

MARCH 13, 1996 - 9:15 AM

Bob Cooper's

MARCH 15 1996

SatFACTS

MONTHLY



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

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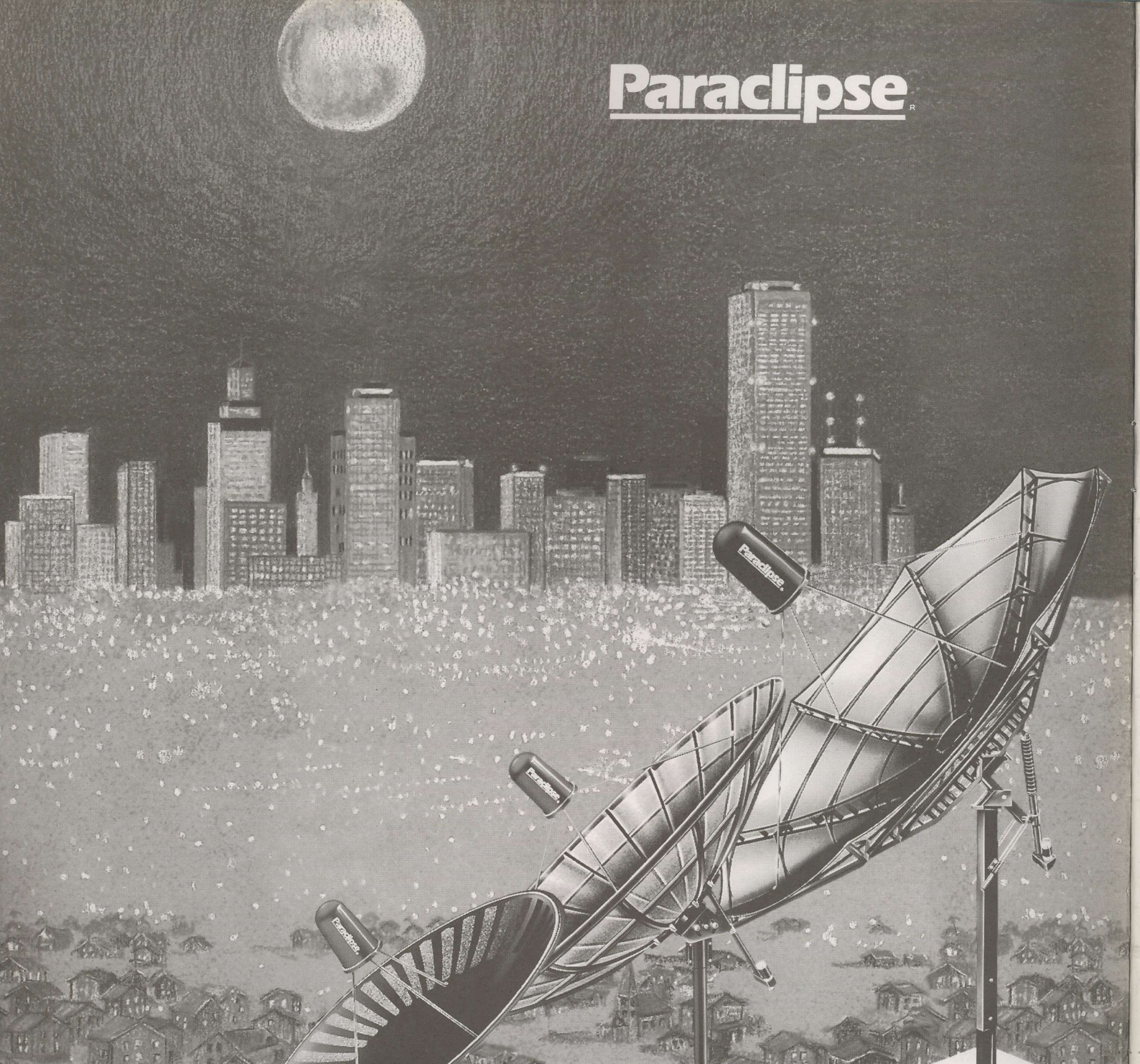
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NZ\$8/A\$9 ♦ US\$5



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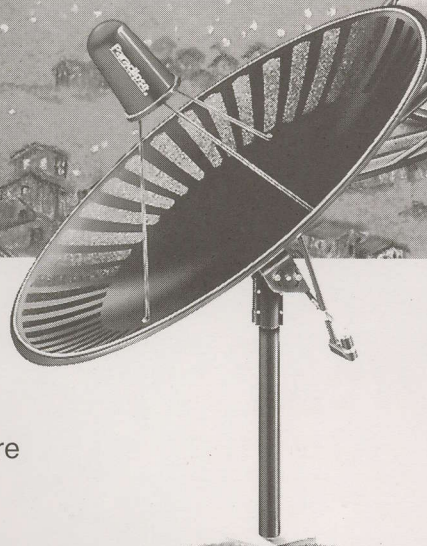


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SatFACTS Monthly is published 12 times each year (on or about 15th of each month) by Far North Cablevision, Ltd. This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries 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 the 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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Mail: PO Box 330
Mangonui, Far North
New Zealand

Subscription Rates
Within NZ: NZ\$40 p/y
Australia: AV-COMM Pty
Ltd, PO Box 225,
Balgowlah NSW 2093
61-2-9947-7417
Elsewhere: US\$40 p/y

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COOP'S COMMENT

In the extensive information packet handed out at SPRSCS '96 by German programmer Deutsche Welle appeared a detailed analysis of nine (largely European) electronic hardware manufacturers and the status of their DVB Compliant receivers. Many of us rushed home to write, call or fax the listed firms (each with a contact name) to ask the question of the day:

"When will you have DVB Compliant consumer receivers, and how much will they be?"

I created a suitable fax to each firm, said I owned a cable TV system here and as an official affiliate for the new DW Bouquet service would require ten receivers by 1 April (the extra 5 are for Barryvision in Auckland). One German firm responded within 48 hours, another in a week. Then I resent the original fax to the remaining 7 firms. Four weeks have now passed and I have no further responses.

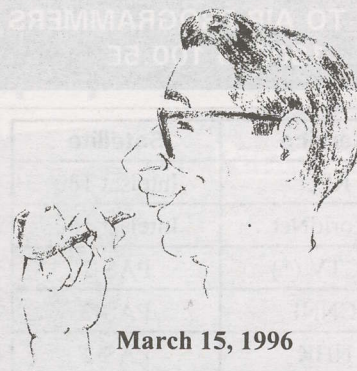
Quite independently I contacted seven other firms (not on the DW list) with the same basic text: "I want to purchase ten DVB Compliant receivers; now." Seven more no-responses.

My experience is hardly unique. Eric Fien in Australia, Steffen Holzt in New Caledonia, other readers in Japan, Malaysia, Tahiti are all chasing sizeable first-order quantities of receivers. Not one of these people reports a positive response from any receiver supplier.

The conclusion is inescapable. There is no such thing as a DVB Compliant receiver, today. There are PACE receivers (see page 9, here) with special model numbers going into Australia and South Africa; there is a very small production quantity of South African built Panasat (Panasonic) receivers there. A few people claim to have actually seen and touched advance production models from Philips and Grundig. And Scientific Atlanta (bless their hearts) is promising they will ship consumer DVB Compliant receivers (the D9233), "as soon as any broadcaster is actually using the DVB Compliant format."

Here we are in March (1996) with still no solid indication that consumer DVB Compliant receivers actually exist, much less are ready for shipment and sale in the Pacific and Asia. I worry for the April 1 start date for the European Bouquet: I ponder the likelihood that STAR TV's Japanese and Indonesian As2 programming "clusters" will launch anytime in April, as announced.

MPEG problems are everywhere. An advisory to Discovery Channel cable affiliates states, "We have recently experienced a few problems in regard to installation of digital equipment with the Latin American network." Their PAS-2 migration from PAL B-MAC to GI Digicipher 2 has now been "postponed until the middle of the year" from 1 March. I am no longer optimistic we will see DVB Compliant receivers available for consumer use much before October-November. This certainly ruins my own planning, but I am adjusting. I hope you can also adjust as well; you have little choice.



March 15, 1996

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-ON THE COVER-

First an apology - to the balance of the Pacific-Asia reading audience! At close of SPRSCS '96, a banner created by Bay Satellite TV was pressed into service for this cover photo (alas, nobody from Bay Satellite was available at photo time!). Left to right, David Horne (Tauranga), Nigel Clough (ECS), David Norrie (Uniden), Grant Everleigh (Signal Master), Selwyn Cathcart (Telsat), Gay Cooper, 'Coop', Wayne Fraser (Timaru) and unidentified volunteer. More photos page 13 ; photo by Steve Johnson.

**FREE TO AIR PROGRAMMERS
180E to 100.5E**

Service	Satellite
RFO	Intelsat 180
WorldNet	Intelsat 180
CCTV (*)	PAS-2
CNNI	PAS-2
NHK	PAS-2
ANBC	PAS-2
Moscow 1	Gz 145E
ATN + Prime	Gz 142.5E
JJAY	Gz 142.5E
Eagle Net	Gz 142.5E
EM TV	Gz 142.5E
Moscow 1	Gz 140E
Saudi Arabia	Gz 140E
RAJ-TV	Gz 130E
Sun Movies	Gz 130E
AsiaNet	Gz 130E
Sun Music	Gz 130E
RCTI	Palapa C1
RTM/TV1	Palapa C1
TVRI	Palapa C1
Canal France Int.	Palapa C1
Australia Int.	Palapa C1
ANBC	Palapa C1
TV-3	Palapa C1
Asia Bus. News	Palapa C1
SCTV	Palapa C1
An-Teve	Palapa C1
GMA	Palapa C1
TV Indostar	Palapa C1
TPI	Palapa C1
MTV Asia	Palapa C1
Gold Net 9	Palapa C1
Star TV	Palapa C1
Moscow1/1472IF	Gz 103E
CCTV	AsiaSat 2
RTPi	AsiaSat 2

* / MPEG digital but no programme use fees.
Bold face (i.e. JJAY) only viewable latitude 20S north.

**PROGRAMMER
PROGRAMMING
PROMOTION**

UPDATE

MARCH 15, 1996

We can now reveal identity of 5th programmer in DW sponsored "European Bouquet" service due up As2 TR10B in April. It is MCM International, 24 hour music video service originating in France. MCM programmes 30% French pop music, balance is "international" with strong English language content. Yes, it will be free to air. Now, this one could sell substantial quantities of DTH dishes in PacAsia!

RTPi (Portugal) on As2 seems to have cleared most problems with erratic video and audio quality; and, signal level now is identical to other analogue services on satellite. They are scheduled to switch to a Saudi Arabia uplink (and Ku Eutelsat feed) from present temporary Macao uplink (tracking Stationar 12 on C-band) sometime after 15 March. You will know this has happened because a second audio subcarrier near 7.2MHz will appear after the switch.

CCTV service on As2, perhaps courtesy of "deal" with Murdoch's News Corp, is FTA in PAL format on TR9B (1183IF). How long? Nobody is saying analogue is permanent; service is real-time parallel to PAS-2 MPEG feed which of course requires expensive IRD. CCTV As2 levels into eastern Australia make home DTH service on 1.8 & 2.1m dishes practical; sales to Chinese origin Australians now booming. Down the track a ways: CCTV wants to programme 6 separate programme channels simultaneously, world-wide. Their present As2 transponder could handle all 6 in DVB Compliant MPEG if they chose to do this. Nearer term - CCTV plans to start a 24 hour English language service using a new programme channel out of Hong Kong as soon as May. Any IRD that receives CCTV on PAS-2 will automatically also receive the new English programme service. No word about it being on As2 as well.

The Filipino Channel (TFC) now being carried by New Zealand's Far North Cable TV in six month marketing trial via PAS-2 Digicipher MPEG 1.5 feed. TFC is providing extensive marketing assistance in attempt to build viewership of 30% English / 70% Filipino language programming in what is essentially English-only viewing



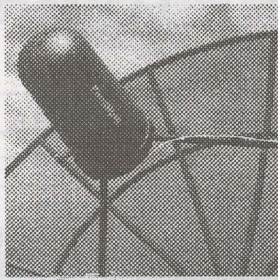
Plenty of variety on TFC 24 hour schedule

area. The service is anxious to establish other cable TV outlet marketing trials in the Pacific region (Patricia Daza, tel. 63-2-921-3759; fax 63-2-924-2732).

BBC World should now be operating full-time on PAS-4, FTA

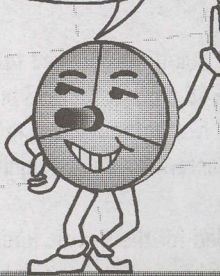
Stronge signals department. New Russian Altair data relay satellite is at 76E while next launch will be to 167E. Both have C-band (plus lots more) on board.

USA audio only. SCPC reception (SF#13, 14) from US RCA C5 (139W) is loaded with SCPC on TR3V (1378-1405IF) and 21V (1032-1044IF). You might not have enough signal to resolve TV pictures, but SCPC requires far less signal to recover quality audio. Happy hunting.



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**FREE TO AIR PROGRAMMERS
100E to 40E**

Service	Satellite
Moscow 1	Gz 96.5E
CCTV	Gz 96.5E
Azerbaijan TV	Gz 96.5E
India 1/1025IF	Insat 2C 93.5E
India 2/1060IF	Insat 2C 93.5E
India 3/1420IF	Insat 2C 93.5E
Moscow1/1476IF	Gz 90E
Moscow2/1276IF	Gz 90E
TVi	Gz 85E
TV4 Vietnam	Gz 80E
TV6 Moscow	Gz 80E
2 X 2	Gz 80E
Movie Club	PAS-4 (68.5E)
Asia Bus. News	PAS-4
ESPN	PAS-4
Sony Entertain.	PAS-4
CNNI	PAS-4
TNT/Cartoon	PAS-4
Jain Satellite TV	PAS-4
MTV Intern.	PAS-4
BBC World	PAS-4
WorldNet	Intelsat 66E
E TV	Intelsat 66E
Discovery	Intelsat 66E
TV India	Intelsat 66E
TV India	Intelsat 62.9E
Asia Bus. News	Intelsat 62.9E
Zee TV News	Intelsat 60E
Ethiopian TV	Intelsat 57E
ORT1	Gz 53.2E
RTR/MART	Gz 40E
RTPi	Gz 40E

Intelsat 800 Series Launch Update

February failure of Long March 3B rocket launch for Intelsat VII-A-2 creates delays for new 800 series satellites. 801 to 174E now rescheduled to October; 802 to 177E to January 1997 (both via Ariane). With present 701 at 177E to replace 511 at 180E, this is also pushed back to late 1996.

See page 23, here.

**HARDWARE
EQUIPMENT
PARTS**

UPDATE

MARCH 15, 1996

AsiaSat 3 will be new Hughes HS601IIP version satellite with late 1997 launch to 122E. Contrary to their first announcement, Australia is now included in C-band footprint coverage while Ku beams will be directed towards India, China plus a steerable "spare." Capacity is 28 C and 16 Ku transponders.

Japanese N Star B replacing aged Sakura 3B at 136E due on station shortly; 6 C-band, 8 Ku and 11 Ka all boresighted Japan.

Russian Express satellite, second in series, could be showing up at 80E at any time (launch was scheduled for 18 February). Satellite has 10 high power C, 2 Ku transponders (SF#10).

Possible Ku USA-Direct source? Tempo 1 satellite, quietly announced for June/July launch on Russian Proton, will go to 166W/194E. This is Ku DBS bird with 32 transponders each 24 MHz wide at 107 watts each. No footprint maps released, but from this location it could easily cover Pacific and eastern Asia with significant levels. Tempo is owned by USA cable giant TCI.

Ku DBS searching. If there are Ku DBS signals headed for the Pacific (present DBS satellites serving USA are at 101.2E; too far east to see here), you may need some minor adapters to your present antenna system. Astrotel (17906 Crusader Ave., Cerritos, Ca. 90701; fax 1-310-403-7040) makes a C + DBS-Ku model feed. Why won't a standard C + Ku work? Polarity; present DBS birds in USA use right and left hand circular so as to collocate identical satellites at same orbital spot, each supplying programming on opposite (circular) modes. Alternately, a USA DBS system comes as a "package" with a .5m dish. And a .5m dish is very unlikely to be large enough out here; A 2 to 4m, on the other hand, might work on the newer DBS satellites. To adapt the DBS Ku feed + LNB to your larger Ku rated dish will require a way to mount the DBS-package supplied LNB and feed. AVCOM of Virginia (not to be confused with ...) has an adapter kit to reinstall (low cost) DBS LNBs on larger prime focus dishes. Price is US\$39 plus optional US\$19 for an adapter mounting plate (Avcom of Virginia, Inc., 500 Southlake Blvd, Richmond, Va. 23236 USA).

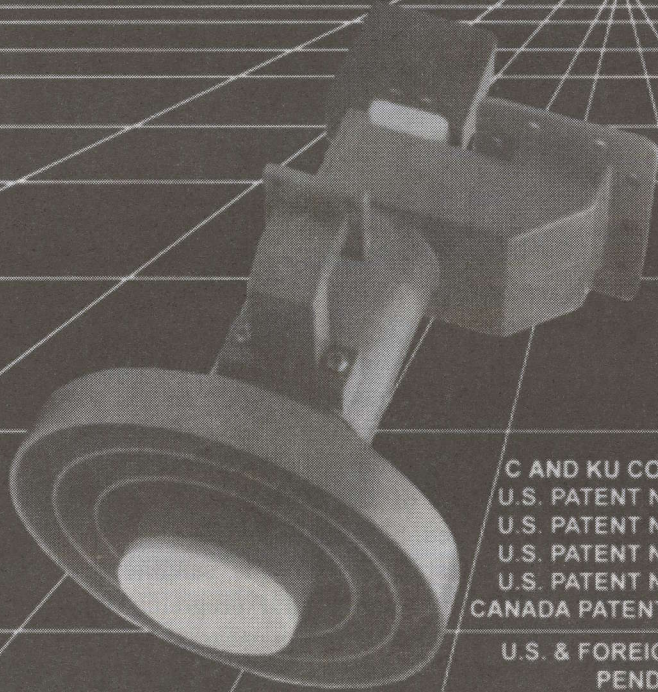
Parclipse has upgraded their chain drive (CD) horizon to horizon gearbox by switching to the Venture motor and Sipco gearbox. The new package allows the dealer to maintain the gearbox and the motor separately; the previous unit was one piece and required complete replacement if either failed. An upgrade kit for 3m size antennas is available; contact Bay Satellite TV for information.

PAGE MPEG receivers - getting the right version. Model DVR-500 used for South African MultiChoice is, like Australian version DGT-400, built around Iredeto conditional access using a PCMCIA interface. DigiStar system on AsiaSat 2 will use NDC integrated system. The two are not compatible for conditional access authorisation purposes although an Iredeto unit will function for at least some (perhaps most) "open key" MPEG-2 transmissions. Arranging to get a model in from South Africa for As2 "testing" is not advisable! (See report page 9, here.)

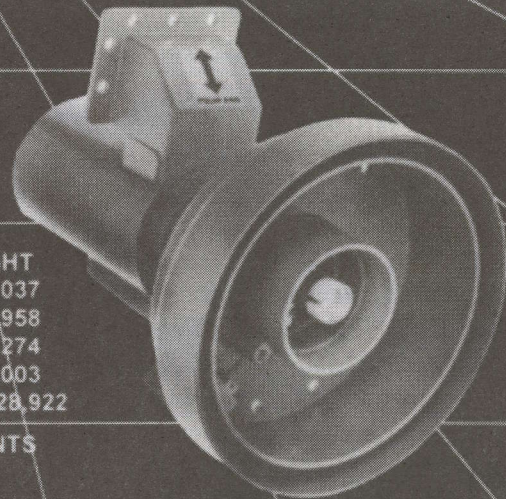
SA's new DVB Compliant receivers: Commercial 9223 version replacing 9222 scheduled for shipment into Pacific by mid-April with US\$1,695 list. New consumer style 9233 has probable NZ/A\$ pricing in range of 950 plus tax and shipping charges. Commercial version has user adjustable bandwidth from 2 to 36 MHz, the consumer version is fixed bandwidth, apparently 27 MHz. Delivery on consumer? One source says "mid-May" while second believes "Late may to end of June." Last shipment of non-DVB model 9222 scheduled into New Zealand shortly after March 15.

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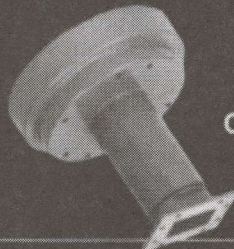
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THE EUROPEAN BOUQUET and OTHER FTA SERVICES

There is a war underway out there in near space directly above the equator; a war for control of information dissemination. Rupert Murdoch is one of the protagonists and his News Corp empire very much intends to dominate as much of the geostationary arc as possible by the year 2000.

Writing in DW tv for March, Dr. Hans-Dieter Godtmann (Technical Director, Deutsche Welle satellite network policy) notes:

"AsiaSat 2 has a position in orbit which has never before been occupied. Entirely new programmes will be transmitted via satellite. These transmissions cannot be viewed in Asia (and the Pacific) at present, and whoever wishes to receive them will need to buy a new satellite receiver (with an appropriate antenna).

"DVB or Digital Video Broadcasting, is a European project sponsored by more than 180 partners from 18 countries. DVB defines the necessary standards to introduce digital television service and it is based upon the MPEG-2 world standard which defines the (digital) coding of video and audio signals."

DVB Compliant receivers are simply (newly designed) digital receivers created to function with DVB format digital transmissions (see page 9, this issue). Eighteen European countries came to the rational conclusion that lacking a "standard" for digital transmissions, the world would flounder under an endless number of customised transmission variants, each of which could require its own specially designed receiver (see SF#17, p. 6). If each viewer was forced to purchase a specialised receiver to receive each of the various possible digital formats, the growth of digital satellite television world-wide would be seriously at risk. By coming to a common ("DVB Compliant") set of standards, used ultimately by all of the world's satellite broadcasters, a single receiver design (manufactured by as many different manufacturers as chose to enter this field) would be able to receive any digital transmissions available.

The first satellite programmer to announce plans to make programming available in the Pacific-Asia (PacAsia) region using digital techniques was STAR TV (Hong Kong). Star said, in October of 1994, it would use transponders on AsiaSat 2 to broadcast both free to air and pay television programming. Buried in the fine print of the announcement was a casual reference to "DigiStar," the name STAR was giving to the new

transmission format. What they neglected to explain at the time or even subsequently was that DigiStar was not going to be DVB Compliant.

Dr. Godtmann:

"Deutsche Welle had every intention, when leasing transponder space on As2, to be a 'programming partner' with STAR. This, after all, made eloquent sense: They would be free to air (for some programme channels) on As2; so would DW. Logically, any receiver that could receive STAR should also be able to receive DW.

"Alas, all of our efforts to reach an agreement with STAR were in vain. We have made an intensive effort in this direction, but STAR TV has turned us down for purely commercial reasons, just as it turned down other potential business partners."

STAR's "commercial reasons" have not, to date, been explained by STAR management. Nor have detailed plans for their use of the As2 STAR held transponder space been detailed. STAR owns rights to 8 C-band and 3 Ku band transponders on this satellite; sufficient "room" for 50+ C-band digital programme channels. What STAR has announced suggests strongly that the As2 service will be totally unlike their present AsiaSat 1 programming packages. The As1 programming combines five free to air plus one pay (analogue encrypted) service channel on each of two footprints; "northern" (China) and "southern" (India, Malaysia + Indonesia). The English language transmissions are near-identical on both beams.

In April (some say June) STAR is scheduled to begin digital programme delivery to target markets using As2. A Japanese "programme package" will be marketed to Japanese cable, SMATV systems while an Indonesian package will separately be broadcast. Some of the English language programming will appear in both "clusters" but the majority of each package will be in the language native to the intended marketing area. A Mandarin (Chinese) package is being developed as well. Because of the wide coverage area of As2, virtually any proper sized dish equipped with a STAR TV IRD will be able to access these packages (following conditional authorisation approval) at any point within the As2 footprint.

To transmit the 15 programme channels which STAR TV has announced it will make available into Indonesia will consume two-plus C-band transponders. It is likely that the Japanese and Mandarin service packages will also require upwards of 2 C-band transponders each.



Dr. Hans-Dieter Godtmann, Technical Director
DW Satellite Network Policy

Thus these three languages could together use all 8 of the STAR TV As2 transponders available. However, more likely is that at least one of the Japan / China service packages will be distributed using STAR's trio of Ku band transponders on As2 which means there is room remaining on C-band for a fourth package of programmes.

STAR has negotiated working agreements with several lesser countries in the As2 footprint: Malaysia and The Philippines remain likely targets for a fourth programming "cluster."

None of this worked to the benefit of DW which first sought to become a participating partner in the STAR Asia-Pacific package and then "tried in vain" to become at least a "technical partner" for the DigiStar digital TV format.

Dr. Godtmann:

"Now that it has become impossible to 'jump on the bandwagon,' we must try harder to distribute our programmes in other ways. Our first level of 'customers' are, above all else, institutions: Rebroadcasters, cable networks and hotel chains interested in Germany and our programming. We had sought to make our programming available to the second level, individual homes (DTH), through an accommodation with STAR TV."

It is the second level which presents the greatest present challenge to DW. They now realise that AsiaSat 2, virtually controlled by STAR TV, is not going to be a point in the sky from which hundreds or even dozens of free to air services radiate. Rather, through the STAR national programming clusters intended individually for

Japan, Indonesia and China it will basically be a "closed shop." Access to any of these clusters will require purchase of a STAR "approved" DigiStar receiver (a PACE developed and manufactured IRD) and then the conditional access (approved turn on) of each such receiver. STAR has repeatedly warned that it will attempt to police conditional access approvals (turn-ons) in a way that curtails use of programming clusters beyond their intended service areas. In other words, if you want access to the Japanese cluster, it will be necessary for you to obtain a PACE IRD that clandestinely perhaps has a location (physical address) at some point within Japan. STAR insists they will not knowingly authorise use of the Japanese cluster in say New Zealand or Fiji. The same policy will rule for use of the Indonesian or Chinese clusters as well.

There will be tens of thousands of PACE IRDs with clandestine addresses.

For DW, a person purchasing a PACE IRD for use by any of the cluster groups would have been the best of both worlds; access to the cluster itself (through conditional access) and access to the DW sponsored "European Bouquet" at the mere touch of the IRD remote control button. It was not to be.

Dr. Godtmann:

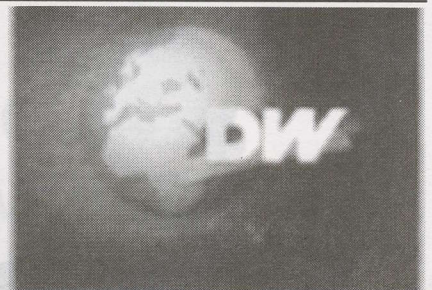
"An integration into the popular STAR TV system would have helped Deutsche Welle in marketing its programmes in Asia. It is technically possible (for the same receiver) to access both 'scrambled' and 'unscrambled' transmissions (1)."

European Bouquet: Launch Format

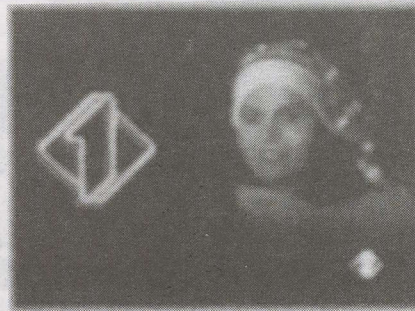
To spread the cost of the As2 transponder, DW had to walk a thin line between restrictions placed in its contract at the request of STAR TV and its need to develop additional transponder users who could cover a portion of the transponder costs. Any pay television programmer was automatically excluded by the terms of the STAR TV agreements with AsiaSat; FTA commercially sponsored programmers were in a grey area. Ideally, Deutsche Welle would find programming partners funded by the same sort of national government funding which makes DW work.

Additionally, the DW "bouquet" must represent a broad cross-selection of European cultures and each of the programming partners needed some ethnic, cultural or commercial reason to want to reach into Asia and the Pacific. Equally important, the partners had to be able to locate funds in their own internal budgets to pay the added cost of sharing the As2 transponder.

1/ In a sense all digital transmissions are "scrambled." In this statement, Dr. Godtmann is referring to 'open-access' and 'conditional access' transmissions of which his European Bouquet is the former.



From top: TV5 France is Anglofone (French Canadian) overseas service; MCM is French (30%) & English music video; Deutsche Welle is overseas broadcasting department of German federal government; Bottom, (R)TVE is Spanish national television service while RAI Uno is government operated Italian national service. (Our apology for the lack of quality on the 'ident' photos displayed.)



The ultimate mix for what DW calls "The European Bouquet" is shown here. Programming for each (with the exception of DW and MCM) is nearly 100% in the native tongue of the originating country. This means French, Spanish, Italian and German. MCM, the music video channel, represents the best musical efforts of the French (approximately 30% of videos played) plus a world-wide sampling that includes top US and European hits as well. Those who have seen this service rate it highly and here in the Pacific it may become a significant reason for dish sales especially in clubs, pubs and public gathering spots.

Deutsche Welle already allocates 12 hours per day to German, 10 hours to English and 2 to Spanish. The daily English programming covers news, current events, sport reports, travelogues and history (see sample here). A study of computer aided crime (1700) and a study of 240 murder cases (20:30) highlights the second half of the March 14th schedule. Because of the DW "bouquet" initiative, television viewing will never quite be the same for tens of thousands of Asia and Pacific homes. Now, all we need are the receivers!

Half-Day Sample of DW English Language programming for March 14, 1996

Time / UTC	Programme
0000-00:30	Journal (news)
00:30-0100	Close Up
0100-01:15	Journal (news)
01:15-0200	Boulevard Germany
0500-05:30	Journal (news)
05:30-0600	Made in Germany
0800-08:15	Journal (news)
08:15-08:30	Treasures of the World / Stonehenge
08:30-0900	Inside Report
0900-09:30	Made in Germany
09:30-1000	Eco-Echo (Environment)
1200-12:15	Journal (news)

TV5 Europe, 174 Rue de l'Universite, F-7507 Paris, France (tel 31-1-45560080; fax 33-1-44180655).

Has teletext (info page 300) but it may not be compatible with your teletext. 24 hours.

MCM, 78 Av. Raymond, Poincare, F-75116 Paris, France (tel. 33-1-45001301; fax 33-1-45001273). 24 hours.

Deutsche Welle (DW), Postfach, D-50588 Koln, Germany (tel. 49-221-3890; fax 49-221-389-2777). 24 hours.

(R)TVE, Radiotelevision Espanola, Torespana o'Donnell 77, E-28007, Madrid, Spain (tel. 34-1-3464000; fax 34-1-3469751). Hours 0600-02:30 UTC. Has teletext (info page 438).

RAI Uno, Italia Uno, Palazzo del Cigni, Segrate 20090, Milan 2, Italy (tel. 39-2-216001; fax 39-2-2138019). 24 hours.

GALAXY and OTHER MPEG RECEIVERS

A Galaxy-intended PACE DGT-400 MPEG-2 digital receiver was provided to SatFACTS early in February by an Australian reader. We had the unit 48 hours before returning it to its owner. We can report:

1) On our 2.1m dish it refused to process the Optus B3 Galaxy transponders (no surprise here; our carrier to noise ratio is barely 4 dB);

2) With modest effort using the handheld remote control and on screen menu prompting we found it could easily be reset to receive the STAR TV AsiaSat 2 MPEG test signal on C-band. Also no surprise here since the STAR tests at that time were running "open key" and no conditional access was running. Basically, this was free to air digital and all you required to tune in was to set the receiver's digital parameters to match those of the transmitted test signal.

That is basically what DVB compliant means: Either by receiver initialising set-up, or automatically on instructions within the digital data stream, the receiver finds the correct transmission parameters and matches them. Once done, this produces digital (DVB Compliant) video and audio.

STAR TV says their actual MPEG-2 signal delivery will include conditional access; you will not be able to set up the parameters on a receiver (such as the Pace DGT-400) and tune-in 'FTA.' There will be an intermediate step of having your specific receiver "authorised" through the data stream and this will only occur after STAR is convinced your receiver is located in a region where the specific data stream you are requesting is intended to be viewed. As a practical matter, if you want into the Japanese data stream, you will require a receiver imported from Japan with a Japanese "address." For Indonesian service, or China service - same story, new address. It is unlikely you will be able to use three separate addresses for the same receiver and not get caught (i.e., one in each country). And if you do get caught? STAR will simply shut off your particular receiver; no STAR police are likely to

knock on your door in the dead of night demanding you give up "the box."

Purchase Order: 10 DVB Compliant Receivers

With the assistance of the technical department at Deutsche Welle SatFACTS ran down ten firms claiming they were in the DVB Compliant receiver business. To each we sent a fax that attempted to order 10 of their receivers for cable TV use in New Zealand. We explained our Cable Affiliate status with Deutsche Welle, our need for receivers for each of the European Bouquet service channels at two cable headends. And we said we would wire transfer funds if they could provide receivers by 1 April; the projected start date for the European Bouquet. We received two answers; a 20% rate of return. Neither wanted our order, now.

"We are presently developing DVB/MPEG2 receivers in line with the MMBG Germany standards. We will have prototypes ready by the middle of 1996 and will start production most probably in October."

"Depending upon the type and quantity we can also produce modified versions."

So answered Peter Lepper, Managing Director for TechniSat in Germany. In our purchase order faxes to each we also mentioned a need for quantity 10 MPEG-2 receivers for the STAR TV service. Although "word on the street" has been that PACE has this one sewn up (or perhaps, Star's News Corp owner has PACE sewn up!), we figured it wouldn't hurt to dangle an order for 10 additional (STAR TV format) receivers in front of the ten firms.

"We feel that STAR TV products are proprietary types of the Murdoch group of companies and we are unable to obtain a licence for this version. If you happen to learn the technical parameters of this particular transmission format, will you be so kind as to let us have it?"

Right-on Peter.

Service	Modulation	FEC / forward error correction	Reed Solomon	Video bit rate	Mono audio bit rate	Stereo audio bit rate	Data channel maximum bit rate	Symbol rate
Deutsche Welle	QPSK	3/4	188/204	8.0 Mbit/s	128 kbit/s	2 x 128 kbit/s	225 kbit/s	28.125 kBd
As2 Star tests	QPSK	1/2		8.0 Mbit/s	?	?	?	28.800 kBd

STATUS: DVB Compliant Receivers for use with European Bouquet Service on As2

Company	Model Number	Price	Symbol Rate	Video bit rate
Grundig	DTVR 1000 S	unknown	depending upon channel bandwidth	unknown
Kathrein KG	UFD 250	DM 1,500	20 - 30 MBd	up to 15 Mbit/s
Nokia Consumer Electronics	DVB 9500S	unknown	1 to 45 MBd	1.5 to 15 Mbit/s
PACE Micro Technology	DVS 200	unknown	15 to 30 MBd	up to 15 Mbit/s
Philips	DSI / DST	approximately 1,000 DM	18 to 30 MBd	up to 15 Mbit/s
Sony	unknown	approximately US \$700	22 or 27.5 MBd	unknown
Technisat SAT TV	DVB-S 2000	unknown	unknown	up to 20 Mbit/s
Wegener Communications	DVR 2000	US\$2,870	unknown	1.25 to 1.462 Mbit/s
WISI	ISD 2100	DM 975	2 to 30 MBd	unknown
Scientific Atlanta	D9233	under US\$1,000	unknown	unknown

Meanwhile in South Africa

Although Australia's Galaxy lays claim to being the first "satellite delivered to home MPEG digital television service" that is not an accurate statement. The North American Hughes owned DSS service began to-home delivery using MPEG digital in June of 1994. More recently, the South African MultiChoice Dstv service inaugurated MPEG-to-home service using Ku band transponders on PAS-4 at approximately the same time as Galaxy in Australia.

MultiChoice offers 16 programme channels to dishes that are typically 1.2m or larger in size across most of southern Africa. There are two receiver suppliers to this programme package at this time: Pace with their model DVR-500 model and Panasonic with their Panasat (digital) IRD. MultiChoice, like Galaxy, has chosen the Iredeto encryption package for conditional access and subscriber management. If Australia has had serious problems with both receivers and the conditional access system, MultiChoice has been experiencing a disaster. Correspondent Michael Cookson writes:

"The picture exhibits a high level of graininess which pulsates annoyingly in the stationary background of slow changing scenes, as the MPEG 2 compression circuitry tries to figure out if the picture content has altered at all.

"The Iredeto manual states that 16 (programme) channels were intended to be compressed onto three half-transponders (or, the equivalent of 10.6 programme channels inside of 54 MHz). Presently, only two transponders are being utilised (12.517 and 12.544 GHz horizontal) resulting in a compression ratio of 5.3 to 1.

The frequency and number of artefacts currently ruining the broadcasts would not be acceptable if they were (now) charging a subscription fee. Two months ago I accepted these visual and aural blemishes as still being a part of the debugging process. Now they have become extremely irritating. The video initially just seemed to break up into coloured squares while the audio gave a loud high pitched squeal which immediately woke up my cat.

"Now the picture just freezes (or goes blank) for a second or two and then the returning scene jumps forward when the system catches up. They do seem to have corrected the audio squeal; now my cat gets a decent nights sleep."

Cookson reports that neither the PACE DVR-500 nor the Panasat seem to handle the transmission problems any differently; a strong argument that the problems originate with the Iredeto uplink equipment. This is verified by talking with other early users of MultiChoice; the problems occur simultaneously across the full installed receiver universe, ruling out downlink reception abnormalities.

PACE DVR-500 receivers are assembled in the UK and flown to South Africa by freighter; as many as 13,000 in a shipment. Panasat receivers (by Panasonic) were being assembled in a new factory at Parow in Western Cape until December. Then a fire destroyed a large part of the facility putting Panasonic out of business until very recently.

The Panasat unit had customer acceptance, the DVR-500 did not and Cookson analyses why.

"Overheating problems seem to be plaguing the PACE IRD unit. Four out of every ten units unpacked after shipment from the UK die within 30 minutes time. The first one I acquired went faulty in ten minutes (it became

so hot you could literally cook an egg on it). The replacement runs so hot that it could easily be a backup emergency hotplate but apparently as hot as it runs it is just enough below egg frying temperature that it somehow continues to function. And function is a misnomer: It is slow to deliver new channels when you direct it to do so and has a number of operational bugs. Everyone I talk to has the same story so my unit must be 'operating as intended.'"

The Panasat unit has the same Iredeto created artefacts but none of the overheating or slow to respond problems of the PACE. Cookson notes:

"When Panasonic had their December fire they were 25,000 units back ordered. Pace attempted to bridge the gap with an emergency shipment of 13,000 DVR-500s. The public elected to wait for Panasonic to get back into production and 45 days later PACE still had 10,500 of their emergency units in a warehouse."

To the South Africa experience to date we would add that Galaxy's problems with Iredeto and subscriber management (i.e., individual subscriber authorisation through the data stream) has been less than exemplary. Galaxy ran "open key" during January and February; a subscriber could pull out his or her decoder card and the pictures stayed on the screen. Galaxy admits their authorisation computer has been having problems keeping up with the newly installed units in the field and thus they have simply turned off the conditional access routine.

The South African level of consumer acceptance is difficult to quantify. For all of the reasons summarised here, MultiChoice elected not to charge a monthly subscription fee for a very long period of time (the status of charges is unknown at our publication deadline) which simply means people have received artefact filled reception without charge. Cookson complains about the proposed monthly charges which he rates as "exorbitant" but provides no actual currency numbers. He further complains MultiChoice receiving packages are "extremely high" and notes, "If the price of a MultiChoice system was cut in half, it would still be twice as much as a quality analogue system." South Africa maintains some of the largest import duties in the world today to protect local manufacturers (a TV set has a 60% import duty). This suggests that PACE receivers there are pegged to the selling price of the locally made Panasat units which further suggests PACE makes (far) more profit per DVR-500 being shipped into South Africa than say a DGT-400 shipped to Australia.

Meanwhile Galaxy's marketing plan in Australia has run aground. By offering a complete Galaxy installation for a token A\$19.95 or \$39.95 Galaxy has been swamped with orders. Unfortunately, for each A\$19.95 - 39.95 taken in, Galaxy spends upwards of A\$1,000 for the equipment and installation. Galaxy discontinued to virtually-free install early in March and raised monthly fees as well.

CONTACTS: DVB Compliant Receivers

Grundig: Mr. Ekkehard Schmider (tel. 49-911-703-8158; fax 49-911-703-9207). Prototype units are reported (unconfirmed) to be in Australia.

Kathrein KG: Mr. Brandstadter (tel. 49-8031-184-288; fax 49-8031-184-398). Advises UFD 250 not available until 2nd half 1996, price not determined.

Nokia: Dr. Christian Heintz (tel. 49-211-90895-469; fax 49-211-62-4641). In January claimed units could be shipped April/May 1996 but failed to respond to SF equipment order.

PACE Micro Technology: Mr. Andrew Bone (tel 44-1274-537-082; fax 44-1247-532-010). Model DGT-400 now in Australia for Galaxy, model DVR-500 is sold in South Africa. See text.

Philips: Mrs. Hecht-Nolle (tel 49-40-2852-1531; fax 49-40-2852-1502). In January claimed shipping "early 1996"; failed to respond to SF equipment order.

Sony: Mr. Peter Buchner (tel. 49-711-5858-210; fax 49-6592-4910). Sony may be confusing their US-sold DBS version with the DVB Compliant format required for the European Bouquet. They do not seem to be dealing outside of USA at this time.

Technisat SAT-TV Products GmbH: Mr. Peter Lepper (tel 49-6592-7126; fax 49-6592-4910). Responds "prototypes middle 1996, production October 1996."

Wegener Communications: Mickey L. Hudspeth (tel 1-770-623-0096; fax 1-770-623-0698). They may know how to build DVB Compliant, are unlikely to ever do so except for total system orders.

WISI: Mr. W. Rehbaum (tel. 49-7233-66240; fax 49-7233-66377). In January claimed delivery 4 months after receipt of order however failed to respond to SF equipment order.

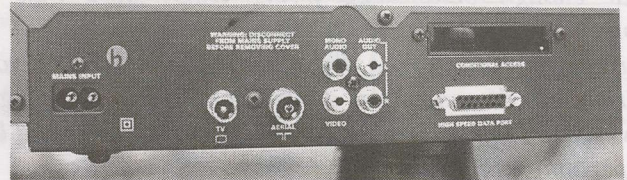
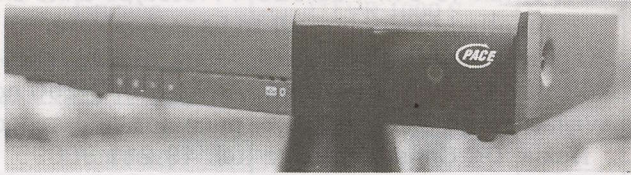
Scientific Atlanta: Steve Dean (tel. 61-2-452 - 3388; fax 61-2-451-4432). Tells NZ D9222 (old style IRD) distributors, "We will ship consumer D9233 when somebody is transmitting DVB Compliant." See update, page 4 here.

However, nobody will accept SF order for 10 units (!).

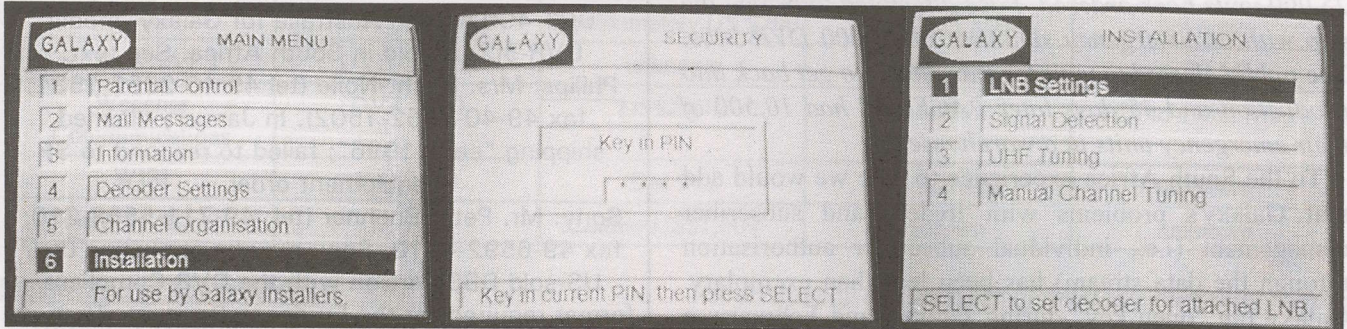
Testing the DGT-400 on AsiaSat 2

The technical differences between the DVR-500 and the DGT-400 are unknown but knowledgeable sources tell SF, "They are small and primarily relate to the conditional access system." The quantity of PACE receivers in the field for the now-testing AsiaSat 2 service from STAR TV probably numbers fewer than 50 and are closely secured from prying eyes. Leon Senior of Skandia (Australian distributor for STAR NET hardware) forecasts it will "be June before we see AsiaSat 2 receivers here." To test those differences SF connected a DGT-400 to a AsiaSat 2 dish and using the

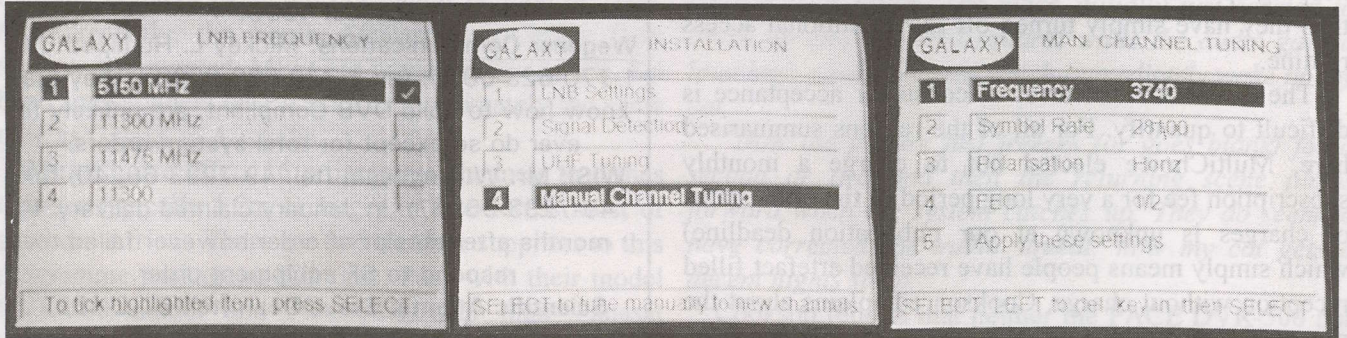
on screen menu preceded to reset the receiver for C-band operation. Our STAR TV test signal access was quite immediate as you will see in the photos below. We caution our test results while STAR was "open key" (conditional access off) will not apply in the future. See Hardware Update page 4 in this issue.



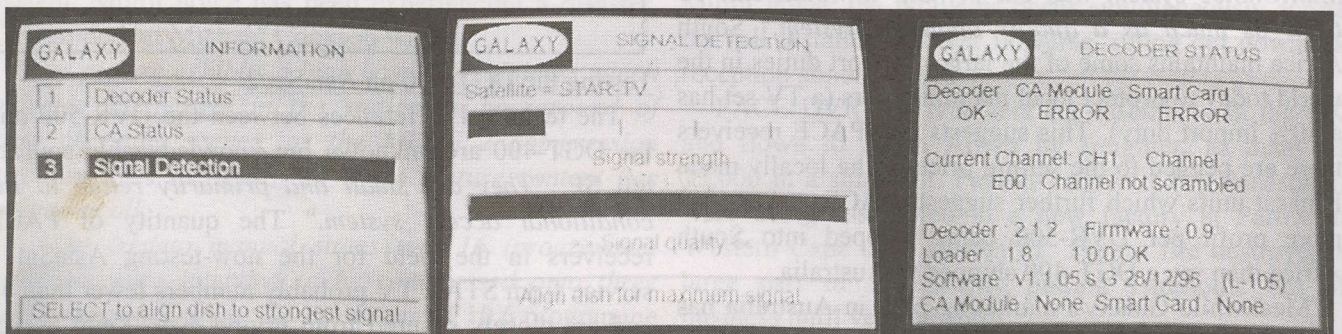
PACE's DGT-400 contains the basic MPEG-2 processing circuitry and software to handle an open key or conditional access MPEG-2 format signal. A handheld remote (not shown) gives the user access to both programming and normal operating functions.



Step 1: Access Installation menu. **Step 2:** Key in installer Pin number (4252 [not found in manual]). **Step 3:** Set LNB for C-band (5150 MHz; see below). On screen menu advises each step and you can correct any errors by simply starting over with sequence.



(Step 3:) Set LNB choice to 5150 MHz (above). **Step 4:** Go to Manual Channel Tuning where you will define the parameters of specific transponder and service. **Step 5:** Set input frequency (3740 was for As2 STAR test), Symbol rate (to 28,100/28,800), FEC to 1/2. Go to bottom line, click "Apply these settings."



Receiver is now searching for MPEG-2 signal at 3740 MHz with symbol rate of 28,100 (800) and FEC of 1/2. Go to signal detection to monitor incoming signal parameters. Signal level will show relative quality (mid-screen bar) and signal level (upper screen bar). Note middle photo reads, "Satellite = STAR TV" which verifies the receiver has received the STAR TV digital "header" and is able to identify the source of the service. Decoder status screen display (right) notes "E00 Channel not scrambled" which was true during testing in February and early March.

SPRSCS '96 - THE PEOPLE, THE EVENTS

Part Two Wrap-Up

Nobody forced attendees to show up a full day before the conference started. But more than 100 did so because it was another form of learning opportunity: The chance to watch the experts (and the not-so-expert) unpack from shipping cartons the hundreds of pieces

installation of the feed for maximum performance is a totally "black art" bordering on "voodoo." True, a manual may give you dimensions (the distance from the centre of the dish to the edge of the feed antenna outer lip, for example) which the installer can measure to



OLD FASHIONED BARN RAISING - with satellite dishes. Dozens of eager, willing hands rose to the occasion as show dishes were assembled and lifted to their mounts.

that go into a typical home or commercial satellite dish and then begin the jigsaw assembly of the parts. The objective, of course, is to learn the right (and wrong) methods of assembly, how to "proof" (check for accuracy) a dish as it is assembled, and again after assembly.

The hands-on nature of SPRSCS provides that unique opportunity to not only observe, ask questions and learn but to also participate if you wish. And in all fairness to dish assembly antenna manuals, virtually all make the assumption the builder has at least some experience in the assembly of parabolic dish antennas before tackling their particular product and model. For many attendees, this was not a valid starting point.

If the dish assembly is a challenge, understanding the basics behind proper feed antenna selection and

verify the correct positioning of the feed. Alas, suppose this manual-given-dimension is wrong because in assembly of the dish the builder has made one or more errors affecting the actual curvature of the dish surface? Will this manual-given-dimension (distance) change if the dish is incorrectly assembled?

If yes, will the distance be greater or less than the manual states? How do you determine the feed is in fact not only the correct distance from the dish surface but that it also is properly pointed at the dish? Is it possible to have the feed mounted so that it is "cockeyed" and pointing "off centre" on the dish? How badly will this

SPRSCS Show Report continues page 16



UNCLE BAYSAT says ... TICKETS PLEASE!

The TVRO train is building up speed. Have you bought your ticket yet? If you are planning to make this trip of a lifetime then you must be prepared. **Special pricing is available now** as the train is loading and the new AsiaSat 2, Palapa C1 and Intelsat 800 series carriages are being coupled to the engine. The technology on board is awesome and for those fortunate few who pioneer this adventure will come rewards that will grow and carry you on the trip of a lifetime. Buy your ticket and claim your seat now - or be left at the station running to catch up. **Hurry - hurry - HURRY.** This train won't wait for late arrivals!



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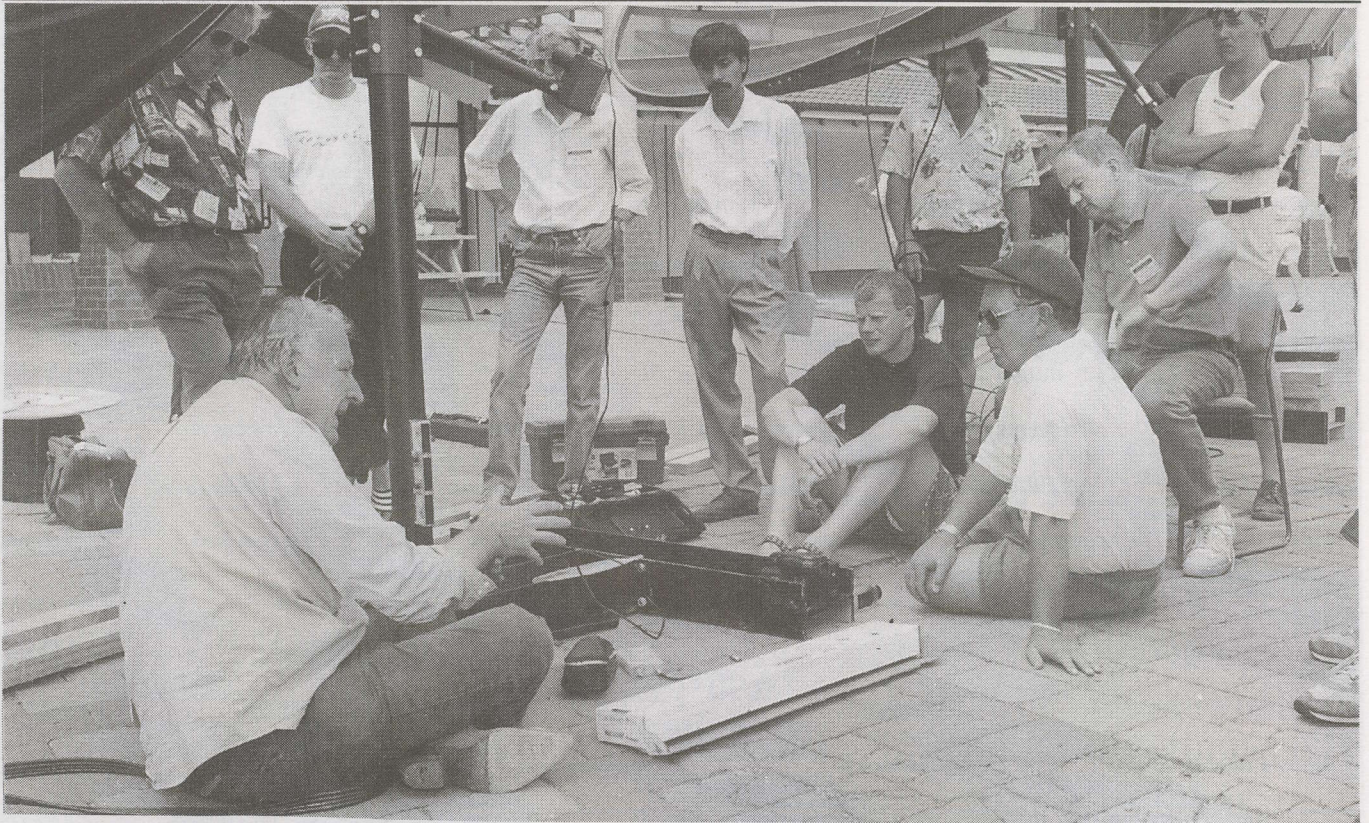
with software by....

PALCOM

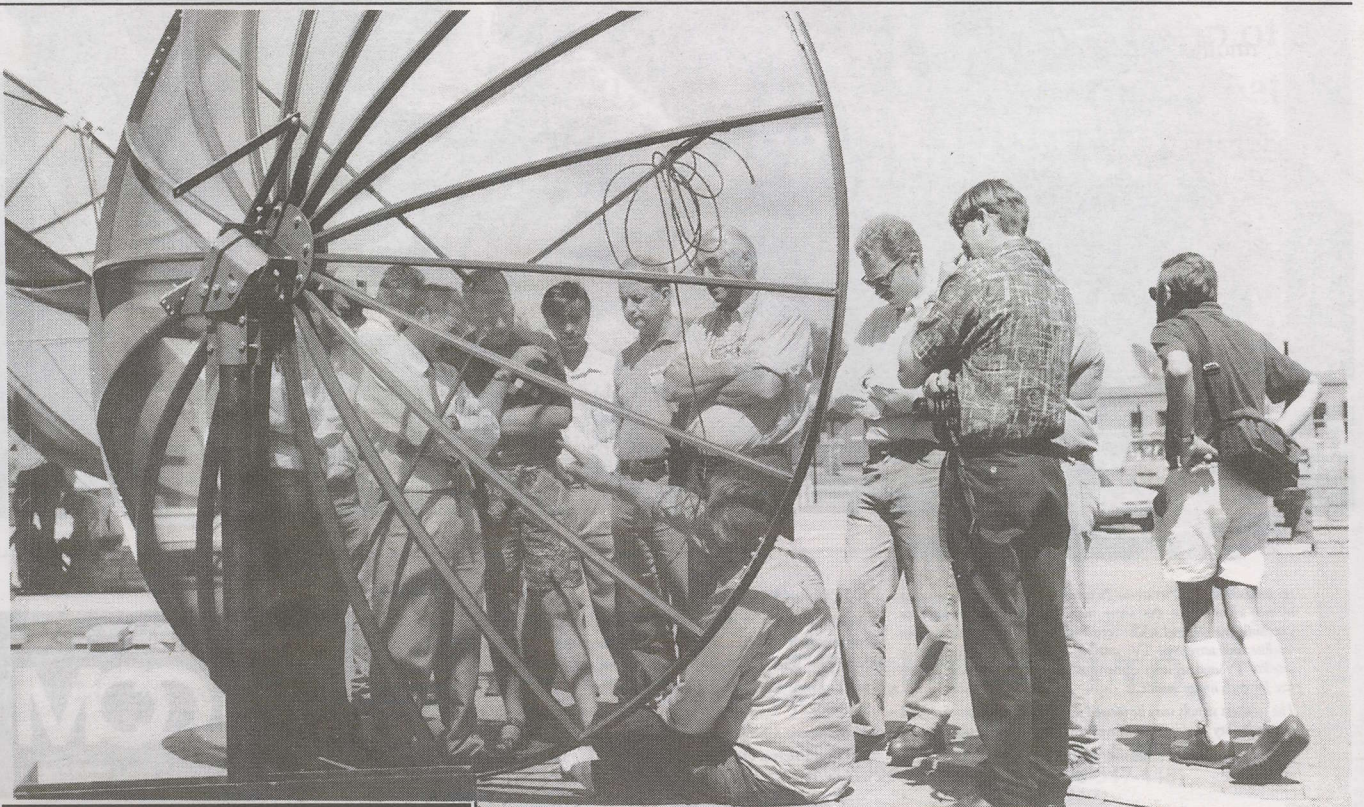
State of the Art Simplicity

degrade the performance of the dish system? Should the installer worry about such details?

The answer generally is "yes" to each of these concerns. And a trio of California based speakers made certain as much information as possible was imparted to those attending and asking the often complex questions.



QUIET 'STAR' - Jim Roberts (left) of California's Gourmet Entertaining spent countless hours patiently explaining the basics of the satellite geostationary arc plus dish construction and alignment procedures to a knowledge hungry crowd. Roberts even visited Auckland dish owners at their homes to assist in sorting out tracking problems. He plans to return in 1997. Thank you Jim, CalAmp's Bob Partain and Tim Alderman.



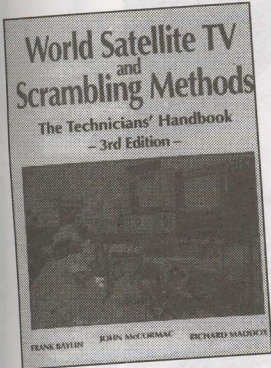


AV-COMM SATELLITE TV EQUIPMENT



WORLD SATELLITE TV AND SCRAMBLING

Cat # B1020



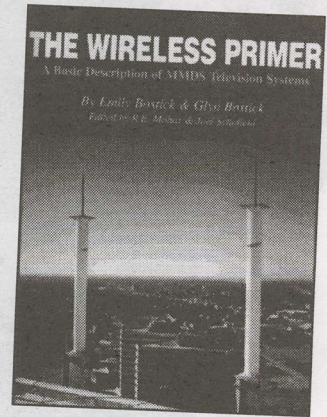
Known as "the technicians' handbook", this text is a must buy for technicians, satellite professionals, and enthusiasts. The design, operation, and repair of satellite antennas, feeds, LNBS and receivers are examined in detail. An in depth study of scrambling methods, and broadcast formats is the backdrop to a discussion of all current American and European satellite TV technologies, including the

Videocypher II, Oak Orion, Filmnet, UK Sky Channel, EuroCypher, D2MAC, BSB and Teleclub Payview III. Circuit and block diagrams of all components are presented and clearly explained throughout the book.....\$79

THE WIRELESS PRIMER

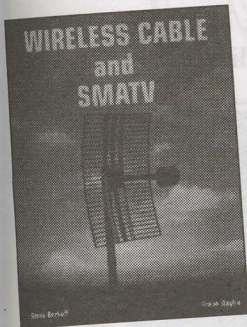
Cat # B1021

A 76 page complete description of MMDS television systems. This first edition, published in 1995, contains thirteen comprehensive chapters covering all aspects of system design, and shows actual on-air configuration of a 31 channel MMDS system. A valuable reference for anyone involved in installation or maintenance of an MMDS system, "The wireless primer" shows how one operator in the USA saved \$100,000 on hardware by following the designs in this book!\$45



WIRELESS CABLE & SMATV

Cat # B1011



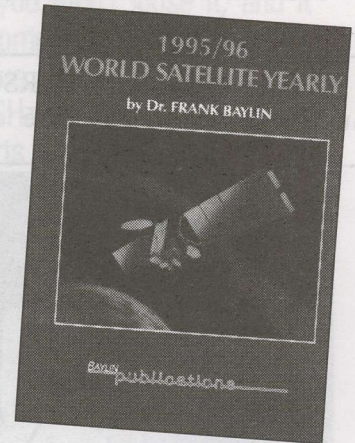
A comprehensive study of the new broadcast method, Wireless Cable, and the closely related field of satellite master antenna TV systems (SMATV). Three chapters are dedicated to details of the site survey, planning and design phases of a private cable system. Off air and satellite headends and all components from antennas to processing and mixing electronics are studied in detail. Ideal for those

considering an MMDS installation.\$89

1995/96 WORLD SATELLITE YEARLY

Cat # B1013

The 768 page 1995/96 World Satellite Yearly contains the latest information about satellites, technology and programming. Features updated chapters on audio and video compression, footprints for satellites launched during 1994 and projected for 1995/96, and worldwide programming assignments. The ultimate reference book on satellite TV footprints, programming and technology.\$140



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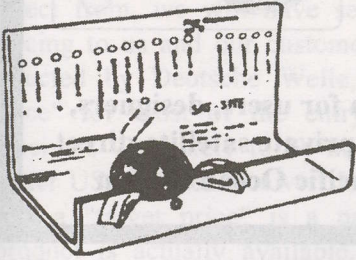
HE KNOWS WHAT THE MARKET IS - Statistics New Zealand suggests there are more than 90,000 Mandarin-Cantonese heritage émigrés now living in the country. SPACE Dealer Danny Deng (right, Satellite TV Services Ltd) promoted the "Open Public Saturday" heavily in the Chinese media and was rewarded by busloads that arrived to see for themselves CTN, CCTV, ABN, and MTV Asia reception. Deng has been overloaded with system orders since the show.

Prediction: The 19897 SPRSCS show (January 21-25, receivers than antennas and feeds. Photos in this report Auckland) will concentrate more on software and by Steve Johnson (Franklin Aerial & Satellite Services).



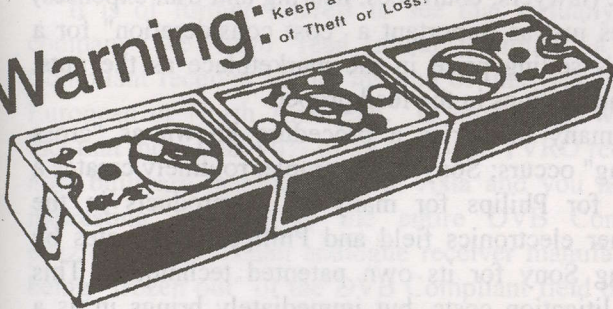
ALL SIZES, COLOURS and materials. Signal Master's trailer mounted satellite TV demo rig (right) and their C + Ku quality solid Patriot line of panellised dishes made it clear they are in the commercial market.

Precise, yet Simple, Dish Installation Tools:



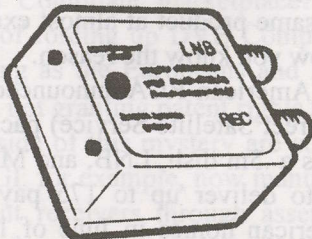
Sat Sites Custom built to your locale, survey sites for obstructions to reception of Satellites! Within their 100-mile ranges, Sat Sites are Robot Salesmen (by involving your clients). **\$89/ea for American C & Ku; \$99/ea for European Ku & \$123/ea for World-wide (all video).** OPTIMUM "Polar" Alignment Analysis included.

Warning: Use is Habit forming
Keep a spare, in case
of Theft or Loss!

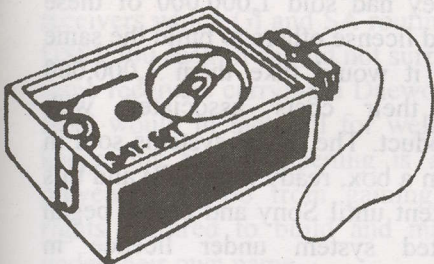


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What Is A "Fair" Profit?

Satellite hardware, like virtually any electronic product available today, sells at pricing that is in direct proportion to the demand. Products in little demand cost more simply because they are assembled in small quantities and often by hand.

This sort of limited production attracts firms that have special product design expertise; they know how to do something that few (if any) competitors have yet figured out. And they bring out a product because they anticipate it will be profitable for them.

MPEG, the transmission standard, is a combination of hundreds of (often competing) patents. No one single company, no one single engineer sat down and designed MPEG. A firm electing to build an MPEG receiver must deal with as many as 100 different patent rights holders just to gain the legal right to build an MPEG receiver. These are time consuming, expensive negotiations.

Variations of MPEG, such as Digicipher by General Instrument, were created purposefully to give its designers a unique "twist" on the basic MPEG formulae; a twist which only GI holds patent rights to and for which GI can if it wishes withhold granting licence rights to others.

GI and Scientific Atlanta (SA) have pushed their variations of MPEG for nearly 5 years (see SF#17, p.6). During that period each has been able to command a segment of the MPEG video market by withholding from competitors key patent rights without which a competitor cannot begin producing GI or SA version MPEG receivers.

Analogue receiver patent rights have all but disappeared. Early patents, held by Dr. Konishi at Uniden and a handful of others, have now expired. When a patent expires the usual practice is for the patented technique or parts to become "public domain," available to anyone who wishes to use them without having to negotiate or pay the patent holder.

Closer to your present TVRO system, there have been several patents granted in the area of feed antennas. Chaparral holds many as does (National) ADL (Labs). ADL claims to have spent several million US dollars to

defend and protect its patents in the last nine years. This expense (lawyers, court fees, hearing and trial expenses) becomes just as important a "cost consideration" for a product's selling price in the marketplace as the nuts, bolts and castings in the feed proper.

In many industries a procedure known as "cross licensing" occurs; Sony, for example, routinely creates a license for Philips for many of its products in the consumer electronics field and Philips reciprocates by licensing Sony for its own patented techniques. This avoids litigation costs, but immediately brings in as a possible direct competitor the cross licensed firms. If you ever wondered why Philips and Sony might introduce essentially the same product at almost exactly the same point in time, now you know the reason.

When Hughes and the American RCA announced the present Ku-band DSS (Direct Satellite Service) package of equipment that features a .5m dish, LNB, and MPEG variant receiver system to deliver up to 175 pay TV channels into North American homes in June of 1994, they said that after they had sold 1,000,000 of these systems then they would license others to build the same system. They claimed it would take them 1,000,000 systems to recover their costs associated with development of the product. The initial systems sold in the range of US\$695 (in a box, ready to install) and this price was quite consistent until Sony and others began producing the patented system under licence in mid-1995. Shortly after Sony arrived with a patent licensed competitive unit, pricing dropped to (US) \$595 and more recently to US\$495. There are whispers it will settle in near US\$300 within 12 months.

If RCA can continue to sell the units at \$495 and be profitable, that strongly suggests their \$695 price for the first million units had a (US)\$200 "pad" in it to help recover product development and patent (legal) costs. So after collecting US\$200,000,000 "extra" for the first one million units, they were ready to let the marketplace determine the correct price.

The correct price is the amount the consumer is willing to pay, when faced with a choice between suppliers, for a system. In other words, the competitive price. Out here in the Pacific and Asia we have no feel for what the "correct price" may ultimately be for a

DVB Compliant consumer MPEG receiver. You can be certain it will be totally determined by the relative competition in the marketplace.

This says what we already know: In time, as there are more similar function and purpose receivers available to select from, we will have serious price erosion (i.e., pricing to us and our customers will drop). In a study directed by Deutsche Welle, they found the "target price" for most of the entry level DVB Compliant receivers was likely to be near DM900, or something under US\$700 per receiver. It must be noted, however, that a "target price" is a paper exercise before the product is actually available. The real price may be considerably higher, at least initially.

It is of further interest to see that virtually every company we have read about planning a DVB Compliant receiver before the end of this year is either European or North American. Compare that with the fact that more than 90% of all analogue TVRO receivers now built are manufactured in Asia and you have an interesting sidelight to the entire DVB Compliant puzzle. Are the Asian analogue receiver manufacturers being "frozen out" of the DVB Compliant field because the European and North American firms do not want them bringing their obvious production skills to the DVB Compliant marketplace? Is this merely another way of forcing up DVB Compliant receiver pricing for as long as the Europeans and Americans can get away with not granting patent rights to the Asians?

Inside of this mystery are some interesting facts. SA and GI, for example, now manufacture their own MPEG variant receivers through assembly line contractors in Asia. Korean and Chinese assembly plants build these receivers which GI and SA routinely sell for upwards of US\$1,500 each. It should not surprise us to learn that the same receivers carrying a Daewoo or other Asian brand label would in fact sell for well under US\$500. What keeps this from happening is an inflexible rule that prevents Daewoo from gaining access to the patent rights required to build and market MPEG receivers under their own name.

So what is a "fair profit?" It obviously depends upon whom you work for or believe in. If ADL believes 30% of the cost of every feed they ship is earmarked for recovery of money spent defending their feed patents, you and I as users of ADL feeds are obviously paying for something which in no way benefits us directly. Yet if ADL did not defend its patents it would be out of business quickly and then we'd lose even the option of using this prestige line of feeds.

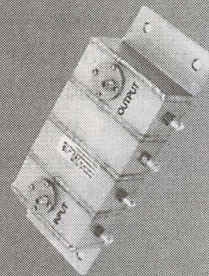
If you as a TVRO dealer knowingly purchase ADL knockoff feeds manufactured in Indonesia or elsewhere in Asia, we may be depriving ourselves of the next improved generation of ADL originals. It is all something to consider when making product selections. When we support "pirates" the originals may go away. And so too does innovative original technology.

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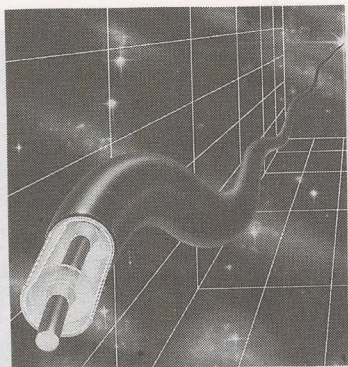
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THE CABLE CONNECTION



Cable System Service Feeds

The Music Zone (TMZ), displayed during SPRSCS '96 in January, has ceased programming feeds via PAS-2. The service was being carried on transponder 9V bundled with other SA format MPEG 1.5 programme services being fed to (Australian) Galaxy. TMZ lost its transponder spot because of a complicated business deal between the American Fox Network (owned by Murdoch's News Corp) and US cable TV giant TCI. Officially, Fox now operates this transponder and unofficially will be utilising it for feeding programmes out of the USA into Australia for the Australian Fox-Tel cable network. TMZ had two cable affiliates in New Zealand (Greymouth and Gisborne).

The major television event of 1996 will be the summer Olympic Games. The games themselves will spread over 3 weeks (July 14 - August 4) with television coverage starting a week earlier. Distribution of Olympic events will be more complex and in many ways more unpredictable than at any previous games. The (US) NBC network owns the actual coverage rights and individual networks and stations beyond NBC will contract with this network to utilise coverage of specific events. In past games Intelsat has been the only 'contract carrier' of coverage between the event and world-wide terrestrial broadcasters. For the first time PanAmSat's network of 4 satellites will be a competitor to Intelsat for world-wide distribution of programming.

The Atlanta, Georgia games will be fed via a combination of terrestrial and (US) domestic satellite links to the NBC production facility in New York City. These basically 'raw' feeds will be produced (text material and graphics, commentary added) in New York; the first time the primary network will attempt to cover the Olympics without having its full production staff and equipment at the actual game sites. Thus the majority of the 'finished' (ready to air) programme pieces will originate via New York City although the games are being conducted 800 miles away in Atlanta.

PanAmSat has announced the first customers for feeds via PAS-2 into the Pacific and Asia. These include ANteve and Rajawali Citra Televisi (both Indonesia) and the People's Television Network (Philippines). All of these networks are carried on Palapa B2P/C1. Additional clients for PAS-2 are expected to be

announced shortly and there are likely to be many in the PacAsia region.

Olympic event coverage on NBC Asia has yet to be announced. It is reasonable to anticipate this PAS-2 cable service feed will have an extensive Olympic schedule and off-the-record discussions with officials at the network confirm this.

For terrestrial networks in Australia and New Zealand, Olympic coverage typically focuses on two areas: Those events which feature participants from either country, and, events which have popular interest world-wide. Basketball featuring the US Dream Team Three is such an event given the world-wide interest and support for the NBA games.

During the Olympics there are more than sixty categories of events. Within each category there are numerous matches which ultimately lead up to the 'finals' for an event. Television coverage will be supplied for each such event and the total separate events covered by television is a mind boggling 600+. A terrestrial network such as Television New Zealand has air time for but a fraction of these. Such networks typically schedule end of day overviews during which they show highlight coverage from the events they do not cover in total.

This leaves hundreds of hours of Olympic coverage unused in Australia, New Zealand and Asia. It is into this black hole that NBC Asia is likely to plunge with its own coverage.

On the unproven assumption that Palapa C1 will provide useful levels of service into the (south) Pacific when it begins transmissions, the Olympic coverage on ANteve, RCTI and People's Network will, along with NBC Asia on PAS-2, certainly broaden the Olympic selections for cable viewers. The first two listed are presently FTA on B2P; Peoples Net was last reported in MPEG.

Equally, free to air (unencrypted analogue) feeds on Intelsat have in past years provided a rich resource for added Olympic coverage. The vast majority of Olympic coverage into Australia and New Zealand will arrive via Intelsat and while some of this will end up on the respective terrestrial networks, it will often be time delayed to suit the 8 hour offset between Atlanta and New Zealand and the 10+ hour offset to Australia. This simply means that live coverage could well appear on cable while delayed coverage would appear on the terrestrial networks. Of course copyrights will apply and if there are copyright protection announcements on the Intelsat coverage a cable firm without clearance for a transmissions would be at risk if carrying such programmes. Individual home satellite dishes, on the other hand, would be at no risk to view such transmissions. Given the volume of Olympic coverage possible into the Pacific via Intelsat, it is likely satellites at 174E, 177E, 180E and 183E will all be carrying coverage during the four weeks.

Potential New Cable Programme Sources

More than 18 months ago New Zealand based Kiwi Cable (now Saturn Communications) with the financial assistance of US owners put a down payment on an Intelsat C-band transponder. Their plan was to bring into the Pacific region some quantity of copyright cleared US cable programming sources for use by their own expanding cable operations, and, to offer the programming package to other cable operators. Recently, (at TUANZ AGM in Wellington), Saturn's Jack Matthews revealed that United International Holdings, Inc. (UIH), a 50% owner of Saturn, is now hopeful of bringing 10 US/Canadian cable programme channels to the Pacific via Intelsat. Time frame? As early as July but more likely August or September. The programming list was not available at our press deadline but is said to include a 'Prime Time Channel,' and The Travel Channel.' Not verified: The cable system price for the 10 channel package would be in the range of US\$3.50 per cable subscriber per month. The format would be MPEG but no detail as to which variation. Will this package be available to DTH as well? No word yet, but we suspect not, at least initially.

Readers are reminded that the present Intelsat line-up at 174-177-180 is scheduled for a major shake-up in the next 12 months. New 800 series satellites will go to 174 and 177E while the present 701 bird at 174 will shift to 180E to end the life of the present inclined orbit 511

satellite. The new 800 birds are capable of 36 dBw (2m range antennas) across the Pacific west of 175W.

Our Coop's Technology Digest (CTD) for February 23 reports on a New Zealand based programmer also working seriously on creating a DVB Compliant format (MPEG) free to air six or more channel programme package. There is a coincidence in the two reports as this second group (not identified by name) also plans a July-plus start date. The service planning calls for two separate feeds of the same programming material simultaneously on two MPEG programme ("virtual") channels; one into New Zealand and a second into a "second time zone" (not identified). Programming will be in six hour time blocks with each block repeated two times after its initial (prime time) airing. The service is designed for direct feed to "cable headends in New Zealand and the Pacific" and would consist of 48 minutes of actual programme material per hour plus 12 minutes of advertising and promotional material (not dissimilar to present New Zealand terrestrial TV service). Which bird? Unknown. Which band? One source suggests "both C and Ku."

The sum of all of this speculation? 16+ new cable TV channels into the Pacific by perhaps September-October. The cable business looks more promising with every passing month. **Note:** These starts may have been predicated upon the 800 series launches; see update page 4, here for update on these launches.



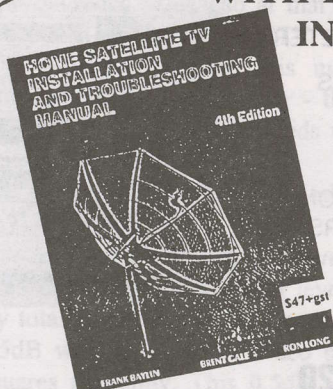
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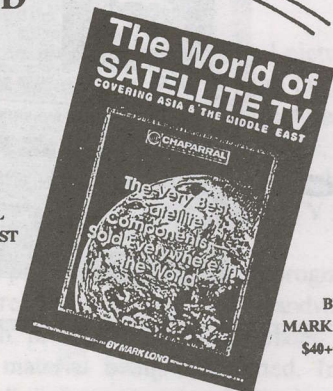
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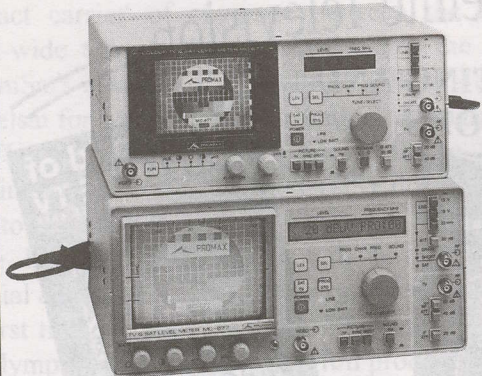
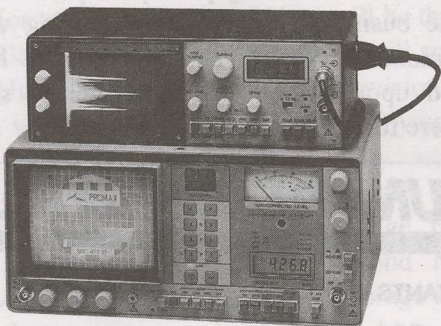
SatFACTS March 1996 ♦ page 23

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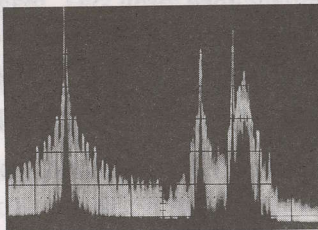
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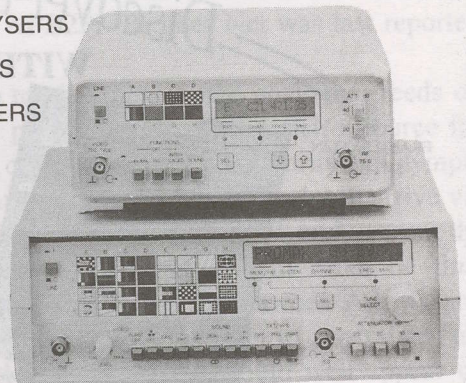


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PRESS-DEADLINE UPDATE

"Hello Test." STAR TV at press-time running on 3740 vertical MPEG DVB Compliant with FEC 1/2, 28.8 Msym BBC (PAL) and STAR Plus (NTSC). This DVB Compliant free to air is temporary. STAR plans to begin Palapa C1 testing "mid-April." Palapa C1? The bird itself anytime after 20 March.

As2 Digital tests

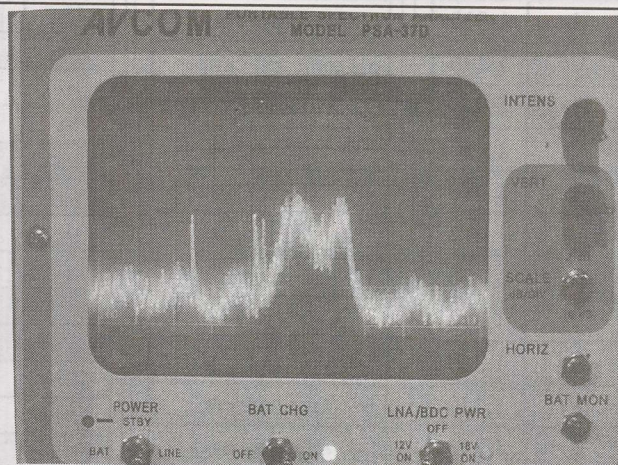
Although the primary interest to date in AsiaSat 2 signals has been for analogue feeds from CCTV and RTPi, this is after all to be a largely digital satellite. Just what can we anticipate in the way of digital service performance using the existing analogue RTPi and CCTV services as a guide?

RTPi service has been erratic since it began late in January. Initially, we understand, the Russian Stationar 12 feed of their programming was taken off satellite at Macao and reuplinked using a temporary facility. For the first several weeks the Macao terminal seemed to have problems staying locked onto the Stationar 12 inclined orbit transmission and often the visual quality of RTPi suffered because the Stationar-Macao-AsiaSat 2 service had sparklies (noise) built-in at the Macao site. Of late this seems to have been improved markedly although there are still occasional problems. The permanent RTPi uplink is reported to be in Saudi Arabia and not due for turn-on until close to 1 April. We will know it is operating (in case the video quality shows no improvement) by the new appearance of a secondary audio subcarrier in the region of 7.2 MHz (this service is not present with the Macao uplink).

CCTV service parallels the PAS-2 MPEG service with one major change; it is analogue and in PAL video format (on PAS-2 it is NTSC). On a spectrum analyser the relative strengths of CCTV (As2 transponder 9B, horizontal) and RTPi (transponder 9A, vertical) are usually comparable. This means that the reception quality should be nearly identical when switching polarisations between the two services. If the RTPi service is degraded reference CCTV, it may be due to the uplink signal being degraded at Macao at that instant. If the relative quality between RTPi and CCTV shows CCTV degraded or RTPi always degraded, this may suggest a problem with your installation. Remember - this is a linear polarised satellite and circular polarised feeds will give very degraded results.

When SF first investigated MPEG digital transmission results (SF#6 and 7) we noted:

"You cannot have less than perfect digital pictures; when the error rate increases beyond a software set level, the picture simply goes away totally. There is a very narrow window of approximately 0.5dB within which the video breaks up into chequer-board squares randomly. This 0.5dB window is the



STAR TV's AsiaSat 2 MPEG-2 test signal on 2.1m dish (northern New Zealand) was in 6dB carrier to noise region; it locked up properly.

nearest thing you have to below threshold analogue reception. and it happens so quickly that as a practical matter once you approach the signal level where the chequer-boarding begins you may totally lose reception (as if someone threw a switch) without even seeing the chequer-board.

"Using The Filipino Channel (TR14H on PAS-2), we found that a carrier to noise ratio of 5.5dB produced error free digital pictures. Between 5.5 and 5.0dB carrier to noise the chequer-board pattern appeared. At and below 5.0dB the error rate caused the software to abort the reception and the receiver advised 'no signal present.'"

Thus it is possible to anticipate "perfect digital pictures" at incoming signal levels to the receiver which, were the signals analogue, would produce badly distorted noisy pictures. This is another way of saying that in a given installation, a dish producing noisy pictures on CCTV or RTPi might well produce error free pictures on the new STAR TV digital services. The operative word is "might."

The transmission power of a digitally programmed transponder is inversely related to the amount of bandwidth in use. And the bandwidth in use is inversely related to the amount of programme material being transmitted. In other words, a fully loaded digital transponder (with 6 or more

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 growing comprehension of the great variety of programming services now on offer from regional satellites. Photos of yourself, your antenna system, and off-screen photos are welcomed. Off screen photos are not difficult to shoot: For PAL or SECAM, set camera to f.3.5-f5 and 1/15th second with ASA 100 film; for NTSC, 1/30th second. Hold camera steady (no flash!) or mount on tripod and focus from approximately 1.5 metre distance. Alternately, submit VHS format tape (any standard, speed) to SatFACTS and we will photograph your reception for publication. Deadline for April 15th issue: April 4 by mail or fax to 64-9-406-1083. See reporting form, page 30.

SatFACTS PACIFIC OCEAN REGION ORBIT WATCH: 15 March 1996

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AsiaSat 2 / Now Testing 100.5E

Pole	IF Freq
Hz	1,510
Vt	1,490
Hz	1,470
Vt	1,450
Hz	1,430
Vt	1,417
Hz	1,390
Vt	1,370
Hz	1,350
Vt	1,330
Hz	1,310
Vt	1,290
Hz	1,270
Vt	1,250
Hz	1,230
Vt	1,210
Hz	1,183
Vt	1,167
Hz	1,150
Vt	1,130
Hz	1,070
Vt	1,090
Hz	990
Vt	1,010

Service
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Strong test carrier
Narrowband noted
Test carrier
No reports
Star MPEG Tests
Star Newscrypt
APT V MPEG
Narrowband carriers
Test carriers
No reports
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No reports
CCTV4 China
RTP Portugal FTA
AS2 test card/ (DW)
No reports
Strong test carrier
No reports
No reports
No reports

PanAmSat PAS2 / 169E

Pole	IF Freq
Hz	1,426
Vt	1,406
Hz	1,372
Vt	1,346
Hz	1,300
Vt	1,288
Hz	1,249
Vt	1,218
Hz	1,183
Vt	1,161
Hz	1,115
Vt	1,110
Hz	1,060
Vt	1,038
Hz	998
Vt	985

Service
ABN/CCTV/CTN/NBC
<u>CMT</u>
Discovery/B-Mac Pal
MTV/B-Mac-NTSC
Occ. Video Feeds
ESPN/B-Mac-NTSC
Asia Feeds/Occasional
TNT/Cartoons-BMac-N
CNN (X2)/FTA NTSC
Fox Sport feeds
NHK/FTA NTSC
Occ. Data feeds
Filipino/GI MPEG
ANBC/FTA Pal
Data
Bloomberg/MPEG

March 1996 NOTES

B-MAC is analogue encryption system used by Discovery, ESPN et al. FTA is "free to air" (**bold face**). MPEG is digital (also "dig."). Underlined is subscription available.
 NTSC is US TV video standard, Pal is European/Pacific standard. All Intelsat not noted are right hand circular while all Gorizont are left hand circular.
 Readers north of the equator have far greater selection than shown here.

Intelsat 174/177/180E

Intelsat	IF Freq	Service
180E	1,432	K'stone
180E	1,388	MPEG
180E	1,325	MPEG
180E	1,310	MPEG
180E	1,277	NBC/e
180E	1,256	K'stone
180E	1,223	CBS/e
180E	1,179	W/Net
180E	1,105	RFO
180E	1092/a	Data
180E	1,054	Data
180E	1050/a	Canal +
180E	1,021	9 Aust.
180E	1018/a	Feeds
180E	984	NZ Dig.
177E	984	Feeds
174E	984	Feeds
180E	980	NZ Dig.
180E	972	NZ Dig.
180E	964	NZ Dig.
177E	963/a	AFRTS
174E	963	Feeds

a/ left hand circular (all others RHC)

Gorizont Satellites (Gz25/103, Gz41/130, Gz18/140, Gz42/142.5, Gz21/145E)

IF Freq	103E	130E	140E	142.5E	145E
	+/-2.1 deg.	+/- 0.7 deg	+/-4.2 deg.	+/-0.1 deg.	+/- 3.5 deg
1,475	Moscow 1	Raj (X2)	Moscow 1	ATN (X2)	Moscow 1
1,425	Muslim	SunMovie	Saudi Ar.	JJAY	
1,375	APNA	TestVideo		vacant	
1,325		AsiaNet		EagleNet	
1,265		IBC-13		EMTV	Moscow 2
1,225		SunMusic		Udaya	

Selected Ku Band Signal Targets

Sat	IF /RF	Pol	Service
B1	977	Vt	Data, radio, TAB
B1	1,193	Vt	Occ. Video
B1	1,219	Vt	Occ. Video
PAS2	1,037	Hz	Test Card, feeds
PAS2	1,395	Vt	Occ. Video
PAS2	1,432	Vt	Occ. Video
1177	11,015	Vt	NBC feeds

Credits to Robin Colquhoun, Shane Wilson, Anthony Williams, Steffen Holzt, Kevin Green, Colin Wenzel, Mark Long and others. Inclination numbers for Russian Gorizonts reflects inclined orbit drift within typically 24 hour period indicating birds may not be over equator at most times.

separate programme channels) averages less power for each of the programme channels than a digital transponder with but one programme channel operating. There is an example of this close to home; as Galaxy added more programme channels to their two Optus B3 transponders they quickly found that either the Optus power had to be increased for the transponder, or, the size of the DTH antennas had to be increased to compensate for the additional bandwidth in use. There is a warning here.

A lightly loaded digital transponder may produce error free reception and create a false impression in your mind as to the actual dish size required. As the transponder loading increases, you could find yourself wishing you had actually used the next larger dish size (such as 2.4 rather than 2.1 or 1.9m). And over time the transponder loading will most certainly go up, with the possible exception of the Deutsche Welle European Bouquet package on transponder 10B (Hz); it should be nearly fully loaded from the start of actual service (after testing).

So what is the best size dish for AsiaSat 2 digital service? You really won't know for sure until you can do your own testing in your geographic area. As a guide, you should be able to back down between 1.5 and 2dB in antenna gain from the smallest antenna that will produce a clean (at or slightly above threshold) CCTV and RTPi analogue picture.

Anthony Williams (Geelong, Vic.) reports Insat from 93.5E (the new 2-C) on an IF of 1023 (Hz) with a (P2) test card. **Garry Cratt** reports some Australian observers have seen cricket on this transponder at P2 levels. Williams also has a mystery: A non-As2 signal just slightly east of As2 (he suggests 101E) on 1280V showing Indian cricket at around 0700 UTC. Can anyone else report this programming? Williams does not believe it is "slop" from either 96.5 or 103E Gorizonts.

Terry Bell (Yallourn Heights, Vic.) reports RTPi is at a signal strength equivalent with PAS-2 ANBC while he finds the CCTV As2 service to be down from RTPi. This with a 12' reflector but using a circular feed (which could well account for the CCTV degradation).

Steffen Holzt reports results with a 2.5m Orbitron micro-mesh dish with 25K LNB and Chaparral Co-rotor feed in New Caledonia: CCTV and STAR TV analogue P5; RTPi P3.5 (he notes, "reducing the bandwidth causes tearing," something we have also observed even with a Palcom 7900 receiver in the TED mode.)

Shane Wilson (Mareeba, Qld) reports CCTV (P4) is slightly down from RTPi (P5) on As2 at his location. He also finds channel 9 Australia has been running FTA the Sky England feed on B2P (a service many more of us may have access to shortly).

Several reports tell of IBC-TV operating in NTSC through Gz 130E, in northern Australia. IBC is channel 13 in Manila, a terrestrial TV service, with a considerable amount of English programming (most is US off-network), IF 1370. **Colin Wenzel** (Mooloolaha, Qld.) reports, "They identify with 'IBC-13, transmitting with 60,000 watts of power.' I presume that is their terrestrial, power; if not, we had all better start wearing metal hats!"

Mark Long in Chiang Mai, Thailand reports no sign to press-time of testing from the new Measat 1 C-band service from 91.5E. Anthony Williams and others are looking as well although no coverage is predicted south of the northern extremes of Australia. Mark also finds CCTV on PAS-4 (Vt,

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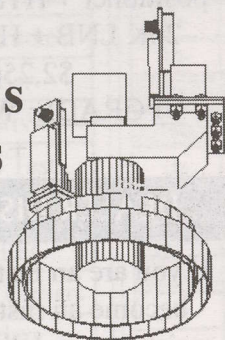
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Product data sheets recently released by Scientific Atlanta give some detail for the D9222 upgrade; the D9223 receiver.

- TDM or FDM
- MPEG 1 or MPEG 2
- NTSC or PAL (not conversion; what goes in comes out)
 - Modulation format: QPSK
 - Inner FEC: 1/2, 3/4, 5/6 or 7/8
 - Outer FEC: Reed-Solomon, t = 8
- Tuner input: -30 to -60 dBm per carrier 950 to 2050 MHz
 - IF bandwidth: 2 to 36 MHz
- LNB drive voltage: on/off selectable + 19V dc
 - DVB Compliant: Yes
 - List Price: US\$1,695

Product availability: mid to late April. Users of the present SA MPEG (1.5) services (CMT, CTN, CCTV, ABN, NBC) are being promised a "swap out" of their present D9222 for this newer version.

1285IF) along with Jain TV (Vt, 992IF) and Doordarshan Movie Club (Vt, 1115IF).

Steve Jepson (Levin, NZ) reports P4-5 reception from As2 using a 3m Andrews solid dish, 17 degree LNB and Palcom 7900 receiver. Jepson is also one of the fortunate ones to have NBC Asia (PAS-2) reception through a D9222 receiver, a service he rates as "brilliant."

STAR TV advises their Palapa B2P service on transponder 12V (970IF), which should transfer to C1 along with the balance of B2P users, has associated Panada audio left at 6.3, Panada right at 6.48, conventional monaural programme audio at 6.8, STAR radio Panada left at 7.38 and STAR Radio Panada right at 7.56 (MHz).

Viewing Tip of the Month

There are some pretty strange transmissions on satellite. Observer Colin J. Wenzel (Mooloolaha, Qld) reports on one worth tuning in.

"You must check out the guy on Russian TV (Stationar 21 at 103E); IF 1472. From 1-3PM my time (Sundays) this fellow appears as the resident astrologer and LSD supplier. He shows up either stoned out of his mind or so tanked he can barely stay on his stool. His eyes roll, his head wobbles from side to side and he gives out an occasional snort. Even in Russian he sounds 'pissed' (and that takes some doing!), dressed with John Lennon glasses and clothing like a refugee from the 60s with long, straight hippy hair. Even if you cannot speak Russian, it is worth a look just for laughs!"

The "P-Code Reporting System

Observers are encouraged to adopt the "Universal Reporting System" as refined by Steffen Holzt in New Caledonia (SF#11, p.24).

- P5 - Noisefree on 27 MHz (full) bandwidth receiver
- P4 - With bandwidth reduced below 27 MHz, no sparklies or tearing
- P3 - With bandwidth reduced, some sparklies present but no tearing
- P2 - With bandwidth reduced, picture is watchable with sparklies and tearing (jitters on edges)
- P1 - Must be an enthusiast to watch!

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OBSERVER REPORTING FORM - Due APRIL 05, 1996

NOTE: Use MIDDLE card (below) to report on Palapa C1!

• New programming sources seen since 15 March: _____

• Changes in pre-existing programming sources since 15 March: _____

• Other: _____

Note: Please include transponder number/receiver IF reading for each programmer and use P1-5 code.

Your Name _____

Town/City _____

Make/size dish _____ LNB _____ Receiver _____

Mail: SatFACTS, PO Box 330, Mangonui, Far North, New Zealand / Fax 64-9-406-1083

SPECIAL PALAPA C1 REPORTING FORM

• Palapa C1 regular programme first seen here at _____ (UTC), _____ (date)
on transponder(s) / IFs of _____

• **Subsequent** Palapa C1 signals seen here **include:** _____

• I compare the **BEST** Palapa C1 signal(s) [identify which _____]
as being on a quality level with PAS-2 programmer _____

• I compare the **WORST** Palapa C1 signal(s) [identify which _____]
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Observer Name _____ **Location** _____

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