

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is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd. This publication is dedicated to the premise that as we 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.

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COOP'S COMMENT

Our (presently) 34 channel cable TV system provides what I like to believe is the most complete selection of diverse television programming available anywhere in the Pacific (EWTN the most recent addition). Recently Gay handed me an inventory folder and asked that I check the headend equipment for accuracy. Imagine my surprise to see that we now have 18 MPEG IRDs installed and operating! Good grief.

I spend an hour or two each day in the headend twiddling, peaking, changing text on our three local message channels. I am painfully aware our 3 half-filled floor to ceiling racks of a year ago are now five and crammed full. But 18 IRD units? Surely not.

First there are the five S-A units; four 9223s and a holdover 9222 NBC supplied last January and which they now seem uninterested in taking back (I have tried). It was last in use to monitor the Rimsat 142.4E Filipino ABC-5 service; amusing but not useful for our cable system. Then there are the four Panasat IRD520s. Two of these are so touchy that they shutdown if the wind changes direction and I have learned to live with them by first figuring out the worst thing I can do when they "burp" is touch them. Left alone they come right; if I touch them or even look cross-eyed at them - well, good-bye RTVE and RAI International for up to half a day. Four Pace DVR 500s are there too; one is broken at the moment having decided quite on its own to shut down and then refusing to accept the installer pin number when I started it up again. I've tried hard reset routines, thumping it, but stopped short of trouncing it with my gum boot shod right foot. It will go down to IRD Guru Robin Colquhoun and he will attempt to revive it through the RS232 port with some special "Doctor Robin software."

The two NTL/DVM 3000s are mighty fine pieces of very expensive machinery. One has the unfortunate habit of shutting down (just like the Pace described) and refusing to accept a pin number. I accidentally discovered I could turn it off for two hours (minimum) and then it would restart. Sometimes Deutsche Welle just goes away on my cable system while this receiver cools off. I guess it gets so clogged up with digital data streams the banks overflow and we simply have to give it a chance to drain out again.

The GI DSR 1500 was our first unit - good only for Digicipher 1.5 MPEG which Galaxy used until they succumbed to Pace pressure exerted by the Murdoch clan. It was then used for six months on the PAS-2 ABS-CBN service until one day the power supply quit and I didn't notice it was off. Several days later I caught the missing channel space and as nobody in our subscriber base had complained I decided ABS-CBN would not be missed. So the non-working 1500 went back to Maser in Auckland and they sent me a spare. That's been - let's see now - six, no, eight months. I don't have mine back but the loaner from Maser does an excellent job on CNN as an analogue unit.

The Nokia 9500 S is for sale; it would be fine in Australia for Galaxy (if one could get a card to work in it) but for C-band ... well, this is an early version and my requests to Nokia for a replacement or later version software have gone unanswered. I chalk this up to being too early off the mark. Finally, there is the Skandia SK888 which we quickly review on p. 32 here.

No wonder we have grown from 3 half-filled to five cram-full racks! No wonder I now routinely run our air conditioner at medium whereas one year ago it coasted along on low. No wonder I spend up to a couple of hours in the headend each day "tweaking" and gingerly working around the Panasats out of fear they will hiccup and quit.

All of this so my cable subscribers can use their converter remotes to dial up the world from the floor or a comfortable chair in their living or bedrooms. There are messages here: Don't get into the cable business unless you are prepared to devote your life to keeping everything working, and, plan for twice as much rack space and double the receiver budget (and headend air conditioning) you think you will need!



January 15, 1997

In Volume 3 ♦ Number 29

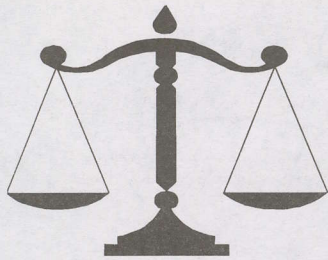
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-ON THE COVER-

CLEANING UP FOR THE SHOW! Technical crew from Telsat Communications (Palmerston North, NZ) goes the extra kilometre to prepare host Barrycourt Ku band dish (used for Australian ABC reception) for SPRSCS '97 entourage arriving for this year's gathering of the clan.



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RAJ Alive & Well

"I was pleasantly surprised to see your commentary in SatFACTS 15 November concerning the transition from 130E to 142E of RAJ-TV. The service is now a very powerful channel in India with aggressive programming around the clock. Mr. Rajhendran is reigning supreme in the Tamil television industry. I thank you for remembering us!"

Shankar Karikar, Skyline Communications
Madras, India

The Rajhendran family of 5 brothers turned a Madras-based 'videotape rental' business into one of India's most successful TV broadcasters and they did it on a shoestring investment. They have every right to be proud of their success.

Permission Granted

"Would it be OK if we published your 2 page 'Orbit Watch' tables as an addendum to our product pricing list we send out to our customer base?"

Tony Moore-Stevens, Winscot Trading Pty Ltd.
South Melbourne, Victoria

Orbit Watch and Digital Tuning Parameters (3 pages total) are widely duplicated by hundreds of users each month. Naturally we would prefer that those receiving 'copies' were full subscribers to SatFACTS but routinely grant permission to those who ask.

Full Supporter

"I wish to comment on your efforts with SPACE Pacific as well as both SatFACTS and Coop's Technology Digest (both of which I receive through AV-COMM in Sydney). I particularly look forward to SatFACTS every month - well done! I also commend you on your efforts to make programming available on an individual basis."

Leigh Wilson, Rockhampton, Qld.

Support of SPACE has been most gratifying although we continue to wrestle with budgetary constraints that prevent fuller participation by our Australian members. SPACE now has members in 23 countries throughout the Pacific and Asia and the 'Membership Notes' newsletter is a valuable insider-report on many of the less well publicised aspects of satellite development. One proposal under consideration - holding an annual SPRSCS event in Australia.

-Letters / continue page 4-

**PROGRAMMER
PROGRAMMING
PROMOTION**

UPDATE

JANUARY 15, 1997

New Zealand Sky Television Network control has been sold to Independent Newspapers, Ltd (INL) for reported NZ\$800 million (INL is owned 49.44% by Rupert Murdoch interests). Sky presently operates 4 full-time terrestrial Videocrypt encrypted channels (plus part of a fifth), is scheduled to launch satellite delivered pay TV services during 1997. Tentative schedule for satellite: Sky will initiate Videocrypt analogue service of their sport channel (only) sometime in April using Optus B1 satellite (TR5Vt, 12,505 - 12,559 - carrier centre frequency to be determined) with plans to convert to multiple programme channel digital service "before end of 1997."

Eternal Word Television Network (EWTN) acting in direct response to a request from SPACE Pacific has produced letter notifying Sydney office Scientific Atlanta, "EWTN's signal transmitted on PAS-2, transponder 8C, channel 4 is unscrambled and offered gratuitously, and, therefore private parties are allowed to downlink EWTN's signal without individual authorisation from EWTN." Fax dated 17 December was addressed to (Ms.) Elizabeth Jennison at S-A from M. Cristina Borges, International Account Executive for EWTN. God bless EWTN's stand on this issue.

ERTU EGYPT debuted on FTA analogue AsiaSat 2 December 20 with P5 level signals reported on 3643 horizontal /IF 1507 (+/- your LNB LO accuracy); audio is 6.6MHz and seems to be best using 50 uS (microsecond) de-emphasis. Contact: Egyptian Radio & TV Union - Dr. Abdoh Fayoumi at tel/fax + +20-2-578-9491. Question: Egyptian Consulate (Melbourne) claims ERTU will "encrypt" midyear but this seems contrary to announced intent of "providing eye into Egyptian culture."

STAR TV (Hong Kong) continues to send out "hints" it is planning some service to the Pacific Region (including Australia, New Zealand). Writing to Derrick Wisking (Burnside, SA), STAR Customer Service Manager said, "STAR TV does not have free-to-air bouquets on AsiaSat 2 at this moment. Australia is under the coverage of AsiaSat 2 and STAR TV is not authorised to broadcast into the Australian region yet. If you would like to receive our programs, you may have to wait for a few more months until the signal transmissions of AsiaSat 2 are in full operation."

Thaicom 3 - when it launches - is scheduled to have digital pay TV service on 3800 MHz (polarisation unknown) with FEC of 3/4 and Msym of 27.500 - you can't say we don't give you advance notice!

Sky Horse Racing is now scheduled to switch from B-MAC analogue on AsiaSat 2 to MPEG-2 requiring Pace DVS-211 receiver on 1 February.

CFI service on 1704 at 66E (RHC at 4055/IF1095) should now have switched from FTA analogue to MPEG bouquet that adds 5 French based service channels (Canal + 1,2,3,4 and 5). Format and receiver requirements not announced. 1704 coverage maps show service east to Adelaide (at edge of pattern).

Mabuhay 1 now rescheduled to as late as July still planned to 144E but Philippine Department of Transport and Communications is seeking C + Ku spots at 127, 137, 147, 151, 153, 157 and 161E as well. Major problem to resolve: Japanese Superbird with Ku only service also scheduled to 144E.

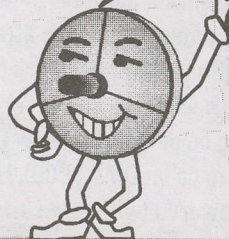
Voice of America, currently using AsiaSat 2 (IF1470, Hz) Mondays 1300-1500 and Fridays 1800-1900 (UTC) planning expanded service. Mongolian TV uses same transponder 0800-1600+ Tuesday-Sundays.

SPRSCS '97: Whether on-hand or at home, check Bay Satellite Web Site (<http://www.baysat.co.nz/baysat>) from Thursday (Jan 23) for "SatFACTS Show Report."

Correction: Australian Nokia receiver source G & G Imports should be 61-9-8941-8860, NOT as given in SF#28 (p. 6).

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STARnet

-Letters/ continued from p. 2-

Marketing of DTH Services

"At present there are 2 pay-TV service providers in the Middle East (including Oman); Orbit Communications (29 channels using S-A 9232 at 350 Omani Rials or US\$903) and Showtime Entertainment (7 channels using Pace DVR 3500 at 375 Omani Rials or US\$967.50). These prices include dish, LNB, digital receiver, cabling but programming is extra (Orbit has a minimum of US\$50 per month, Showtime charges US\$588.24 per year). A third entrant is the STAR TV Movie service which lends viewers decoders and charges 97 Rials (US\$250.26) for the annual subscription."

Gregorio V. Hermosa, Jr.

Sultan Qaboos University, Sultanate of Oman
How Orbit can sell a complete dish package + S-A 9232 MPEG receiver for US\$903 while at the same time S-A is charging Pacific users of a very similar receiver US\$1,295 for the receiver alone is a puzzle. We like the STAR TV "loaning of a receiver" approach; the old "give away the camera and sell them film" marketing trick!

RAI Programme Schedule

"As an installer of satellite systems in the extremely ethnic region around Fremantle I'm keen to tap into the Italian market. My concerns are that RAI only transmits for 16-17 hours daily, and their down time coincides with our peak Perth viewing hours; i.e., 3PM to midnight. Is this a permanent schedule? The RAI home page on Internet does not seem to match up with the programs shown."

Joel Dixon, Smart Vision, Bibra Lake, WA

RAI's (international) service for the Pacific and Asian appears to be very badly co-ordinated. That they elect to go to test card during those hours when the majority of their Pacific-Asian audience is sitting in front of the TV makes no sense whatsoever. We suggest readers flood Giovanni Chelsi at fax 39-6-331-71855 with letters of complaint and suggestions for making their schedule more suitable for the audience they are attempting to reach.

Looking For Filters

"We read SatFACTS every month and reference to the November 1996 issue in the Cable Connection column. Can you please advise contact name and telephone number for the Australian firm that manufactures in line filters at A/NZ\$13 per unit?"

Peter Meaney, United Cable Systems
Enoggera, Qld.

No known Australian manufacturer but we highly recommend Communications & Energy Corp advertising op. 21 of this issue!

HARDWARE EQUIPMENT PARTS

UPDATE

JANUARY 15, 1997

SK888 receiver arriving for test from Skandia Electronics on December 13 came out of the box, plugged in and immediately produced EBB reception. It doesn't get much more basic than that (see report, p. 32). Manufacturer Sun Moon Star based in Taiwan and receiver designer ADB (Asia Digital Broadcasting) are hot on the trail of producing receivers or designs for many name brand firms. Included is S-A for their long promised "consumer version" as well as Korean firms Daewoo, LG (Goldstar) and Japanese Maspro and Uniden.

Rodney Allen Mitchell, co-founder of ADL (Antenna Down Link) in 1979 and patent holder for early ADL antenna feeds, died of cancer October 20. Mitchell was a man who stayed out of the spotlight of publicity and seldom appeared in technical forums often dominated by individuals and firms that through the years attempted to copy and replicate his patented feed systems. His skills and creativity will be sorely missed by an industry with few innovators and many copiers.

Ambiguous at best. Our 'Digital Parameter' listing on p. 26 tells you WTN is 3/4, 8.448 and APTV News is 3/4, 5.632 (as they verify to be on DMV 3000). However, on a Nokia 9500 S both are 3/4, 8.448 while on a PowerVu (with new software) both are 3/4, 5.632. Explanation (see p. 31 here)? Meanwhile in Australia, ABC Exchange service on PowerVu is on Optus B1, 12.549 horizontal at 3/4 and 6.980.

MORE Nokia confusion. To make a bad situation worse simply announce a new model with new software versions. They did it. Now there is the Nokia 8500-S which was demonstrated to TV5 Paris exec Jim Hodgetts and others in Hong Kong and New Delhi during December. Hodgetts reports, "Very good news on the IRD front. We have at last discovered an IRD which is perfect for European Bouquet's needs in Asia. It is the new NOKIA 8500-S, not to be confused with the 9500 made for Germany. I saw it work very well, it is user friendly and gave a very good signal in spite of poor reception of the satellite by the exhibition organisers. Nokia has a first stock of several hundred in Sweden: (Mr.) Thore Jacobsson (tel 46-141-228-273. Price US\$600 ex factory." To press-time we have not yet tested one of these but at least one unit is promised at SPRSCS '97 (in the Telsat Communications booth).

S-A 9223 receivers provide bouquet listing information (programme channel number, name of service) but apparently PanAmSat does not update listings frequently. Start by being on appropriate transponder, then: (Menu), (user), (Next), (Yes), (3 [MPEG]), and (9 [Status]).

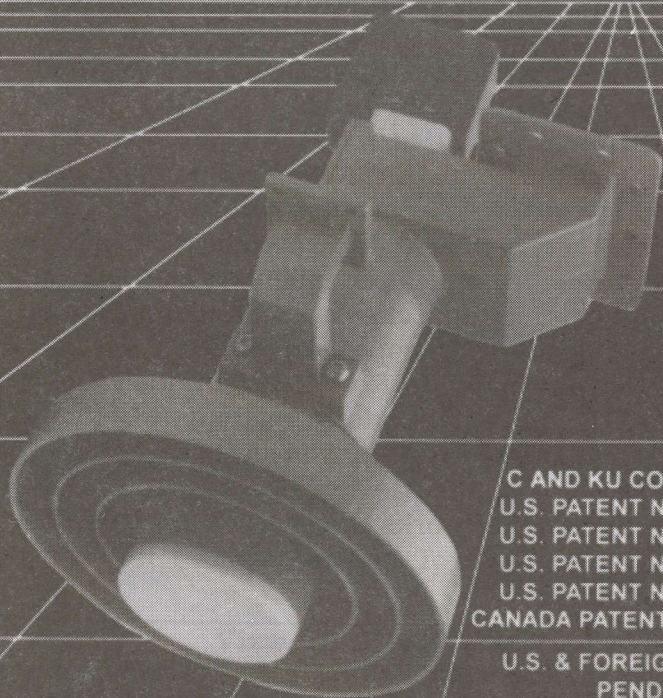
Launch Delays: JCSAT 4 (150E) delayed from 31 January to 16 February (00.50-0222 UTC); ApStar 2R from January to April.

EM TV continues to endure "We don't really care..." attitude of PNG PTC providing uplink to R41 (142.4E). During December, uplink "lost track" of satellite for up to 3 hours at a time shutting down service, then uplink amplifier quit forcing EM TV to advise viewers "We are operating at a lower power." Station wants own uplink, is shopping in USA for one they can afford. You know when PTC is goofing off - EM TV picture goes poor then suddenly jumps back up in quality when PTC operator remembers he has a job to do. Uplink does not auto-track R41; all tracking is done by hand by personnel who at best are inexperienced and at worst don't care anyhow. At presstime, poor quality early/mid-evening is because uplink cannot track E-W.

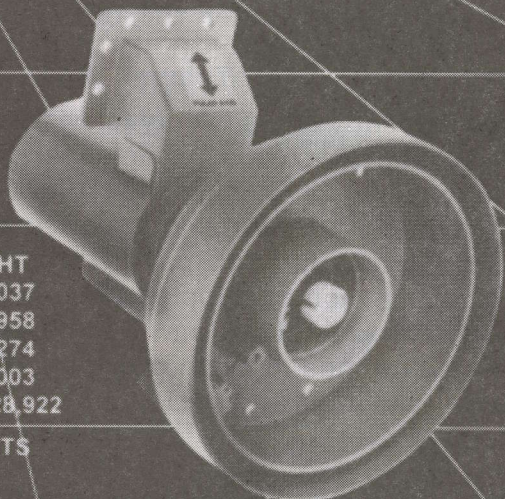
AsiaSat 3, scheduled November to 105.5E to replace AS1, forecasts footprints of 31-37dBw over all of Australia except for SW edge (Perth) with 35dBw to Sydney (same as hot C1 transponders). New Zealand is 33dBw South Island, 31 dBw North and to New Caledonia (for reference, hot C1 are 35dBw, AS2 is 33 dBw).

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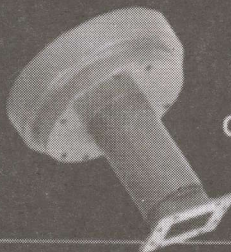
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DIRECT-TO-HOME TV VIA THE MALAYSIA EAST ASIAN SATELLITE SYSTEM (MEASAT)

by Mark Long in Thailand

Licensed by the government under the Malaysian Broadcasting Act of 1988 to provide broadcasting services, MEASAT Broadcast Network Systems Sdn Bhd has been exclusively authorized to provide Direct-To-home (DTH) satellite broadcast services in Malaysia marketed under the brand name ASTRO: the All Asia Television & Radio Company.

ASTRO currently offers twenty television and eight radio channels to Malaysian subscribers. Future plans call for the new digital DTH service to include a wide range of interactive applications such as impulse pay-per-view, distance learning, home shopping, tele-banking and software downloading. What's more, ASTRO also intends to begin providing digital DTH services in India and the Philippines starting in 1997.

MEASAT's All Asia Broadcast Center (ABC)

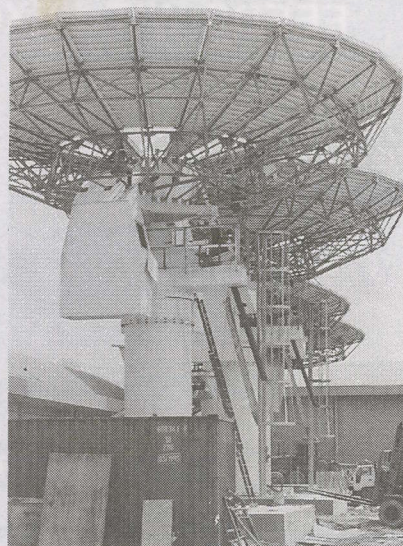
The company's All Asia Broadcast Center (ABC), which is located on a 29 acre site in Buki Jalil, Kuala Lumpur, has a total floor area of 250,000 square feet, making it one of the largest all-digital broadcast and production complexes in the world. Once completed, the ABC will serve as a regional broadcasting center with the ability to send and receive broadcast signals to and from the East Asian region.

In October of 1996, I had the opportunity to visit MEASAT's All Asia Broadcast Center while it was still under construction. Two new Ku-band uplink antennas for MEASAT-2 were built and raised during my week-long visit. These mammoth 13-meter antennas were installed next to the operational units for MEASAT-1. Five smaller C-band receive-only antennas also were on site to receive program feeds from PAS-2, Palapa C2, and other regional satellites. Eventually, the facility will have eleven receive only C-band antennas for downlinking the various satellite TV programs that are part of the ASTRO DTH programming lineup.

Inside the ABC, a labyrinth of corridors links the various departments needed to make MEASAT Broadcast a complete satellite broadcasting facility. The fully automated Central Technical Facilities (CTF) selects and plays video tapes from MEASAT's 60,000 tape library using video cart machines and a large disc-based server system. Here the ASTRO program schedules are developed, allowing for programming, promotional clips and commercials to be broadcast in the proper sequence.

The *Master Control Rooms* continuously monitor the various broadcast systems to ensure that a high level of quality is maintained. Each MEASAT satellite has a dedicated Master Control Room that works closely with the MEASAT Satellite Control Center (MSSC) in Pulau Langkawi.

MEASAT Ku-band uplink facility at the All Asia Broadcast Center in Kuala Lumpur, Malaysia. Photo by Mark Long.



MEASAT Ku-band TV Channel Chart

Transponder M1: 10.982 GHz, Vertical Polarization, 54 MHz wide

BCC#	Viewer#	Channel	Description
101	111	HBO Asia	Movies
102	102	Wah Lai Toi	Chinese language channel
103	104	Star Plus	Entertainment
104	151	MTV Asia	Music
105	161	TNT	Movies
106	132	Asia Business News	Financial News
107	162	Disney Channel	Entertainment
108	100	Astro Preview Ch.	Previews

Transponder M2: 11.044 GHz, Vertical Polarization, 54 MHz wide

BCC#	Viewer#	Channel	Description
201	141	STAR Sports*	Sports
202	105	NBC Asia	News/entertainment
203	114	VAANAVIL Malayalam languages	Hindi, Tamil, Telugu &
204	101	ASTRO RIA	Malay language channel
205	112	Star Movies	Hollywood productions
206	131	CNBC	Financial News
207	121	CNN International	World News
208	199	Test	

Transponder M4: 11.168 GHz, Vertical Polarization

BCC#	Viewer#	Channel	Description
301	142	ESPN*	Sports
302	103	Hallmark	Family Entertainment
303	113	MGM Gold	MGM/UA movies
304	159	Channel [V]	Music Videos
305	181	Discovery Channel	Documentaries
306	115	STAR Asian Movies	Asian movies/entertainment
307	191	RTM 1	National broadcast service
308	192	RTM 2	National broadcast service

* The two sports services are transmitted at 6 Mb/s; all other TV services at 4.02 Mb/s.

Seven TV Production Studios also are on site. These are used for the in-house production of news, entertainment, and variety programs. Also available: a 6,000 square foot studio with the capacity to accommodate an audience of 200 people, as well as facilities for set and lighting design, make-up and wardrobe.

The ABC's seventeen TV Post Production Studios support the editing, sub-titling and censorship requirements imposed by the Malaysian government. All downlinked satellite signals are time delayed using digital video server technology to allow preview, censorship edit-

ing, replacement of commercials, and subtitling into the four main languages of the region: Bahasa Malaysia, English, Mandarin and Tamil. Four TV Broadcast Audio Dubbing suites also are available to generate multi-lingual audio tracks for selected TV programs.

The Subscriber Management department handles billing, payment, inquiries, and order fulfillment for Malaysian subscribers. Local subscriber management systems will be developed for India, Philippines and other countries eventually to be reached by the MEASAT Broadcast System. These customized systems will be

networked into the main database at the ABC.

The ABC's *Radio Facilities* employ all digital scheduling systems, enabling minimal operator handling and smooth presentation. Studio capacity allows for live broadcasts, or the pre-recording of current affairs, talk shows and news programs. There are twenty *Radio Facility* studios on site: nine for live broadcast, four for news reading, and seven audio production, editing and transfer suites.

The ABC also houses a complete *Technical Training Facility* that provides regular sessions for its personnel covering satellite, broadcasting, and other related technologies. During my visit to Malaysia, I provided six days of introductory classes on satellite TV technology to MEASAT's new staff members, many who were recent college graduates.

An MPEG-2 DVB Compliant System

MEASAT Broadcast is using an MPEG-2 digital video compression system that conforms to the parameters adopted by Europe's Digital Video Broadcasting (DVB) group. The DVB standards, which were first proposed to govern the digital transmission of TV signals in Europe, have since been adopted by numerous other broadcast entities worldwide, including MEASAT.

The DVB standard sets the basic parameters for digital TV transmissions for satellite, cable and terrestrial TV broadcasters. DVB compliant satellite transmissions multiplex numerous video, audio and data signals into a single QPSK (quaternary phase shift keying) modulated data stream transmitting at a rate of 27 Megasymbols per second (Msym/s) or 55 Megabits per second (Mb/s) when QPSK modulation at 2 bits per symbol is used. After subtracting the bits required by the Reed Solomon and convolutional Forward Error Correction (FEC) algorithms, 38.015 Mb/s remain available to carry the video, audio and data information.

MEASAT Broadcast presently transmits a total of eighteen video services at a data rate of 4.02 Mb/s, as well as two sports services at a higher rate of 6 Mb/s. Audio services are relayed at 192 kb/s using DVB's modified form of MUSICAM. Within the MPEG-2 DVB compression system, all data is multiplexed into packets, with each packet composed of a 1 byte header and a 187 byte message.

DVB has specified a new *Service Information and Teletext* standard which is used by each DVB compliant broadcaster to transmit their

technical system parameters, such as satellite transmission frequencies, channel allocations and modulation parameters, to each associated receiver/decoder. The value of this feature is that any changes to the configuration of a programmer's system remain transparent to the end user. The programmer can reconfigure the software inside each receiver/decoder automatically.

The Service Information and Teletext standard also sets the parameters for the transmission of electronic program guides such as the one used by the MEASAT Broadcast System. These electronic program guides provide a wide variety of information, including service provider and channel name; program name, type, and description; alternate channel program lists; and forthcoming channel program information.

The one thing that DVB does not standardize is how the MPEG-2 data stream is encoded. The term MPEG-2 DVB compliant, when applied to satellite receiver/decoders, therefore does NOT indicate compatibility between different satellite programmers using the DVB transmission standard.

A major benefit of the DVB standard is that satellite signals can be seamlessly converted by DVB compliant cable TV systems without modifying the MPEG-2 data stream. Satellite signals are merely demodulated at the cable head end and then remodulated for cable distribution using quadrature amplitude modulation (QAM), so that the bandwidth of the multiplexed signal is reduced to comply with the narrower bandwidth constraints of cable TV systems.

Receiving System Hardware

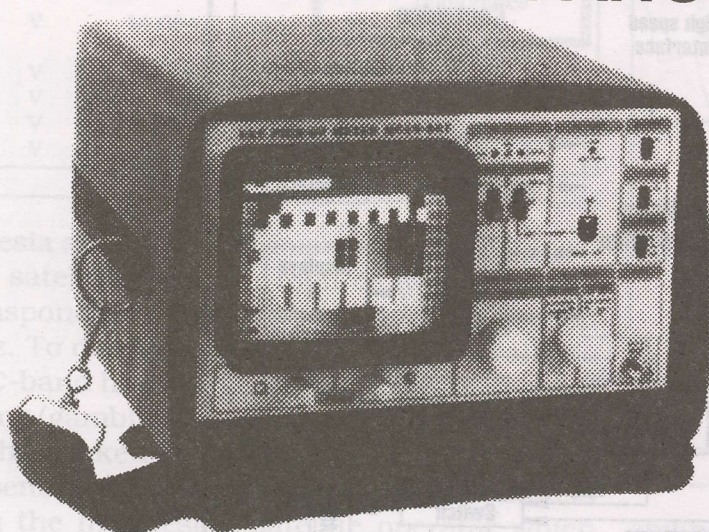
MEASAT Broadcast has selected Phillips to be the supplier of DTH receiving systems. The Phillips INS 610 integrated receiver/decoder (IRD) supports all Pay TV structures such as subscription TV, near video on demand, pay per view, and impulse pay per view (IPPV). The IRDs utilize a smart card supported by the CryptoWorks conditional access system. To facilitate MEASAT's future IPPV plans, the IRD can be equipped with an integrated telephone modem to automatically report pay TV use.

Programs can be either selected by direct channel number input via the IRD's remote control or from an on-screen electronic program guide. The IRD supports both a conventional TV aspect (picture width to picture

PANORAMIC SATELLITE METRE

MC10-SAT

AU\$1599 (TAX-EX)



A PERIFELEC
PRODUCT

- SATELLITE POINTER AND FIELD INDICATOR WITH RECEPTION ON 14cm (5.5") SCREEN
- FREQUENCIES FROM 950 TO 2150 MHz
- DISPLAY OF FULL-BAND AND EXPANDED SPECTRUMS ANALYSER
- DISPLAY OF PICTURE OF SELECTED CHANNEL
- POSITIVE (Ku Band) AND NEGATIVE (C Band) VIDEO DEMODULATION
- MEASUREMENT OF SIGNAL RECEPTION STRENGTH BY WHITE BAR SUPERIMPOSED ON THE PICTURE AND PROPORTIONAL IN LENGTH TO THE SIGNAL IN STRENGTH
- RANGE OF MEASUREMENT OF SIGNAL STRENGTH BY WHITE BAR SUPERIMPOSED ON THE PICTURE AND PROPORTIONAL IN LENGTH TO THE SIGNAL STRENGTH
- RANGE OF MEASUREMENT OF SIGNAL STRENGTH FROM 50 TO 90 dBµV
- POWER SUPPLY TO LNB IN 14 OR 18 VOLTS AND 22 KHz
- BATTERY LIFE : ABOUT 1 HOUR
- WEIGHT : 5.1Kg

THE MC10-SAT SATELLITE FIELD STRENGTH METER IS NOW CONSIDERED AS THE ESSENTIAL TOOL FOR ADJUSTING SATELLITE RECEPTION DISHES. THE VISUALISATION OF THE SPECTRUM AND THE PICTURE ALLOWS THE CARRYING OUT OF ALL THE NECESSARY ADJUSTMENTS WITH THIS ONE INSTRUMENT.

FREQUENCY RANGE : from 950 to 2150 MHz
TUNING: Multiturn potentiometer
INPUT IMPEDANCE : 75 Ohms
INPUT CONNECTOR : F-TYPE
INPUT ATTENUATOR : 0.10 & 20 dB USING 3 POSITION SWITCH

SIGNAL STRENGTH :

- **INDICATION :** by a white bar superimposed on the picture, its length being proportional to the strength of the received signal, and also by audio indicator
- **READING :** on the scale from 0 to 70 dBµV
- **MEASUREMENT RANGE :** from 50 to 90 dBµV
- LNB POWER SUPPLY :** 14 or 18 V and 22 KHz by switch

DISPLAY ON 5.5" CATHODE TUBE

- **SPECTRUM :**
- Full band spectrum (FROM 950 TO 2150 MHz)

- Expanded Spectrum with visualisation of the counter-polarisations

- **PICTURE :**

- positive video polarity (Ku Band) or negative video polarity (C Band)
- Picture of selected channel only
- Picture of selected channel with signal strength indication

POWER SUPPLY : 12V, 3 AH battery

CONSUMPTION : 1.2 A (without LNB)

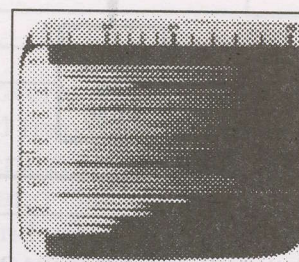
BATTERY LIFE : about 1 hour

CHARGING TIME : about 4 hours

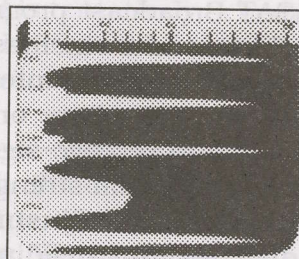
DIMENSIONS : 240 x 140 x 270mm

WEIGHT : 5.1Kg

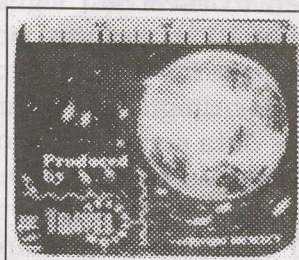
ACCESSORIES INCLUDED : Measurement cord, AC mains adaptor, charging lead for car cigar-lighter, case.



FULL BAND SPECTRUM



EXPANDED SPECTRUM



DEMODULATED PICTURE

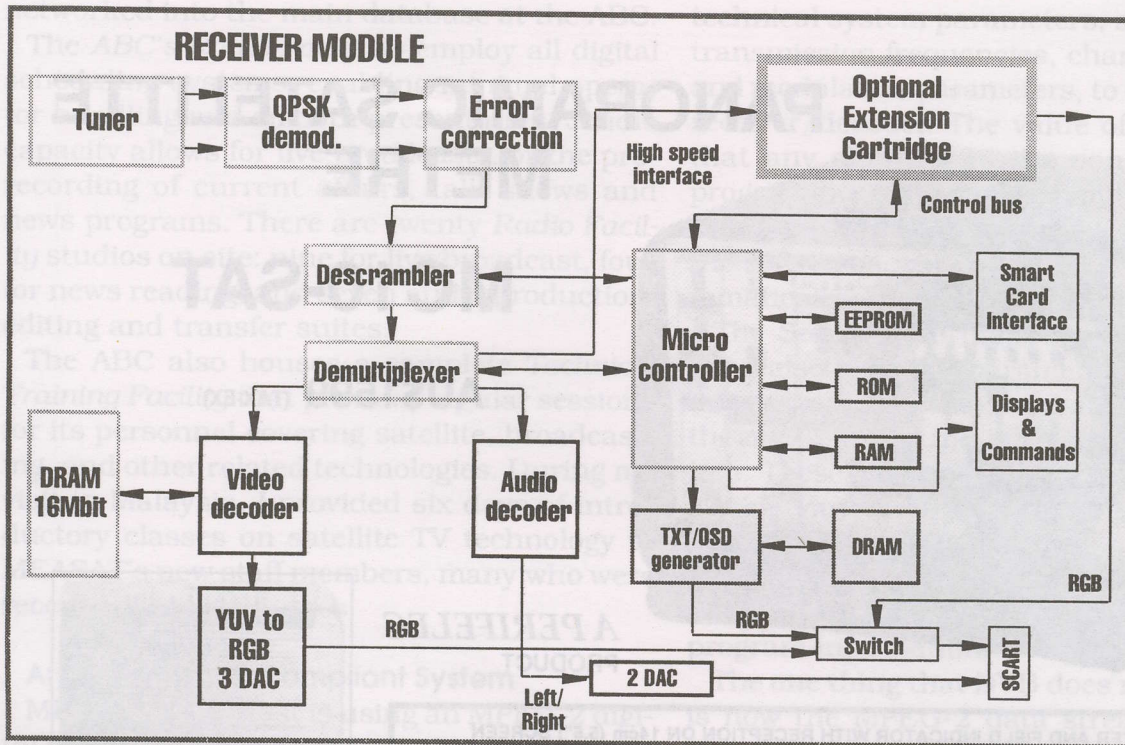


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Block diagram of the Philips INS 610 digital IRD.

height) ratio of 4:3 as well as 16:9 for selected MEASAT Broadcast programs that are transmitted in a wider cinemascope format.

A menu-based user interface supports initial system set up, where on-screen 'fuel gauge' bars indicate relative signal strength and bit error rate. A signal strength audio tone also is generated so that adjustments can be made to the dish without needing to look at the TV screen to ascertain signal level. IRD outputs include: RF modulator, video, stereo audio, and a nine-pin RS-232 data port for interfacing to a PC for diagnostics purposes or to support future data services. No on-screen diagnostics are supplied by this IRD.

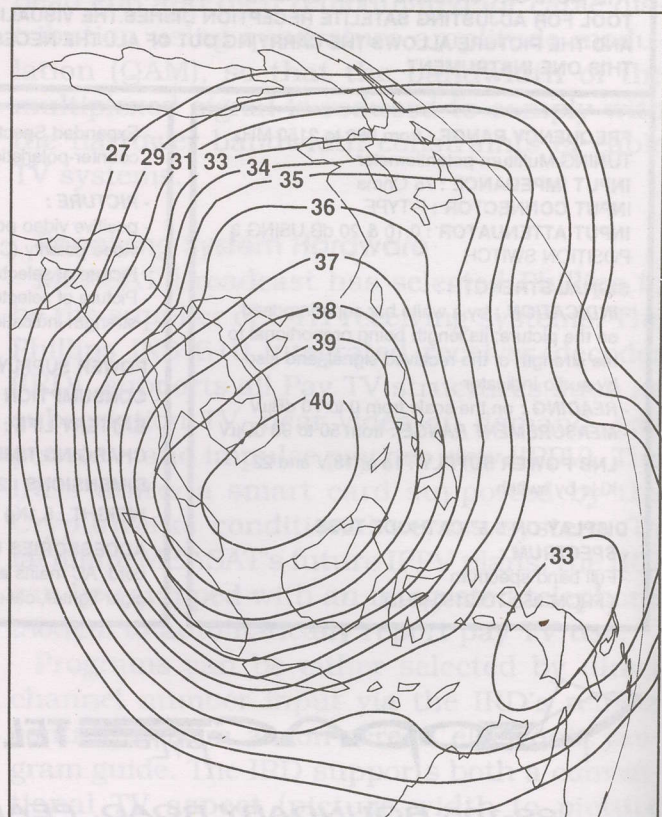
The outdoor portion of the system consists of a 60 or 85cm (depending on location within the footprint) offset-fed dish with a gain of 36.1 dBi (or 38.9 dBi in the case of the 85cm dish) and 70 percent efficiency, a matching feedhorn and Ku-band LNB. The dish size calculated to provide 99.7% service availability in one of the highest rain rate regions in the world.

At the All Asia Broadcast Center, the transmission power of the 13 meter uplink antennas can be boosted to 2.2 kW, its full capacity, during a thunderstorm in order to overcome potential rainfade on the uplink side. The power required on a clear day is only 12 watts or just over 0.5 percent of the available capacity.

The MEASAT Satellites

On C-band, MEASAT-1 has the ability to transmit into a medium-powered coverage beam that stretches from coastal China to In-

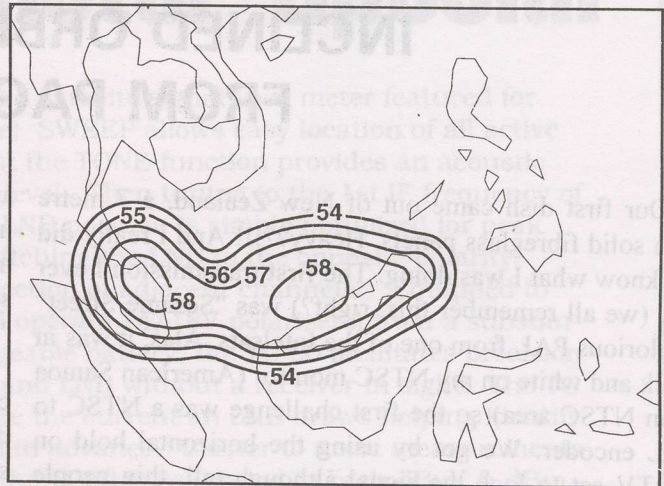
MEASAT-1 C-band coverage beam from 91.5 degrees east longitude. (©1996 MLE INC. From *The World of Satellite TV*, Asian Edition. All Rights Reserved.)



MEASAT-1 Ku-band Frequency Plan

Tr#.	Pol.	Uplink/Downlink	BW	Beam Coverage
1	V	14.032/10.982	54	Malaysia/ Philippines
2	V	14.094/11.044	54	Malaysia/ Philippines
3	V	14.156/11.106	54	Malaysia
4	V	14.218/11.168	54	Malaysia
5	V	13.784/12.284	54	India
6	V	13.846/12.346	54	India

MEASAT-1 Ku-band Malay Beam. (©1996 MLE INC. From *The World of Satellite TV, Asian Edition*. All Rights Reserved.)



donesia and from Myanmar to the Philippines. The satellite carries a total of twelve C-band transponders, each with a bandwidth of 36 MHz. To date, the only video service available on C-band has been a B-MAC encrypted horse racing/gambling channel which primarily airs on the weekends. The Malaysian TV networks presently carried on Palapa C2 have contracts with the Indonesian satellite operator which run through the end of next year. Following the expiration of these contracts, the Malaysian broadcasters are expected to migrate over the MEASAT satellite system.

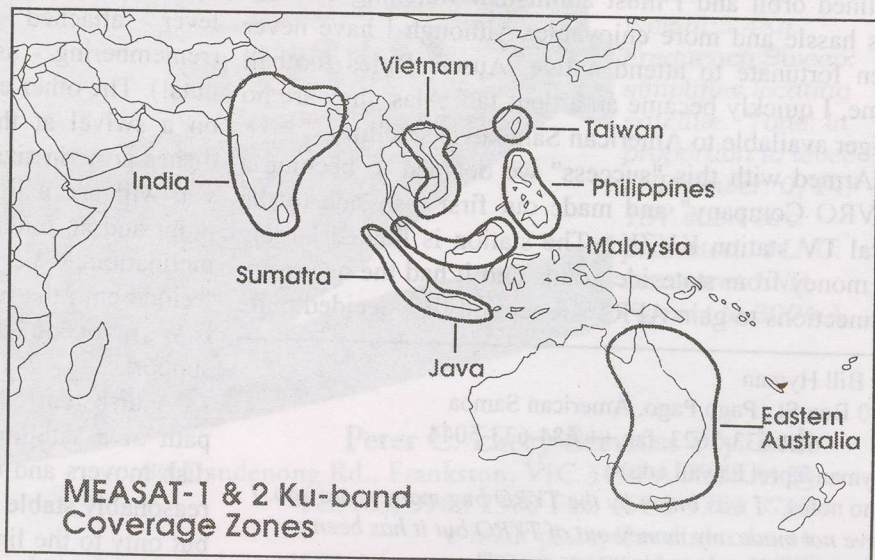
The high powered (112-watt) Ku-band spot beams of the MEASAT-1 satellite are over Malaysia and other countries in the South and East Asia region, including India and the Philippines. With the launch of MEASAT-2 and MEASAT-3, additional areas within the region will also be covered, including Vietnam, Laos, Indonesia, Taiwan and Eastern Australia.

MEASAT-2 is now awaiting launch and will be located at 148 degrees east longitude. The new satellite will carry six C-band transponders with a bandwidth of 72 MHz and nine Ku-band transponders with a bandwidth of 50 MHz. On Ku-band, MEASAT-2 will have the

ability to duplicate the coverage of MEASAT-1 as well as switch selected transponders to additional spot beams covering: the Philippines; Taiwan; Vietnam, Laos, and Cambodia; Eastern Australia; and the Indonesian islands of Java and Sumatra. MEASAT-3 is presently in the final design stage and is tentatively scheduled for launch in early 1998 to 91.5 degrees east longitude, where it will be collocated with MEASAT-1.

Based in Chiang Mai, Thailand, satellite consultant and technical trainer Mark Long is the author of the best-selling **World of Satellite TV** and founding publisher of **The World Satellite Almanac**. He can be reached via e-mail at mlesat@cm.ksc.co.th or contacted through his Home Page at <http://www.cm.ksc.co.th/~mlesat>

MEASAT-1 & 2 Ku-band coverage zones from 91.5 and 148 degrees east longitude, respectively.



INCLINED ORBIT TRACKING FROM PAGO PAGO

Our first dish came out of New Zealand, a 7 metre with solid fibreglass panels. Heavy??!! And I really did not know what I was doing. The first transmission I ever saw (we all remember this, right?) was "Sesame Street" in glorious PAL from one of the Intelsats. Alas, it was in black and white on my NTSC monitor (American Samoa is an NTSC area) so the first challenge was a NTSC to PAL encoder. We got by using the horizontal hold on the TV set to lock the signal although tall, thin people became the order of the day. This amazing reception was done with the dish laying on its back on the ground which we adjusted with planks of wood as shims and supports. The next step as getting the dish on a mount; a crane was required (remember - heavy!!!). The mount was supposed to be "polar" but it lacked a declination offset adjustment (something I did not appreciate at the time: Declination offset? What is that!!!). My ignorance of geostationary satellites and mount mechanics soon began to show as when the dish was attached to the mount I discovered the rotational point was 45 degrees from north. We got no reception with the dish on the mount. Solution?

I did some reading in the modest local library and realised the pole had to be twisted to face north. The way we did that was interesting - a round collar was fabricated and clamped onto the square pole which formed the dish mount. And so the crane came back to lift the dish off while we fitted the collar and then dropped the dish back onto the collar!

Way back in "those days" none of the Intelsats were inclined orbit and I must admit that watching TV was less hassle and more enjoyable. Although I have never been fortunate to attend a live, Aussie Rules football game, I quickly became an ardent fan. Alas, they are no longer available to American Samoa via satellite.

Armed with this "success" we decided to become a "TVRO Company" and made out first dish sale to the local TV station KVZK. The station is funded largely by money from stateside grants and it had the necessary connections to gain AFRTS reception. We decided quite

arbitrarily a 10 metre dish would be required and a firm in New Zealand agreed to fabricate it. Armed with my 7 metre experience, I made a number of mechanical design suggestions to the dish builder to make installation "easier" for us here.

With no advance warning that "inclined orbits" were coming, I decided the safest way to mount a 10 metre dish for our use here close to the equator (where most satellites are virtually "straight up") was to place it on a pair of towers. The first is shorter and to the north of the primary support tower. The shorter tower would act as a support for the dish at the outer rim, and facilitate fine tuning the dish for proper boresighting on the selected Intelsat (chosen at the time because AFRTS was there).

In the back of my mind was an interim test - to first install the 10 metre at my home to allow me to search for US Domsats. And in fact the foundation was constructed for the 10 metre at home; today the twin towers hold a 7 metre and a 5 metre. (No, we never did get the opportunity to do extensive US Domsat testing.)

Then the inclination began. Remember we are out here in the middle of nowhere, and information is at best scarce. I simply did not know what was happening - only that the picture quality on all of my dishes would come and go with some sort of periodicity. As many others probably also learned, I could retrack the dish to get reception back for a short period of time and then it was gone again. Most frustrating at the time, I assure you!

We eventually learned what was happening and so the search for a tracking system began. On small dishes of up to 3 metre size, we simply moved the dish with a lever attached to the declination adjustment (remembering - as we did not at first - to loosen the nuts!). The other end of the jack driven lever is attached on a swivel at the dish mounting pole. However, as dishes grow in size beyond 3m the dish is more stable if you will use a lifting jack installed between a ground point and an outer dish support ring to change the N-S inclination. We found pivot points often have to be welded onto the outer support ring in line with the main E-W pivot on the mounting pole to provide extra support.

A dish that can be adjusted to track the inclination path of a satellite can be a dangerous machine. Most dish movers and dish mounts have been designed to be reasonably stable under adverse wind loading conditions but only to the limits of the dish mover and the strength of the mount to dish support members. As soon as you "loosen nuts" to give a dish some freedom of movement

by Bill Hyman

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(hyman@prel.hawaii.edu)

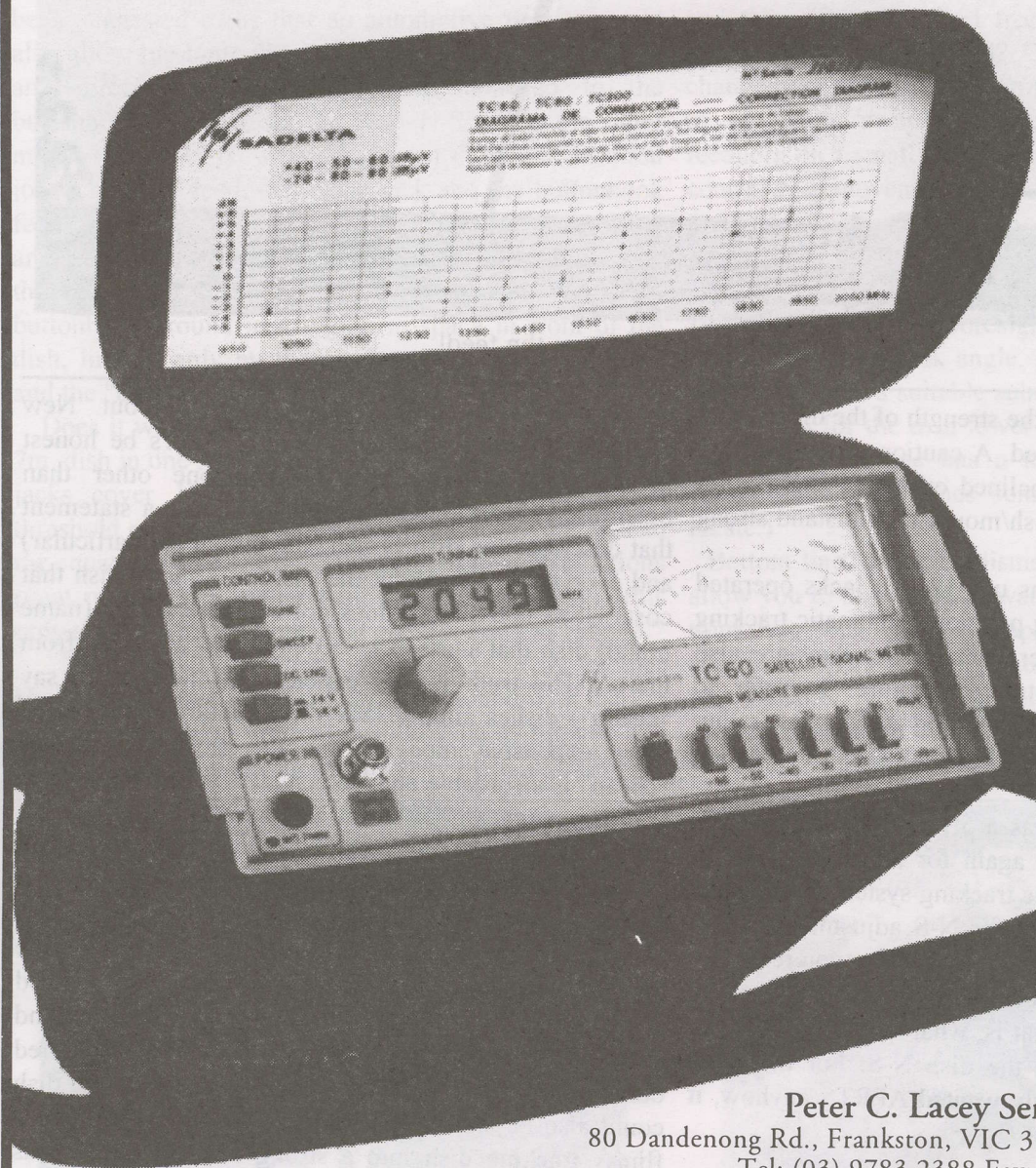
who notes, "I was bitten by the TVRO bug many years ago. I have not made any money out of TVRO but it has been a tremendously exciting learning curve!"

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CAN'T MOVE THE DISH? Move the feed!

in a north-south direction, the strength of the dish/mount is significantly compromised. A caution: Whatever you do to adapt the dish for inclined orbit tracking, do not reduce the ability of the dish/mount to withstand strong windy conditions!

Most of our installations use 12 volt jacks operated manually from the viewing position. Automatic tracking systems may be more user friendly but they are also more prone to misadventure or failure. I prefer to "educate" the user in proper tracking adjustments rather than relying upon automated signal sensing tracking systems.

The next installation was a 5 metre dish for a (US) State Department facility, again for AFRTS reception. We did install an automatic tracking system on this dish using the normal E-W jack for N-S adjustment and to make it track N-S rather than E-W we (are you ready for this!) purposefully mounted the dish on the mount 90 degrees out of position; that is, what would have driven the dish E-W now drove the dish N-S. For the State Department chaps who only wanted AFRTS anyhow, it was a suitable solution.

The Real World

Living on a "small rock" in the Pacific with limited technical (and financial) resources forces one to be

innovative (something I also admire about New Zealanders - their "Kiwi ingenuity"). Let's be honest here - "big dishes" built by someone other than Scientific Atlanta (etc.) are flimsy. This is a statement that describes the dish proper, the mount (in particular) and everything else about the dish. A 7 metre dish that costs US\$8,000 simply does not compare with a (name brand) dish that starts at US\$35,000 and works up from there. The truth is less expensive (I hesitate to say "cheap") dishes simply lack the structural integrity of more expensive models. Yet for most installations "cheap" is affordable and "expensive" is not. So how do you take a "cheap" dish that is flimsy and turn it into a dependable installation which will stay in place and keep on working even under adverse wind loading conditions? A bit of a puzzle.

One solution (which we practice here) is to mount the dish in a stationary position (which means you can add supports under the dish and around the outer rings) and dedicate it to a single satellite. This was how we started out - the satellites were stationary and therefore the dish could also be stationary. And in the process, turning a flimsy tracking dish into a strong stationary dish was mostly a matter of adding metal and ground support points. Alas, when the geostationary satellites began to move - our business plan had to change.

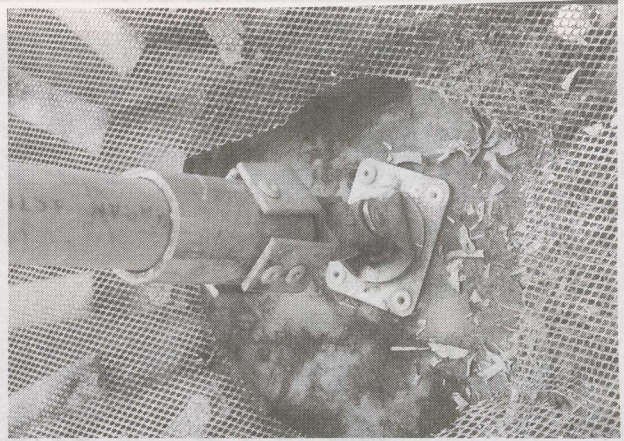
The challenge: If the dish can only be strong when it is "riveted" to the ground, but the satellite moves which means the boresight must be changed to track the moving satellite, how do you compensate for the movement without moving the reflector? The answer, which others have done quite independently of me, is to move the feed inside of the dish.

If the dish is large enough (i.e., it has excess gain above that required to reach threshold) the feed can be moved over a limited area to compensate for the movement of the satellite. The dish stays in one place - the feed moves over a line (or arc) that approximates N-S in "reflection" to the actual movement of the satellite.

One of our more versatile systems uses a pair of jacks attached to the buttonhook feed support. The buttonhook is attached to the dish at the reflector end using a genuine "windsurfer" universal joint (a product most of us living near the ocean can find in abundance). It has been suggested to us that an automotive tie-rod would also allow the buttonhook to swivel (move) in virtually any direction. With two jacks attached to the buttonhook, one moves the feed N-S while the other moves it E-W. Now we have an "infinite location joystick" for a feed; drive one jack and the buttonhook feed support end moves in one direction; drive the other and it moves at 90 degrees to the first. By working both the E-W and the N-S controls, you can swivel the buttonhook around in a region in space in front of the dish, limited only by the mechanics of the drive jacks and the "universal joint."

Does it work? Well, from my location I can anchor a 7m dish in one spot (such as at 177E) and by driving the jacks cover 174E, 177E and 180E all with above threshold reception. I admit that because we are near to the equator (14.16S, 170.43W) that our dish installations point mostly "up" rather than east or west. Still, this only aids us with satellites that are more or less "above."

Take EM TV (Rimsat 42 at 142.4E) as another challenge. It is very low on my horizon and with the 7m dish installed in our normal fashion even by tugging and shoving we ended up with the dish pointing at



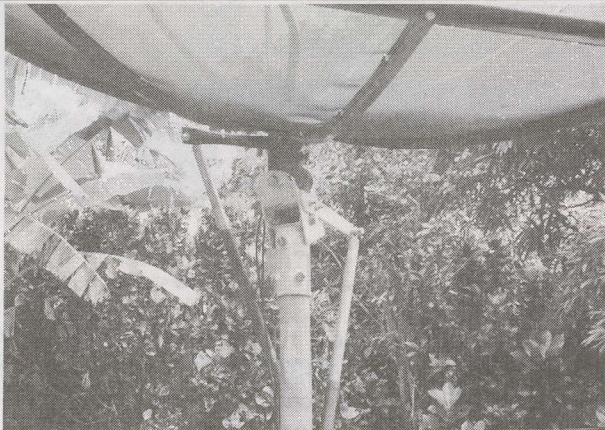
"Universal swivel" allows buttonhook to move

approximately 147E; 4.5 degrees short of EM TV as the dish lower lip ran into too much ground to "dig out." Rock-in-the-Pacific ingenuity to the rescue.

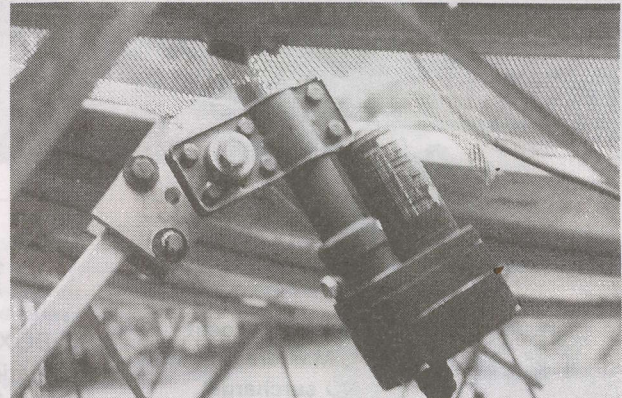
If we could not get the dish low enough to boresight on EM TV, why not drop it as low as practical (146E) and then offset the feed from the normal focal point until we found the signal? Crazy, you say. Not so. I changed the tripod mount on the feed to allow the feed to be offset away from centre, then mounted the feedhorn on a small spindle driven by a jack. Now I can control N-S movement with the off-centre located feed and EM TV is perfect reception.

(Editor's note: The gain of a dish actually goes down only slightly when the dish proper is pointed as much as 10 degrees off of the boresight of the satellite. Anyone faced with a low look angle, ground clearance problem should find this a suitable substitute to digging a hole in the ground for the dish lower lip. A dish pointed off of boresight of course has a new physical 'focal point' which initially becomes something of a challenge to locate.)

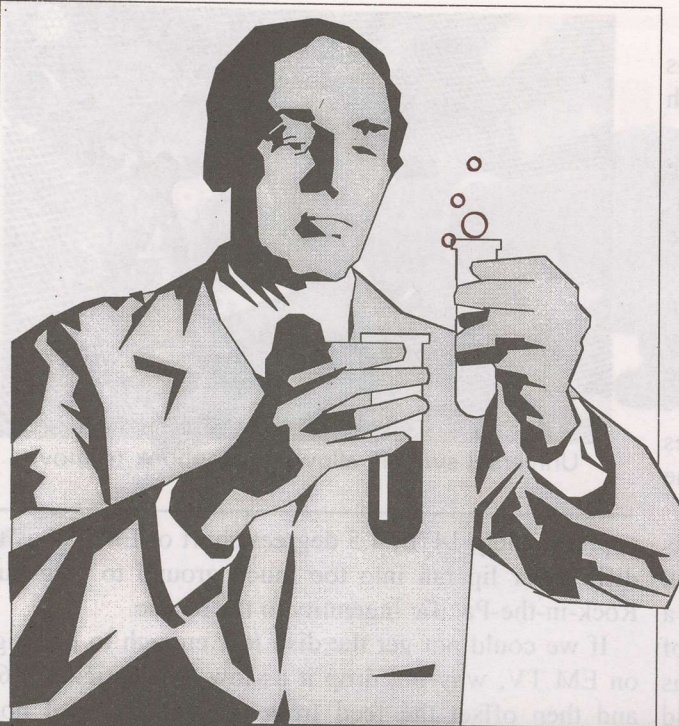
Bottom line? Don't be dismayed by systems that don't allow you to do what you want to do. Just sit down and think out what is really happening and how you can change the parameters of the game to suit you unique requirements. There is a solution! And those of you reading this report who have questions or solutions of your own to share - let me hear from you.



SMALLER (3m) range dishes can be driven N-S using declination adjustment

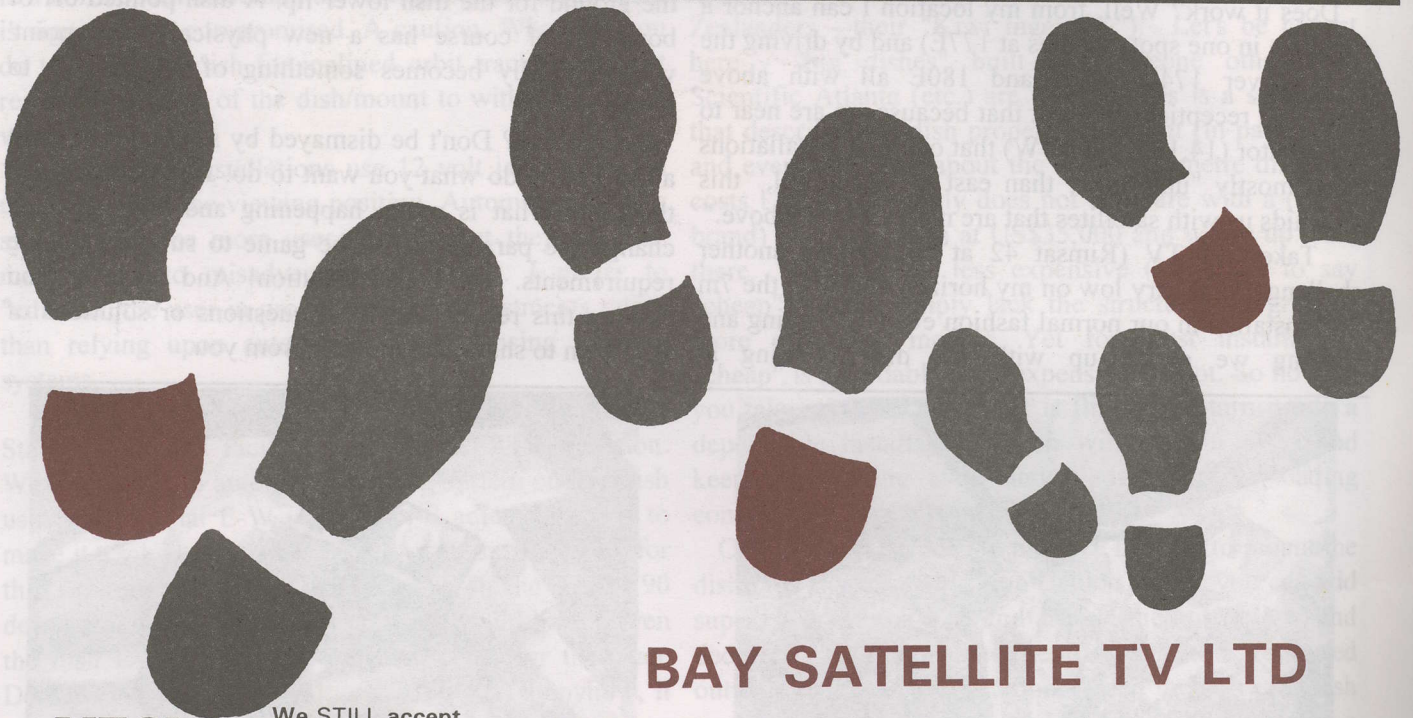


DRIVING a buttonhook on a swivel mount "through" the dish surface with actuator jack



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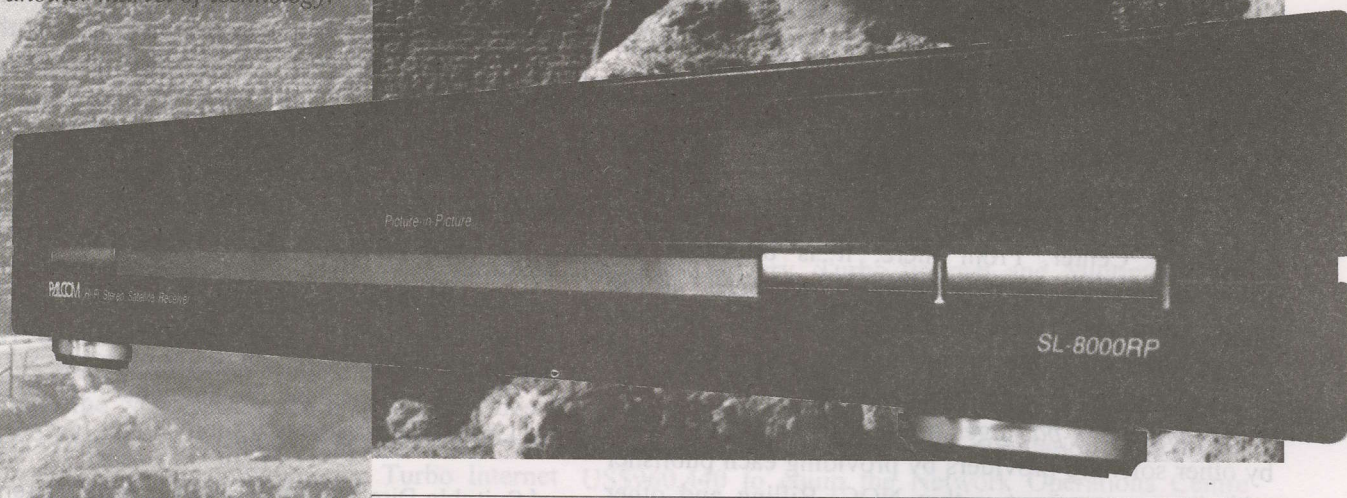
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installers, sellers of private satellite-direct
systems in the Pacific Ocean & Asia Regions

Redefining Free To Air

There was a time when virtually anyone in the satellite or TV broadcast world could properly explain what "free to air" (FTA) means. Simply stated: The viewer buys a receiver, connects an aerial (as required), tunes in the transmission and views. There are no "access" fees, no "special approvals" or "conditions" attached to viewing. Some of the more enlightened copyright laws (such as the 1994 New Zealand law) recognise the "rights of viewing" for free to air signals while older copyright laws simply ignore this important element of broadcast dissemination.

The now turned-off Star TV analogue service that operated on Palapa B2P (and subsequently C1/C2) pushed the legal envelope of FTA when they invoked a form of analogue encryption for evening movie transmissions. On one hand it was argued this "encrypted movie service" was conditional access. On the other hand, anyone purchasing a Pace receiver with built in Videocrypt decoder could tune in this "encrypted" transmission automatically because the receiver's decryption circuit decoded the transmission. The 'fine point' here was that a viewer purchased a receiver which without payment of an additional fee and without registering to be a "conditional access viewer" did the decryption automatically. An analogy: You can buy an FM radio receiver that is monaural or stereo - the buyer selects which one he wishes. The added benefit of the stereo model is akin to the added benefit of having selected the Pace analogue receiver with a built-in decoder.

More recently along came MPEG digital transmissions. Anyone who purchases a suitable DVB MPEG receiver can tune in the European Bouquet services without registering the receiver, without going through any other form of "conditional access" routine. Like the decision to purchase a Pace analogue receiver with a built-in Videocrypt decoder, the viewer makes a choice. To argue that MPEG is "encoding" is to say the transmissions are not FTA.

PowerVu is a form of MPEG peculiar to Scientific Atlanta. And S-A makes much in its promotional literature of their claim that PowerVu is "DVB Compliant" and not really any different than any other DVB MPEG format. From the day of the first sale in the Pacific of Scientific Atlanta MPEG receivers for CMT (early 1995) they have insisted that before you can purchase a receiver from them, they must have the "authorisation" of a programmer. In other words, S-A has taken on the mantle of being a watchdog for who is allowed to own a receiver capable of tuning in their MPEG format transmissions. Except they don't actually place their firm in the delicate position of denying a receiver to anyone; they simply tell you, "*First get authorisation from one of our MPEG service customers to receive their service and then we are able to sell you the receiver you wish.*"

Hundreds of D9222 receivers came into the Pacific because a buyer said he wanted to subscribe to CMT (at about US\$75 per year), following which CMT authorised S-A to ship the receiver. A very significant percentage of these "CMT subscriptions" are possibly

MEMBERSHIP IN SPACE

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

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

(probably) "bogus"; that is, CMT is reasonably priced, and if you have to subscribe to "something" to get permission to purchase an S-A receiver - well, why not?

Early in December FTA (forever) Eternal Word Television Network (EWTN) began operation through the S-A PowerVu uplink from California. A number of SPACE Members decided EWTN was an important enough service to them that they were ready to order the D9223 receiver (for most it would be their first S-A digital receiver).

S-A Sydney would not sell them a receiver on the strength that they were going to become an EWTN viewer. "First you must obtain a letter of authorisation from EWTN granting their permission for you to view their programming" admonished the S-A Sydney office.

"How do I get such a letter?" asked SPACE members. At first we advised them to contact EWTN (Sam Ranelli at tel [USA] 205-956-9537 [or fax 205-956-9437]) and then called Sam ourselves to ask him what he knew about this requirement.

"Why should this be?" he asked. "Because those are the S-A rules" we responded. "And so I have to create a letter for everyone who wants to watch EWTN as a condition to their spending their money for the Scientific Atlanta IRD?" he asked.

Obviously this is no way to run an industry. S-A must have known when they accepted (or chased) EWTN as a customer for their PowerVu system this network, unlike all others, was not only free to air but intensely dependent upon universal access without hassles. Basically, the S-A "watchdog role" they have assumed when policing who is to be anointed with their receivers is like stationing a gate keeper outside of a Catholic church and demanding to see some proof of being a member of the Catholic faith before allowing them into the church.

S-A cannot have it both ways. They cannot claim they are selling a totally secure service to "selected, approved customers" and at the same time offer to distribute a FTA intended service such as EWTN. They cannot claim "conditional access security" as well as "free to air MPEG DVB Compliant" distribution all with the same set of equipment distribution policies.

So SPACE asked EWTN to advise Scientific-Atlanta that they did not intend to be forced into a position of having to write individual letters of "approval" to each and every potential EWTN viewing location just to satisfy an internal policy at S-A. We asked EWTN to create a "To Whom It May Concern" letter which would be

published here giving anyone who copied the published letter the "right" as granted by EWTN to access their programming through PAS-2. As you might expect, S-A immediately went into "condition red" since the publishing of such a letter would tear down their carefully constructed marketing message about the claimed "security" for their PowerVu system.

We cannot have it both ways. Nor can S-A. Either a system such as PowerVu is totally conditional access (even if only because S-A demands a subscription to one of the PowerVu services before selling a receiver), or it is not. And in fact, the history of this goes back 14 months to the start-up of CCTV-4 on the Hong Kong S-A MPEG uplink. At that time CCTV-4 accepted the responsibility for turning on (conditional access) each receiver that registered with them. Today if you own a D9223 receiver, CCTV-4 (as well as CCTV-3) are FTA and no registration is required; a subtle change in policy that occurred during the transition from MPEG 1.5 (the 9222 receivers) to MPEG 2 (the PowerVu receivers). S-A apparently accepted this "change" because CCTV operates its own PowerVu uplink and is allowed to run it as a FTA access system without S-A interference.

EWTN, however, is uplinked by PanAmSat which depends totally upon S-A for operational controls. All of this needs corrective action, soon, or EWTN is going to be damaged by the S-A gatekeepers at the church entrance.

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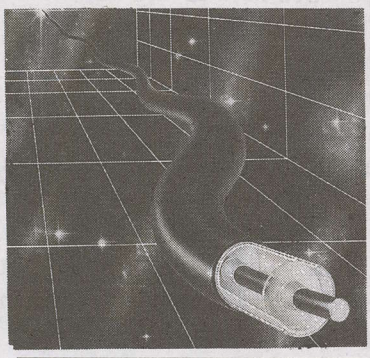


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The CABLE Connection



On The Cheap - continued

So you have located a region where terrestrial TV reception is poor, and believe you have a suitable "headend" site where clean terrestrial FTA services can be received. And you have sketched the cable runs from the headend into town based upon placing all of the cable system's active amplification at the headend; the cable plant itself will be totally passive (SF27, 28).

Moreover you have done your maths to determine how much the system will cost and how long it should take to recover your investment. Now, can you speed up the investment return period by making the cable service more desirable?

A limited number of FTA services are available via satellite; many more are available with a formal cable affiliation between the cable company and the programmer. To keep cable investment to a minimum, we will deal first only with the FTA services (i.e., install a satellite receive system, connect up a receiver to a modulator and place the service on your cable system). The FTA services with significant English language content are shown above.

The most obvious "first choice" is CNN. Now this presents an interesting situation. CNN continues to be FTA analogue on PAS-2 and C2M although everyone should recognise that use of it is at least morally (if not legally) conditioned upon payment. Under the law, as CNN does not encrypt and they make no over the air announcement limiting its use (i.e., no broadcast statements telling you not to distribute it on cable without their permission), it is a by definition FTA service. And available for use. However, any cable company that also elects to carry TNT + Cartoons (another service from the same company) will be told that before they can sign an agreement for TNT +, they must also agree to pay for CNN (if you can convince Turner you are not using CNN, this would be waived). In other words, CNN is "free" as long as you do not also want TNT + (or until they begin announcing that its use is restricted to those who agree to pay for the service).

In selecting your first set of FTA satellite channels for "on-the-cheap" cable carriage, you must weigh the cost of the satellite equipment against the increased appeal of the cable service by adding one or more satellite

POSSIBLE 'On The Cheap' Cable Services/ English (PAS-2)

- ✓ CNN (FTA, must be paid for at approximately US\$1 per month IF you also carry TNT + Cartoons)
- ✓ Value Channel (feed quality superior on AsiaSat 2 if available to you)
- ✓ EWTN (requires S-A D9223 receiver)
(Rimsat 42 - 142.4E)
- ✓ EMTV (some periods are Videocrypt)
(Palapa C2)
- ✓ CNN (see PAS-2 above)
- ✓ GMA Philippines (approximately 40% English)
(AsiaSat 2)
- ✓ Value Channel
- ✓ Deutsche Welle (40% English, requires MPEG DVB receiver)
- ✓ MCM Music Video (40% English, requires MPEG DVB receiver)
- ✓ Sky News (within Star TV bouquet, requires NTL/DVM 3000 receiver and will not stay FTA indefinitely)

channels. If the budget allows for only a single dish, logic suggests you look at AsiaSat 2 for the best variety of satellite channels: Sky News (which is no CNN because of a heavily UK bias but still it is better than no news!), Deutsche Welle (for the 10 hours per day in English) and MCM Music Videos (the non-English content is a minor irritation since the music is universal). This would require a feed system for both (linear) polarisations, of course a pair of LNBS, but unfortunately it will also require three MPEG receivers - one of which (for Sky) is big bucks (around NZ/A\$4,000). All up with dish, feed, twin LNBS and receivers you would add NZ/A\$10,500 to your system cost to slide in these three channels (including modulators for the new channels). If you recall our original budget was \$10,000 (SF28)- the addition of these three satellite channels effectively doubles the initial investment cost.

On the other hand, if you installed a pair of dishes for PAS-2 (CNN) and EM TV, added two analogue receivers and two modulators, you would invest an additional NZ/A\$6,000 to have these two services on cable. There is a small downside in addition to having a pair of dishes - EM TV does Videocrypt (encode) some transmissions and that means their total available FTA time each day is reduced by the scrambled hours. Further, EM TV will be changing satellites by midyear 1997 and may no longer be available in the South Pacific if they move to a satellite that does not cover this region.

So what is logical? A single dish, pointed at PAS-2 and "taking" CNN as your first satellite channel (your additional investment cost - around NZ/A\$2,500). If you are in an area where local interest in the programming of EWTN would be high (see SF28, p. 1 and 32) this could be your first "MPEG" channel. Now,

Possible "Some Expense" Services / English
(PAS-2)

- ✓ Asia Business News (requires D9223 receiver, cost approximately A/NZ\$0.25 per subscriber p/m)
- ✓ CNBC/NBC Asia- 2 channels (requires DVR500 [MPEG] receiver, cost in range of US\$1 per subscriber p/m)
- ✓ Discovery (requires D9223 receiver, cost approximately US\$1 per subscriber p/m)
- ✓ TNT + Cartoons (requires S-A B-MAC receiver; cost in range of US\$1 per subscriber p/m, to which you may also have to begin paying for CNN as well at another US\$1 per subscriber p/m.
- ✓ CMT (requires D9223 receiver, cost in range of US\$0.35 per subscriber p/m)
- ✓ Bloomberg Financial (requires D9223 receiver; costing unknown)

with the dish already functional (on paper at least) for PAS-2, what about the "pay to use" signals that are also on this satellite?

The first level of choices for English language channels appears above. All require Scientific Atlanta D9223 MPEG receivers with the exception of TNT + Cartoons which uses the S-A B-MAC system. Which of these makes the most sense for your first paid-for services?

Discovery is number one, the two NBC channels (CNBC and NBC Asia) are numbers 2 and 3, TNT +

Cartoons number 4. That is based upon cable experience in systems already carrying these channels.

If you planned a monthly fee of \$15 for carriage of the off-air terrestrial channels only, how much can you increase the per month fee as you add paid-for channels?

Let's add CNN first as a FTA service and for this we have raised our capital investment by \$2,500; a 25% increase. Logic suggests that if you still want to have the system paid off in the same period of time, you will increase monthly fees by at least 25% with CNN added. That would be \$18.75 per month. Or, if you will accept a longer pay off time for the original investment (25% longer), you could leave the "base rate" fee at \$15 as previously suggested.

If Discovery is the first paid-for channel added, you will spend around \$3,000 to add the receiver and the modulator. On top of that you will have approximately NZ/A \$1.65 per month (per subscriber) additional cost to pay Discovery for the programming. The capital cost recovery increases the pay out period 30% or requires that you raise your base rate by 30% (in our model system described in SF28). That turns \$15 per month per home into \$19.50 per month. Add to that your own cost of \$1.60 per month for the Discovery programming and you have \$21.10 per month without making a profit on the Discovery programming. At this point you would have the local terrestrial channels, CNN and Discovery at \$21.10 per month. Is there a business here?



ORBITRON

Antenna Specifications

	Dia	F/D	Gain dBi	
Model	M	Ratio	4.2GHz	12.2GHz
SX8.5	2.5	.36	39.2	46.6
C10	3.0	.30	40.5	48.2
SX12	3.6	.36	42.2	49.5
O16	4.9	.30	44.9	52.1

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SatFACTS Pacific Ocean Region Orbit Watch: 15 January 1997

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Free-to-Air 57E to 80E

Sun Music	57E/703 1400RHC
Sun Movies	57E/703 1342RHC
Sky News	57E/703 1257LHC
BBC World	57E/703 1224LHC
Sun TV	57E/703 1220RHC
AsiaNet	57E/703 1170RHC
WorldNet	57E/703 1100RHC
NEPC	57E/703 1090/LHC
TVi	57E/703 1020LHC
Muslim TV	57E/703 975LHC
Discovery	68.8/Pas4 Vt/1365
ABN	68.8/Pas4 Hz/1365
CCTV4	68.8/Pas4 Vt/1314
Sony Enter. TV	68.8/Pas4 Hz/1240
Doordar. India	68.8/Pas4 Vt/1116
CNNI	68.8/Pas4 Hz/1065
TNT/Cart.	68.8/Pas4 Hz/1040
ATN	68.8/Pas4 Vt/972
BBC World	68.8/Pas4 Hz/1350
MTV Asia	68.8/Pas4 Hz/965
TK Rossija	80/S13 1475RHC
VTV4	80/S13 1275RHC

Free-to-Air 80E to 113E

AST	85/S3 1275RHC
Dub'l II	90/S6 1475RHC
Orbita II	90/S6 1275RHC
Dub'll I	90/S6 1234RHC
Orbita I	90/S6 1208RHC
Doordar.7	93.5/In2b 1285/Vt
Doordar.1	93.5/In2C 1160/Hz
Doordar.9	93.5/In2c 1080/Hz
Doordar.8	93.5/In2b 1050/Vt
Doorda10	93.5/In2b 1010/Vt
Doordar.2	93.5/In2c 980/Hz
Orbita II	96.5/S14 1475RHC
CCTV4	96.5E/S14 1325RHC
TV Shopping	100.4/As2 1490/Vt
TV Mongolia	100.4/As2 1470/Hz
Henan, China	100.4/As2 1430/Hz
Guandong China	100.4/As2 1310/Hz
CCTV4	100.4/As2 1190/Hz
RTPi	100.4/As2 1170/Vt
EBB (DVB)	100.4/As2 1150/Hz
Dub'l II	103/S21 1475RHC
ART	103/S21 1275RHC
CFI	113/C2 990/Hz
SCTV	113/C2 970/Vt

Free-to-Air 113E to 145E

Brunei	113/C2 1010/Vt
MTV Asia	113/C2 1030/Hz
TPI	113/C2 1070/Hz
TV Indosair	113/C2 1090/Vt
ABN	113/C2 1120/Hz
ANteve	113/C2 1130/Vt
CNNI	113/C2 1183/Hz
GMA	113/C2 1230/Hz
TV3	113/C2 1250/Vt
ATVI	113/C2 1270/Hz
TVRI	113/C2 1310/Hz
RTM	113/C2 1330/Vt
RCTI	113/C2 1408/Vt
CNBC	113/C2 1530/Hz
Colour Bar Tests	128/Jcsat3 1170/Hz, 12.280/Hz 12.386/Vt
Laos TV	130/R41 1375LHC
Orbita-I	140/S7 1475RHC
NTV	140/S7 1425RHC
Music Asia	142.4/R42 1475LHC
RAJ-TV	142.4/R42 1425LHC
ViJay TV	142.4/R42 1325LHC
EM TV	142.4/R42 1272LHC
Dub'l-I	145/S16 1275RHC

Free-to-Air 145E to 180E

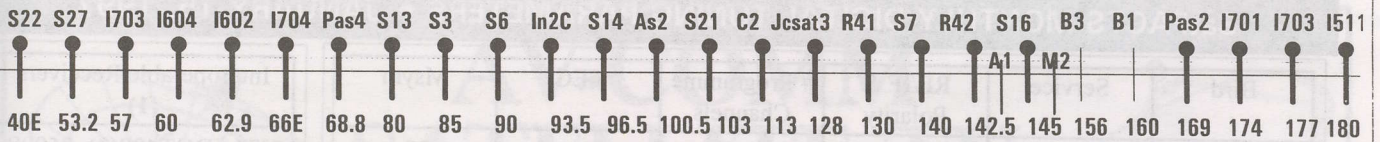
CNNI	168/Pas2 1183/Hz
CNN Feeds	168/Pas2 1155/Hz
NHK	168/Pas2 1114/Hz
TV Shopping	168/Pas2 1400/Hz
Feeds	174/I701 984RHC
Feeds	174/I701 973RHC
Feeds	177/I702 984RHC
Feeds	177/I702 963RHC
Feeds	180/I511 1430RH
WorldNt	180/I511 1175RH
RFO	180/I511 1105RH
Feeds	180/I511 1020LH
Feeds	180/I511 984RHC

ENCRYPT/MPEG SERVICES

Sky Racing(a)	100.4 1130/Vt
European Bouquet	100.4 1150/Hz
Star TV (b)	100.4 1250/Vt
APT (b)	100.4 1351/Hz
WTN (b)	100.4 1363.6/H
Star Chinese (a)	100.4 1390/Hz
Star TV (b)	100.4 1410/Vt
Star TV (c)	100.4 1450/Vt
ESPN (d)	113/C2 1030/Hz

HBO Asia (d)	113/C2 1150/Hz
TNT + (d)	113/C2 1390/Hz
Discovery (d)	113/C2 1430/Hz
Star Indovis'n (c)	113/C2 1570/Hz
Star Indovis'n (c)	113/C2 1650/Hz
ABC5, RPN9 (c)	142.4/ R42 1375LHC
Galaxy (c)	156/B3 12.437Hz
Galaxy (c)	156/B3 12.373Hz
China PowRvu (b)	168/Pas2 1433.5/ Vt
HK MPEG 1.5 (c)	168/Pas2 1426/Hz
Discovery (c)	168/Pas2 1374/Hz
MTV Asia (a)	168/Pas2 1346/Vt
ESPN (a)	168/Pas2 1288/Vt
California PowRvu (b) (c)	168/Pas2 1249/Hz
TNT + (a)	168/Pas2 1218/Vt
Fox/Prime (c)	168/Pas2 1161/Vt
Filipino Ch. (b)(c)	168/Pas2 1060/Hz
NBC HK	168/PAS2 1057/Vt
HK PowRvu (b) (c)	168/PAS2 1002/Vt
TCS Singapore (b)	168/Pas2 967/Hz

No home DTH
subscriptions



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

(B-Mac)	1425/Vt
Central ABC HACBSS	1393/Hz B-Mac
Vic. ETV	1361/Vt CryptV.
Imparja TV	1329/Hz B-Mac
(B-Mac)	1297/Vt
Net 9, Sky specials	1233/Vt B-Mac
Central ABC HACBSS	1201/Hz B-Mac
	1169/Vt
Galaxy	1137/Hz Irdeto Mpeg 2
	1105/Vt
Galaxy	1073/Hz Irdeto Mpeg 2
Golden West	1041/Vt
	1009/Hz
	977/Vt

RUSSIAN Inclined Orbits

- 80E/ +/- 2.3
- 85E/ +/- 2.8
- 96.5E/ +/- 1.5
- 103.2E/ +/- 2.1
- 130E/ +/- 1.0
- 140E/ +/- 4.4 (?)
- 142.4E/ +/- 0.9E
- 145E/ +/- 3.9

Encrypted (to left)

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

Net 9, Sky feeds	1425/Vt B-Mac
Data	1402/Hz
QSTV	1377/Hz B-Mac
NE ABC HACBSS	1370/Vt B-Mac
NE SBS HACBSS	1344/Vt B-Mac
SE SBS HACBSS	1339/Hz B-Mac
SE 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
Net 7	1244/Vt E-Pal
Net 9 feeds	1219/Vt Pal&Ntsc
	1214/Hz
Net 10	1182/Vt E-Pal
Net 9	1180/Hz E-Pal
Net 10 feeds	1155/Vt Pal
Net 7	1120/Vt E-Pal
Net 9 feeds	1091/Vt Pal
CAA air to ground	1009/Vt Nbfm
CAA air to ground	977/Vt Scpc(fn)

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

CCTV3,4	1433.5/Vt (Sa9223)
Abn/Ctn/Cctv/Nbc	1,426/Hz (Sa9222)
Value Ch.	1400/Vt
Discovery PowerVu	1374/Hz (Sa9223)
MTV Asia	1346/Vt B-Mac
ESPN	1288/Vt B-Mac
MPEG-2 PowerVu Sylmar	1249/Hz (Sa9223)
TNT+ (1/2Tr)	1218/Vt B-Mac
CNN+ (1/2Tr)	1183/Hz
FoxSports	1161/Vt (Sa9222)
NHK	1115/Hz
Filipino Channel	1060/Hz (GI Mpeg)
NBC Mux MPEG	1057Vt (Pace)
MPEG-2 PowerVu HonKong	1002Vt (Sa9223)
TCS Sing.	967/Hz

PAS-2 Ku

PowerVu	12,415V
H-Life	12,520V

**MeaSat 2
148E**

Tests	1167/Vt
-------	---------

**Intelsat 701
174E**

Feeds	963
Feeds	984

**Intelsat 703
177E**

AFRTS (1)	973 B-Mac *
Feeds	984

* LHC; (1) PowerVu testing underway

**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. At boresight, signals of < 2m levels.

TDRS5 / 174.3W

Fuji TV	1305 Hz
BBC World	1163Hz MPEG

**Intelsat 511
180E(W)
+/- 2.9deg.**

TVNZ	964/Ntl 3000
TVNZ	972/Ntl 3000
TVNZ	980/Ntl 3000
TVNZ	988/Ntl 3000
Occ Vid.	1,020**
9 Aust.	1,025
Canal +	1,054 **
RFO Tahiti	1,105
Asian	1,130
World-net	1,175
NHK	1,225**
ABC Oz	1,256
7 Oz	1,274
10 Oz MPEG	1,385 (PwRvu)
Keystone	1,432

* RHC & LHC
** LHC only

(511 Ku)

NHK	11.135H
CBS	11.475H
CNN	11.508H

TDRS5 "north" only

UPCOMING SATELLITE LAUNCHES

- January '97/JCSAT-4 to 150E
- January '97/ Indostar (S-band) to 106E
- January '97/ ApStar 2R to ??E
- February'97/ I1801 to 174E.

(a) B-MAC or Starcrypt encrypted, no access available.; (b) MPEG format, requires special receiver; (c) MPEG, encrypted, access may be possible (d) B-MAC, subscriptions available in some geographic areas. No indication - MPEG DVB FTA.

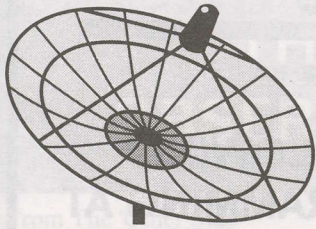
SatFACTS MONTHLY DIGITAL TUNING PARAMETERS ♦ JANUARY 15, 1997

Bird	Service	RF/IF & Polarity	# Programme Channels	FEC	Msym
As2	EBB	4000/1150Hz	5TV, 13 radio, MediaNet (a)	3/4	28. 125
	StarAsia CA test	3700/1450Vt	up to 6 TV (b)	3/4	28. 100
	StarAsia tests	3740/1410Vt	up to 6 TV (b)	3/4	28. 100
	World TV News	3786.4 /1363.6Hz	1TV, 1 aux	3/4	8. 448
	STAR + service	3900/1250Vt	5TV, 1 radio (c)	3/4	28. 100
	APTV News	3799/1251Hz	1TV, 1 aux	3/4	5. 632
Palapa C2	Star Indovision	3500/1650Hz 3580/1570Hz	6+ TV 6+TV	7/8 7/8	26.85 26.85
R41/142.4E	DSP, Inc. Philippines	1375LHC	3TV (d)	3/4 (when PowerVu)	4.88 (P-Vu)
PAS-2	TCS Singapore-SA	4183/967Hz k1	2TV	1/2	6. 62
	Discovery Singapore-SA	3776/1374Hz k3	6TV (k)	3/4	19. 850
	NBC HK-Philips	4093/1057Vt j2	7TV (e)	3/4	29. 473
	SA California PowerVu	3901/1259Hz k2	7TV (f)	3/4	30. 800
	SA California PowerVu	12415/1115 vt j3	7TV (f) (g)	3/4	30. 800
	CCTV China PowerVu	3716.5/ 1433.5Vt	2TV (h)	3/4	19. 850
	SA HK PowerVu	4148/1002Vt j1	7TV (i)	2/3	24. 430
Optus B3	Galaxy	12.438Hz 12.373Hz	20+ TV (j)	3/4	29. 473

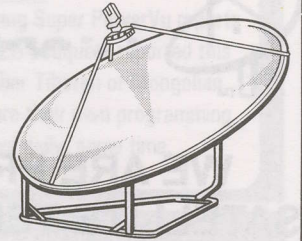
Interoperable Receivers (1)
NTL, DGT400(2), 9500S DVR500, IRD520, SK888
NTL(b)
NTL(b)
NTL, Nokia 9500 S
NTL, Nokia 9500 S
NTL, Comstream
Pace DVS211 (not yet available in quantity)
SA9222 today (temporary); PowerVu "soon"
S-A PowerVu
S-A PowerVu
NTL, DGT400(2), 9500S, DVR500, IRD520, SK888
S-A PowerVu
S-A PowerVu
S-A PowerVu
S-A PowerVu
DGT400, IRD520, SK888 (3)

1) Interoperable receivers: Receivers (IRDs) which have proven through repeated use to be capable of reliable digital reception for the programme services listed. **2)** Pace (Galaxy) DGT400 units will function on these services ONLY if they have NOT been over-the-air "upgraded" to include the "programme Censorship" classification function. **3)** Access to Galaxy programming requires a smartcard from Galaxy; such cards reportedly will also function with these receivers. Otherwise preview channel and TVSN are only services FTA.

(a) (1) Deutsche Welle, (2) MCM, (3) RAI International, (4) RTVE, (5) TV5 Paris; **Radio channels:** (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 + MediaNet [Internet] within Vertical Blanking Interval of DW TV on video programme ch. 1 (see SF#27, p. 14, 32); **(b)** Star Asia using their own version of MPEG(2) is testing up to 6 programme channels on these two transponders; conditional access when employed requires Pace DVS-211 receiver and companion smartcard. **Occasionally** testing can be seen on DMV/NTL 3000 without conditional access. **(c)** Video is subject to some variation but nominally includes: (1) Star + (Japan; NTSC), (2) VIVA Cinema (Philippines: NTSC), (3) CNBC (actually, test with static slide), (4) (horse) racing feeds (very occasional) to 'TCNA', (5) Sky News (London), (6) Star Radio; **(d)** At press time this remains SA MPEG 1.5 at 1375LHC on 142.4E but conversion to PowerVu is scheduled. At this time (1) ABC-5 (English), (2) RPN-9 (English), (11) test video; **(e)** (1) CNBC, (2) CNBC, (3) NBC Asia, (4) Colour bars - future use, (5) CNBC, (6) NBC Asia, (7) colour bars - future use [note: CNBC and NBC split feeds by programme channel for differing target area time zones (India, for example, is time-offset from Australia/New Zealand)]; **(f)** (1) CMT (NTSC), (2) CBS feeds, others; (3) NBA feeds, others; (4) EWTN (NTSC), (5) BBC World (NTSC), (6) Bloomberg Financial (NTSC), (7) Golf Channel (NTSC), (8) "Open"; **(g)** Ku feed of California PowerVu bouquet had disappeared from PAS-2 November 4 and may not return (was a test); **(h)** (1) CCTV4 (NTSC), (2) CCTV3 (NTSC), (3) CCTV tests; **(i)** (1) CTN News, (2) CTN II Entertainment (conditional access), (3) TVBI HK and other feeds (NTSC), (4) Ad-Hoc (PAL), (5) Ad-Hoc (NTSC), (6) ABN, (7) CTN II, (8) CTN III; **(j)** Galaxy access requires subscription smartcard which works with intended DGT400 IRD and from reports with Panasat IRD520 as well. Without smartcard DGT400, IRD520 and perhaps SK888 will also access free to air programme preview channel (not always operating) and TVSN shopping channel. **(k)** (1) Disc. Aust/Nz, (2) Default, (3) Disc. Japan, (4) Disc. SE Asia, (5) Disc. Taiwan, (6) Disc. Philippines, (7) Disc. China.



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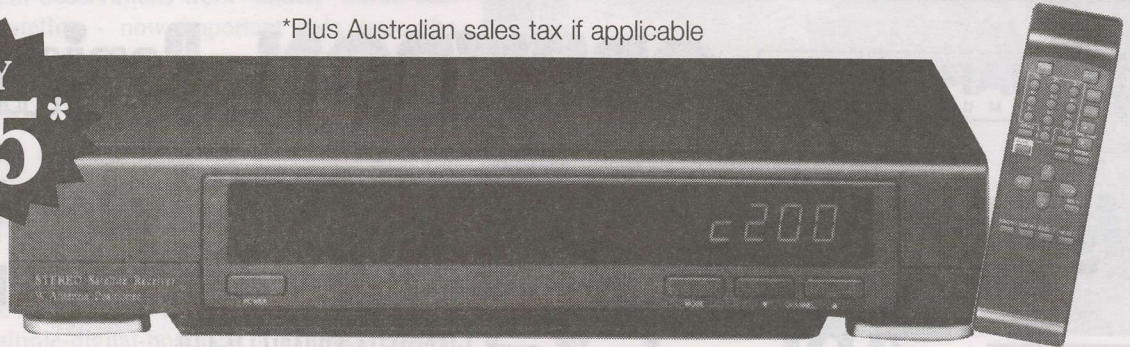


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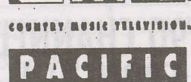
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WITH THE OBSERVERS

AT PRESS DEADLINE

Observer Robin Colquhoun (Auckland) using Super PowerVu reports increasing activity daily on Chinese MPEG bouquets reported this page; one service now running is in either Tibetan or Mongolian dialect. Individual uplinks seem to feature their own programming but all carry CCTV-4 national news daily, same time.

View From The 'Other Side'

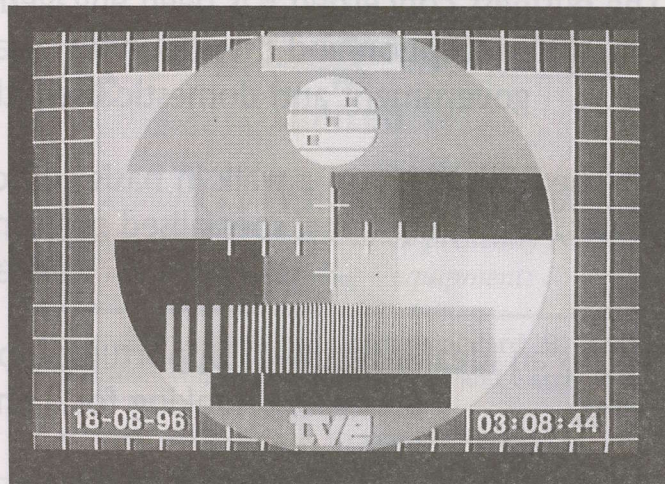
Reader **Gregorio V. Hermosa, Jr.** at Al Khod, Sultanate of Oman provides some valuable insight into the late June changeover of Palapa C1 to C2M at 113E. Previous reports have covered in depth observations from "under," north, east and south of the satellite - now important data from the opposite extreme of the C2M coverage area.

"Using GMA as a reference, we used to get perfect signals on C1 using a 10' dish, 20 degree LNB and low threshold receiver. Now GMA requires a 12-14' dish for the same quality. Using CNBC as a reference, On C1 I had P5 pictures on a 6.2' dish, 25 degree LNB and ordinary receiver. Now the signal has sparklies. However, from C1 to C2M ATVI, SCTV, MTV, TV Indosair, RTM are better than before while CNNI, Anteve and ABN are down from C1.

Appearance of multiple-digital-bouquets of Chinese regional TV appeared last week in December on AsiaSat 2 replacing previous analogue transmissions of Guandong TV (IF1310, Hz) and Henan TV (IF1430, Hz). By January 1 SF was counting 11 separate SCPC digital carriers (on a spectrum analyser) with a few showing programming. The announced plan is for each of 11 regional centers to provide their own TV service channel(s) to AsiaSat 2 and anyone within coverage range will be able to switch between the 11+ programming channels. What receiver? We understand the uplink gear is provided by Philips (they also provided MPEG uplink for NBC) and as we go to press the Nokia (software version 1.63) and Super PowerVu (see p. 31) are displaying three separate programme channels.

The possible significance of this important new group of Mandarin/Chinese (some in dialect regional to their area) programme channels is the potential of being able to offer a relatively simple single-dish, single-feed, single-receiver system to Chinese ex-pats living throughout the AS2 coverage zone. And - create more than a dozen separate programming channels for viewers. Three places to start your own tests: IF1323, Msym 8.398 and FEC 3/4, IF1431 and 1445, Msym 4.418 and FEC 3/4. If these services ultimately confirm to be DVB Compliant (tests seen to date indicate they are) and not CA, a receiving system for them will also produce the European Bouquet at IF1150 on the same polarisation. The package potential grows more interesting!

Observer **Joris Van Pelt** (Oman) reports ACT on 3875 from 85E P4 on 3m dish; E-TV (Teluga dialect) 4057 and CFI 4055



SPAIN RTVE, part of European Bouquet from AsiaSat 2 on 4000 MHz, horizontal.

from 66E. He also reports Home RTV (3845), ABN (3785) and ATN (4178) from PAS-4 at 68.8E.

Andrew Rajcher (Melbourne) found ERTU (Egypt) P5 on a 2.1m dish when they began telecasting early on the morning of 20 December from AsiaSat 2 (IF1510, Hz). Stories in Australian Egyptian community that ERTU "will encrypt" are verified after a fashion by Egyptian Consulate which says "within 6 months." Encryption could mean "digital" (which would seem like encryption to a consulate official), or it could mean exactly what it says. Stay tuned.

Tom Shaw (Werris Creek, NSW) reports an enlarged quantity of narrowband data signals on I513 (177W) on left hand circular as well as test carriers on Measat 2 (148E). He also reports Australian ABC has gone completely digital on B1 since 1 December and queries, "Does anyone know the Msym for (PowerVu) Net 10 on I511?"

In the strange but true department, an Australian observer with a B-MAC CDE2000 found HBO Asia movies on an Optus B3 transponder late in December - anyone else catch this one?

Stu McLeod (Napier, NZ) verifies changes in apparent Palapa C2 levels into Pacific with notation that RCTI (IF1409) is at TV3/RTM levels since moving to this new transponder. RCTI carries a significant amount of English language

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 February 15th issue: February 3 by mail (use form appearing page 34), or 5PM NZST February 4th if by fax to 64-9-406-1083.

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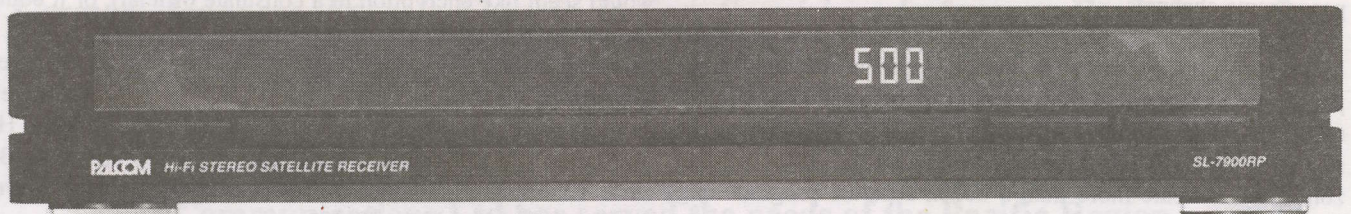
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THIRD - read (very carefully!) the February issue (SF30) for instructions and clues leading to your first formal contest entry.

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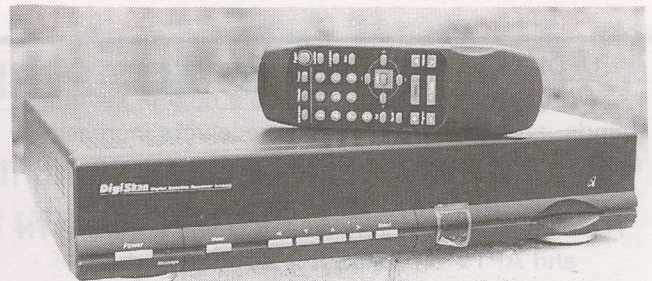
OVERVIEW - Skandia SK888

Version "1" of this new receiver is not perfect although it shows great promise. There were 100 of the "version 1" and by the time you read this "2" will be in the hands of many readers (due early January).

Our SK888 came out of the box after a four day air trip from Melbourne. Leon Senior at Skandia had begged us to "Take it out of the box, plug in the LNB line, the power cord and a monitor - and turn it on." We did precisely this, not even opening the (well written) manual nor touching the remote control.

Instantly there appeared MCM Music on programme channel 2 and by pushing the up arrow the receiver displayed RAI International, RTVE, TV5 and then DW in rapid succession. It does not get much more basic than that.

The SK888 from Sun Moon Star is the first generation of what will likely become during 1997 the "standard consumer MPEG IRD package"; receivers that arrive pre-programmed for at least one bouquet (if not several), ready to plug in and turn on. After struggling with the complicated instructions



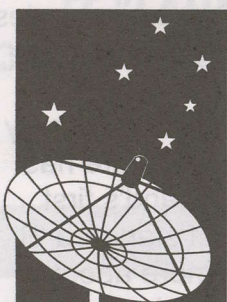
SKANDIA SK888 MPEG DVB receiver



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accompanying the Pace (DVR 500 et al), Panasat (IRD520), Nokia (in its many software formats) or PowerVu units - the SK888 is a welcome arrival.

Alas our unit provided faultless reception for two weeks and developed a video glitch - a video overlay that pulsed several times per second. Leon Senior told us that the only other failure out of 100 units shipped was a heat related problem caused by someone who deliberately tried to wrap the receiver in a blanket (all receivers require adequate ventilation - ours was not subjected to excessive heat and was installed in the air-conditioned cable TV headend). We unplugged it for 30 minutes and restarted - same result. Unplug for three hours and restart - and the problem was gone.

Bad points (the video artefact aside): No on-receiver LCD display of programme channel number and by our way of thinking if the Nokia can "do" WTN, APTV and others - so should this one. (Leon Senior advises they are "working" on this as well; we suggested that since it is all "software," the 'triple-8' ought to get us into FTA PowerVu too!).

Skandia advises version "2" units have an improved threshold (we tested ours and found it lost MPEG lock after the Panasat and DVR-500 had dropped out but before the NTL/DVM 3000) - 1.5 to 2dB better. That's good because small dish users in Australia will now have added "margin."

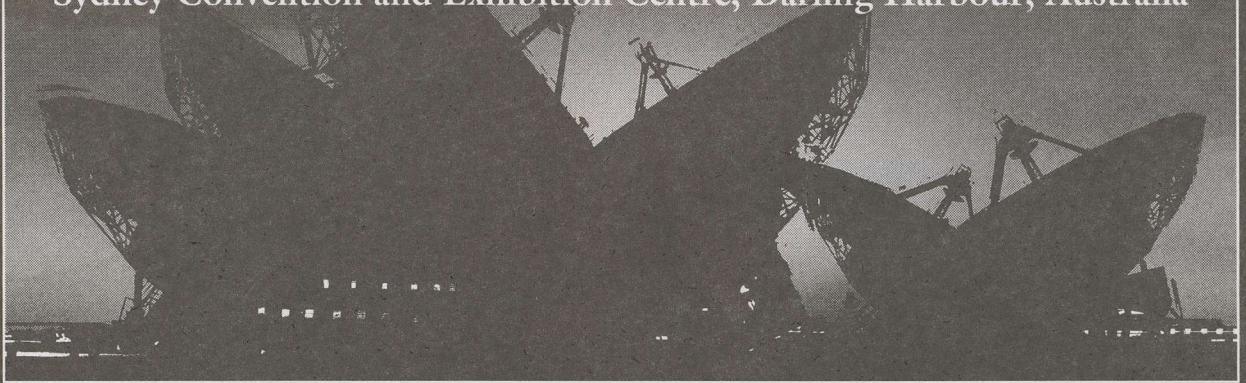
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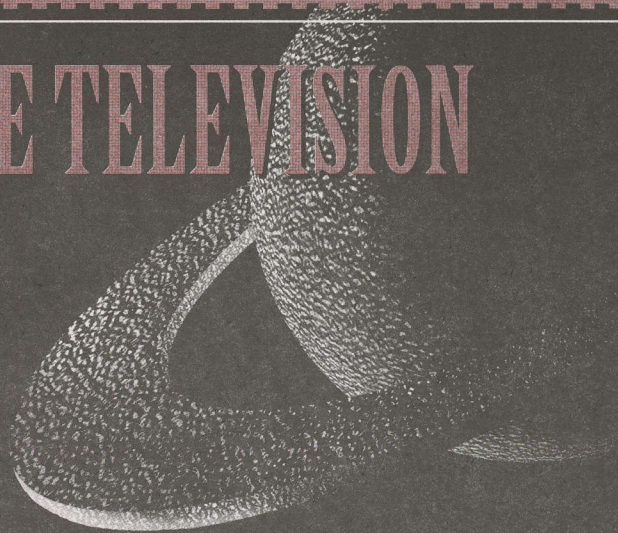
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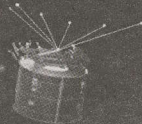
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