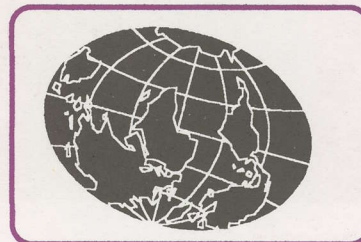


Bob Cooper's

AUGUST 15 2003

SatFACTS



MONTHLY

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

IN THIS ISSUE

"SATELLITE HEAVEN"

C1 really works!

**All-Scanning,
all finding
by Roy Carman**

**TVNZ FTA
Rugby: Kicking Sky
where it hurts**

- ✓ Latest Programmer News
- ✓ Latest Hardware News
- ✓ Off-the-shelf 2.4 links
- ✓ Observer Reports

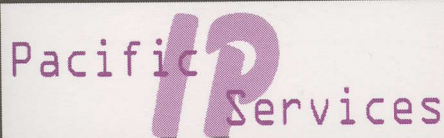
Vol. 9 ♦ No. 108

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1		209.101.119.162	MULTI HOMED US BACKBONE	CALIFORNIA US	-08:00	78	-x-	US BACKBONE
2		10.33.250.58	PANAMSAT NAPA IP GATEWAY	NAPA, CALIFORNIA		83	x	(private use)
3		216.139.171.178	PACIFIC IP GATEWAY	NAPA, CALIFORNIA		86	x	(private use)
4		202.87.128.134	YOUR COMPUTER	YOUR ISLAND, PACIFIC		621	x	(private use)

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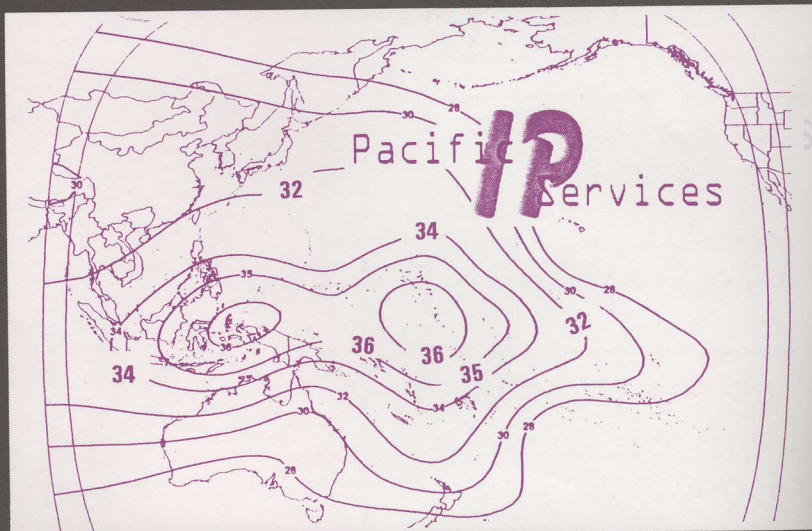
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- 3.0m for Cook Islands,
- 3.6m for Tahiti

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SatFACTS MONTHLY

ISSN 1174-0779

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our NINTH year!

COOP'S COMMENT

Last month I suggested here that a resurgence (rebirth) of FTA or free to air satellite services seemed promising. There is new evidence this month that my optimism may yet bear fruit.

Name three programming categories guaranteed to make subscribing to a pay-TV satellite service desirable? Rugby, movies and more rugby. In that order. Now name three categories guaranteed to make people buy FTA dish systems.

Rugby, movies and more rugby. OK, for at least New Zealand (and Norfolk Island) getting two of these free would be pretty acceptable. Let's try "rugby" and "more rugby."

Entire books have been written describing how one Rupert Murdoch has cornered the world rugby market by buying TV rights (and or rugby clubs) creating new wealth for a handful, himself included, at the expense of those who follow the sport. What I am about to reveal totally turns around the "Rugby = pay-TV = Murdoch" equation.

On page 14 here this month, we provide detail on a new "Rugby World Cup" television initiative underwritten by New Zealand Government owned TVNZ (Television New Zealand). Three magic letters ("FTA") make this coverage very interesting. In a nutshell, between October 10 and December 20, something like 48 rugby matches involving all of the nations in the world who support the sport, will be televised. Many of the actual matches will be broadcast on terrestrial FTA TVOne and simultaneously on TVOne satellite digital (12.456Vt, satellite B1, Sr 22.500, FEC 3/4). Only TVONE's terrestrial coverage will be on pay-TV service Sky NZ, none on terrestrial competitors TV3 (4/Prime). *Now the real news.*

With 71 consecutive days of Rugby, played in a dozen plus venues and in an equal number of local time zones, out of TVOne's coverage will come hundreds of hours of fresh, if not totally live at least very current, matches. TVNZ will do something very innovative with this rugby resource; establish on the same B1 satellite bouquet where TVOne is already available a new "RWC Channel" where 12+ hours per day, every day for 71 days, rugby fans can tune in today's live game, today's delayed games, yesterday's best game and so on. Over the nine week period, nearly 900 hours of RWC matches! **Only on FTA satellite.**

Is there a pub, tavern, sports bar anyplace in NZ that will not want this coverage? Are there not thousands - tens of thousands - of homes that will also want this coverage? The punch line. Other than the live coverage of matches on TVOne (a fraction of the total 900+ hours planned), there is only one place where this coverage will be available. *That's right - FTA on satellite; TVNZ's digital satellite service.*

But I worry. A great deal. The most optimistic estimates of FTA equipped locations in NZ suggest between 5 and 6,000 existing systems. Virtually all of these have been installed for B3/C1's Globecast and other ethnic (such as Indian) TV services. TVNZ is on B1, not B3/C1. Moreover, at any given moment (such as *this* very moment) in New Zealand there are fewer than 200 unsold FTA capable receivers sitting in the distributor (Hills, Skylink, Telsat) pipeline. Even the most conservative estimate suggests a huge rush (when the public comprehends this unique offering ONLY on FTA satellite) for equipment. If it all starts on October 10, and this is August 15th, in less than two months the gates open wide and all hell breaks loose.

If TVNZ promotes this as I have begged them to do, using their own TVONE and TV2 resources, by early September most New Zealanders will have at least "heard" about "900 hours of FTA Rugby." But the pipeline for new dishes (or even 2-way splitters if you "borrow" the Sky dish already pointing at B1), new LNB's, and most of all new FTA-capable DVB Compliant receivers is long, stretching first to Australia, then to perhaps the Middle East, then finally to an Asian manufacturer in China or Korea. Pipelines take time to fill, and October 10th is just around the corner. The "window" here is only 71 days long, and the incentive to own a TVONE FTA digital system will peak October 9th and steadily erode every day past that date. OK - you wanted FTA sport. Now you will have it. Are you up to "the game?"

In Volume 9 ♦ Number 108

B3 to C1: The conversion is now complete -p. 6

Comparison of all-scanning IRDs (Roy Carman) -p. 10

TVNZ's Rugby World Cup FTA service -p. 14

2.4 and 1.2 GHz "senders" (part one) -p. 15

Departments

Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; Technical Topix (Optus C loading tables) -p. 20; SatFACTS Digital Watch -p. 23; Supplemental Data -p. 26; With The Observers -p.

27; "Super Receivers" -p. 28 At Sign-Off (On the road to RWC) -p. 31

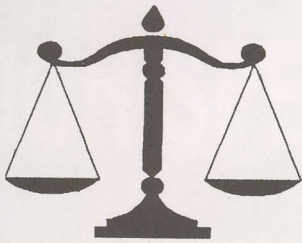
-On the cover-

2.4 GHz video + audio links using TVRO hardware (p. 15)



August 15, 2003

SatFACTS Monthly August 2003 ♦ page 1

**How he sees it ...**

"One comment on 'Fast-' vs. 'Euro'. DGT 400's cannot process Euro-I which is why they cannot descramble Aurora signals, which were always Euro-I. That's why they are being changed out at present due to the Foxtel changeover. Interestingly, whilst Fast-I is an older 'standard,' which is why the early Pace boxes used it as it was all that was available at the time, it is actually more secure than Euro-I. I cannot see there being a wholesale (Austar) changeover from Irdeto to NDS due to the cost, especially for AUSTAR. Will be interesting to see what happens."

RW, NSW

As we pointed in SF#105 (p. 31), Austar is caught between a rock and Murdoch. If they change to NDS, something like US\$120 million just for the decoders - a back breaker for a firm barely scraping by month to month. Which leaves Euro-I as the "target" for pirates, easily hacked, shifting the piracy from Foxtel and Austar to Austar alone. Given that scenario, how long can it be before Austar becomes a division of Foxtel or some other Murdoch corporation - such as Sky Network TV New Zealand?

Receiver capabilities?

"Discovered something with eMTEch 100b. According to published factory specs, it should 'do' Ms/s range from 1 to 45. However, it refuses to load the Optus B1 12.574Hz SCPC (Sr 1.851, 3/4; 'Mix 106.3'). On the other hand, my Humax IRCI-5400Z which claims ability to load only from 2 - 30 loads it just fine. At the opposite end of the Sr scale, the eMTEch loads and plays the FTA channels on Measat 2 AstroMux (Sr 41.500) while other IRDs that should, do not. All of this leads me to be a nay-sayer when I question the claims for the Coship 3188C (SF#107, p. 6). My intuition tells me there is no such thing as a 'find-everything' (all SCPC, MCPC, every hidden PID) receiver out there."

IF, Queensland

A non-DVB-compliant SCPC (or MCPC) might be a challenge to an all-finding searching mode IRD - DVB is the road map and lacking that essential guide, all bets would be off. Early Coship 3188C Coship users in the Pacific (and Asia) - what are your observations?

Home has moved

"A reminder to all that as of August 3, the C1 horizontal 'home frequency' has become 12.278 (Sr 30.000, 3/4). If your IRD has a 'home to' entry for starting it off each time it is powered, it probably had 12.313 entered. Change it or the IRD will have to refind the new frequency changes each time it is powered."

Benjamin T, NSW

Temporary staff

"While converting from DGT400 to new UEC Titan as an Austar customer, the friendly voice on the phone mentioned, 'our temporary contract for this project expires Friday August 29'; by that date any not changed over will find it very difficult to get through the system. I had dragged my feet on my own changeout, suddenly the DGT400 quit and I called to ask why. Seems each group sent out had a 'time window' attached and mine had expired. Anyone work out what we are going to do with 40K DGT400s in September? Man that's going to be some landfill!"

AIT, NSW

**PROGRAMMER
PROGRAMMING
PROMOTION****UPDATE****AUGUST 15, 2003**

RWC - Rugby World Cup. A BIG deal in NZ (and Australia) and an opportunity for New Zealand FTA satellite installers to SELL new terminals because of an innovative plan at the state-owned national telecaster TVNZ. Forty-eight matches, live in digital which will be treated in a very unique way, creating a special-event "RWC Channel" operating 12+ hours per day with coverage ONLY available on satellite. Pubs, hotels and other public gathering spots are a natural for this only-on-satellite (and not on Sky NZ) channel - dealers bend over and slip on your 'selling shoes,' now! (Hills, NZ importer of the Strong FTA receiver, has already stocked up for this one.) Details p. 1 and 14 here.

C1 casualty. The 7 Satellite Music Australia (SMA) services previously available through B3 (Aurora) have been closed down in the C1 coverage; no more SMA.

Impact TV status? From their initial announcement (late last December) this much forum-discussed, promised service has been the butt of insider jokes, cajoling and Doubting Thomas reactions. It now looks more real by the week. B3, moved to 152E, initially 2 transponders on NANZ footprint (90cm in NZ), providing combination of (1) FTA (such as German DW), (2) NZ sourced TVOne, 2,3,4, Prime (using a "Cardview" approach, similar to Optus Aurora), and, (3) some quantity of pay TV services. All of this to be built on Irdeto 2 encryption, bankrolled largely out of Taiwan. Receivers will be China sourced through Impact, although other Irdeto 2 models would be 'authorised' with one exception - the Coship Irdeto version.

Reason? Intramural haggling between Impact and Peter Escher (Satlink). Impact was 'burned' at Coship (see p. 4) by Escher, leading to Impact deciding, "We won't be supporting Satlink in any way; if (Escher) is going to play this kind of deceit, he will be cut out of NZ distributed 'Cardview' (cards) for NZ reception." The games we play!

TARBS on the offensive. Everyone's favourite kick-butt, TARBS, is escalating the price of hacking. Story is that with around 10,000 paying subscribers in Melbourne area, the alleged importation of approximately the same number of "grey market" MDS 3100 boxes by a "piracy consortium" has finally prompted TARBS to respond. Austar/Foxtel's "piracy problem" is minor league stuff when compared to TARBS - it was in Italy that pirate users actually outnumbered paying subscribers - TARBS in Melbourne is (said to be) approaching that point. TARBS is reacting with some vengeance, asking Austar and Foxtel to support a proposed change in Australian law which would greatly increase the penalties for pay-TV hacking. They would like new law to make it such a "violent" offence that those caught would lose their homes, all other assets (including spouse's assets) plus big-time long term jail time (using the U.S. model of up to 20 years if caught). The TARBS "experience" is to be "documented" in plea for law change as an example of "how bad it can become for pay-TV providers" when the penalties for hacking are not significant. All of this begs the question, *what kind of relationship does TARBS have with Taiwan MDS 3100 supplier* if the OEM allowed 10,000 boxes to be sold to the pirates? Obviously, not good which pretty well describes TARBS approach to PR. Et tu Jorge???

Channel News Asia to AsiaSat 3S - September 1. Hey guys and gals - FTA is looking better all the time! Asia's primary news provider is moving to As3S 1 September (3706Hz, Sr 6.000, 3/4), shutting down on Palapa C2 and Apstar IIR. Yes, English service. On C2M, CNA has been on 4000Hz with Asean beam and capacity to link up to 3 news feeds. On IIR, at 3705Vt with separate 625 and 525 video channels (using 6.111, 3/4).

S 20 Satellite Digital and Analogue Television Bit Error Rate Meter



The S20 is a new hand held Digital and Analogue satellite TV instrument for 920 - 2,150MHz. Measurements include True Bit Error Rate, Signal Level, Digital Channel Power, Digital Carrier to Noise Ratio, Spectrum and Expanded Spectrum; all presented on an wide screen graphic Liquid Crystal Display. Some routine measurements are executed Automatically, whilst others are simplified. An optional Network Identification Table card will automatically identify satellites and their orbital slots from data stream info. The case is protected against falls and blows by a moulded rubber holster and the keyboard has been designed to withstand dusty and humid hostile environments.

Menus guide users through selection of functions that include powering an LNB, Programming QPSK reception parameters and Data Logger programming. Different parameter settings can be stored in 100 Program memories.

Those familiar with Unaohm's pioneering SBM105 Satellite BER meter have judged the S20 an instant hit.

Internal Ni-MH battery life can be extended with optional external batteries and the instrument can recharge whilst still being used from the mains switch mode power supply included or 6V DC.

Accessories included are the mains power supply/battery charger and the moulded rubber holster.

S20, exciting Sat TV instrumentation that needs neither a mortgage to buy it or a sherpa to carry it. ©2003 Lacey's.tv

- **QPSK true BER and Digital C / N.**
- **Digital and Analogue measurements.**
- **Spectrum Analysis with two Markers and Full 10 MHz Span.**
- **MAX, MIN & FREEZE Hold functions for special signal analyses.**
- **View any 7 transponders simultaneously.**
- **Data Logger records Signal Level.**

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Amazing issue?

"SF #107 is an amazing issue crammed full of interesting information for satellite enthusiasts. I quite agree it is but a matter of time (and perhaps not much time at that) before the Chinese take over from the Koreans as the primary world source for all formats of satellite receivers."

Siam Global, Bangkok

And we had better hope that the Chinese don't abandon C-band for their own satellite distribution internally any time soon as when that happens, the price and availability of C-band LNBs and feeds is going to sky rocket upwards.

Pay TV industry disgusts me

"One letter in the July issue dismayed me, "Leaving this business." The writer according to the letter is a highly qualified technician who has decided to abandon the satellite industry, and I for one am very sorry to see this happen. The entire pay-TV industry disgusts me in the way the technical side is being run - is it any wonder that the REAL people are getting out? Installers seem to be only regarded as 'a necessary evil' and 'expendable.' The really SMART installers have woken up that it is nearly impossible to make a living on the rates of pay that are being offered, especially by Austar. Because of this, service to the customer suffers and Austar by all indications does not give a damn. Little do they realise that if they paid their installers properly (and I prefer to call them Technicians) with a fair and equitable rate of income, business would actually improve. As I run a business in Tasmania, I continually hear disgruntled remarks about they way they are treated and the rate(s) of pay. This has been going on for far too long, and in Tasmania (being a small state) the word is out that working in the pay-TV industry is a waste of one's time and skills. Another point that amazes me is that instead of using local firms (yes, such as our company) who have trained, properly paid staff with years of experience and local knowledge, Austar prefers to import mainland companies to run their installations. Any profit (???) that might be made is exported from our state. There are very capable people within Tasmania who can offer excellent service if only they would pay the correct money to make it happen. Austar will never be a success until they have good front line troops!"

Brian Watson, MD, Western Video Pty Ltd.

Let us play Devil's Advocate here. Austar is broke, gushing money, unable to even break even on a day to day basis. Everything they do costs money - more money than they take in. Someone at Austar has the misconception that if they are losing money, they need more volume (lots more customers) to break even and someday return a profit. Their losses if honestly listed now total more than a billion Australian dollars. This creates a mindset, a way of thinking, which limits each employee to one pencil per week, shared desks and cubicles, and affects everything they do right down to the installers. An installer for Austar is a bit like being the "water boy" for a Rugby team that has never won a game, and down deep never expects to. The salvation for Austar is to write off that huge debt, allowing the existing company to be absorbed by someone who can start fresh with minuscule debt, a fresh attitude, and new deep pockets to fund a turn around.

Toroidal?

"I measure the 90cm to be 1.0m wide x 1.0m height. Page 34 of SF#85 carried a photo on p. 34."

Bernard T, NSW

See our comments, as relates to NZ, p. 20 in SF#109, next month; even in NZ!

HARDWARE EQUIPMENT PARTS

UPDATE

AUGUST 15, 2003

C1 versus B3 vertical Aurora in NSW. The changeover is now complete, although not without short-term problems for many. Cross pole leakage traceable to improperly set LNBf polarity-null adjustments has been significant and magnified by the challenge of "flying" a slightly troublesome B3 simultaneous to replacement C1 in the same "70 mile box." The detail appears starting on p. 6, here.

	12(.407)	12(.527)	12(.567)	12(.720)
B3	56%	60%	56%	60%
C1 July 16	96% (a)			
C1 July 28	80%	96%	76% (b)	96%

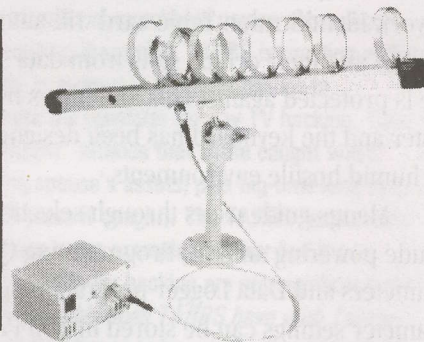
(a) 12.407 began (16th) on NA beam, switched to NANZ July 27.

(b) 12.567 is NANZ beam.

Measurements from UEC 642 receiver, 65cm dish, 100 miles west of Sydney

Coship update? There should be one, this is probably not it. Tim Heinrichs (DMS in USA, who was the original source) is basically washing his hands of this product after getting into a squabble with the Chinese creators; something to do with differing interpretations of the word "exclusive" as it might relate to who can sell a product, where. Not to worry - Tim has a "new, better one" in the pipeline. Closer to home, Impact TV's Tony Dunnett was "funding" a direct Chinese purchase of 50 3188C all searching-all finding set tops until another NZ "distributor" got into the act promising to move "thousands" for the Chinese. History repeated for Impact (and their "agent" Craig Sutton of www.apsattv.com) and suddenly their "tiny order for 50" was put on the back burner in China. Meanwhile, in Singapore, a SF Thailand reader advises, "There is an excellent model, also made in Shenzhen, called Innovia (with a website of the same name), which I have tested and found (it) to be as good if not better than the Coship as well as virtually all other receivers at 4 times its price. Which is an amazing US\$50! Availability? Wavelength Communications, Sim Lin Square." So there you have it - a muddy picture at best (also see p. 28, here).

Point-to-point, unlicensed, plug 'n play TV links? Reasonably priced? Transmit power levels from 100 milliwatts to 6 watts? Ready built transmit and receive Yagis? Multiple channel receivers? Well, pick 4 of the 5 and you are away for distances to beyond 20km (if LOS - line of sight). A new series reveals all, starting p. 15 here.



And now B3 at 152E. That's the next "game in town." Optus refused to enter into negotiations with new would-be transponder users until the B3 > C1 transition was buttoned up. Largest major "move" known will see all Aurora-based Sky (Racing Channel) services moving to B3, first using Irdeto as now but then changing over to NDS to control rampant piracy they have experienced. The B3 new location will *not* create identical footprint levels from B3 at 156E so there could be some surprises ahead there. With NANZ footprints at 152, 156 and 160E, the Toroidal dish starts to make sense for Kiwis.

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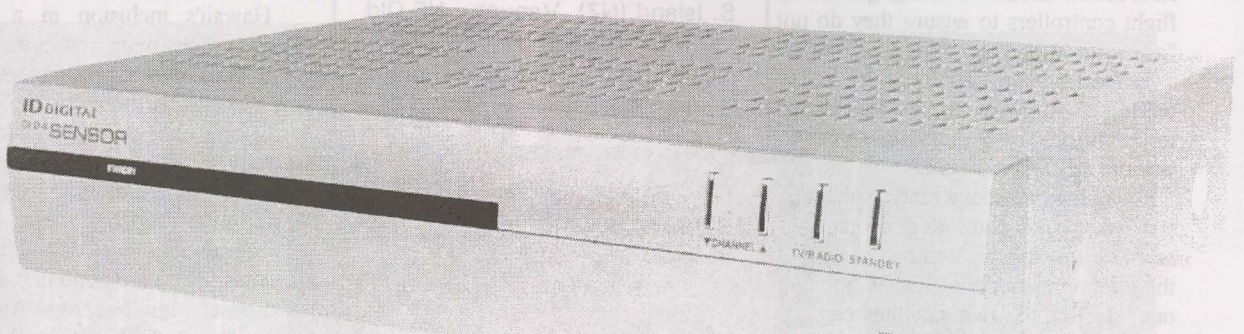
Introducing the **NEW**

ID Digital CI-24 Sensor

Super Sensitive Tuner **G3**

Features:

- Common Interface slot for Irdeto 1 & 2, Seca / Mediaguard, VIACCESS, Nagravision, Conax Cryptoworks and more.
- 1 - 45 Msym Symbol Rate
- Super Sensitive Tuner
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- Automatic Search for Asia/Pacific Satellites
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- 22kHz Switching
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- Supports DVB Subtitling & DVB Teletext
- Electronic Programme Guide



Can be supplied with Irdeto V2.09 / V2.06B or Aston V1.05 CI-Module

Stock No:102001

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PCMCIA 1 Slot Common Interface

Tuner & Channel

Input Connector F-type, IEC 169-24, Female
 Frequency Range 950 ~ 2150 MHz
 Input Impedance 75 Ω unbalanced
 Signal Level -25 ~ -65 dBm
 IF Frequency Zero - IF
 LNB Power & Polarization Vertical: +13.5 V
 Horizontal: +18 V
 Current: Max. 500 mA,
 Overload Protection
 22 kHz Tone Frequency: 22 \pm 4 kHz
 Amplitude: 0.6 \pm 0.2 V
 DiSEqC Control Version 1.0/1.2 Compatible
 Band Switch Control 22kHz Tone
 Demodulation QPSK
 Input Symbol Rate 1 - 45 Msym
 FEC Decoder Convolutional Code Rate
 1/2, 2/3, 3/4, 5/6 and 7/8
 with Constraint Length K=7

MPEG Transport Stream A/V Decoding

Transport Stream MPEG-2 ISO/IEC 13818
 Profile Level MPEG-2 MP@ML
 Input Rate Max. 15 Mbit/s
 Aspect Ratio 4:3, 16:9
 Video Resolution 720 x 576 & 720 x 480
 Audio Decoding MPEG/MusiCam Layer I & II
 Audio Mode Single channel/Dual channel
 Joint stereo/Stereo
 Sampling Rate 32, 44.1 and 48 kHz

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Main Processor ST ST20C2+(81MHz)
 Flash Memory 1 Mbyte
 Graphic & System 8 Mbyte
 DRAM

A/V & Data In/Out

VIDEO RCA/Cinch, Video Output (CVBS)
 AUDIO R/L RCA/Cinch Volume and
 Mute Control (Resolution:
 20 bits DAC, Max. 2 Vrms)
 RS 232C Transfer rate 115,000bps
 9 pin D-sub Type

RF-Modulator

RF-Connector 75 Ω , IEC 169-2, Male/Female
 Frequency 470 ~ 860 MHz
 Output Channel CH21 - 69 for the Remodulator
 TV standard PAL B/G/I/D/K
 selectable by Menu

Power Supply

Input Voltage 90 ~ 250 VAC \pm 6%,
 50 Hz/60 Hz
 Type SMPS
 Power Consumption Max. 28 W
 Stand by Power \leq 11 W

Physical Specification

Size (W x H x D) 260 x 50 x 180 mm
 Weight (Net) 1.3 kg

The STORY of How Singtel/Optus C1 "Took Over" the Skies

Every step of the way was (and to some extent remains) filled with danger. Two satellites, their combined launched value in excess of US\$500 million, are being "flown" by ground controllers in the near-space equivalent of "chicken." In a box casually defined as "70 miles on a side, 70 miles deep, 70 miles high," two Sydney muni bus size contrivances are being guided by flight controllers to ensure they do not "go bump" in the night. Or daylight.

In the language of the space satellite world, B3 traffic would be transferred to C1. It took 18 days and was not without anxious moments.

Flying the two space craft, which is what ground controllers do just as 747 pilots operate controls to fly the jumbo passenger planes, is "job one." Unless the two satellites can be safely and properly positioned, one to another, nothing else follows.

Optus created a rigid time schedule (see box, below) for the various transponder changes; most of this was adhered to but some deviations did occur, particularly as related to Optus Aurora service to New Zealand. When B3 12.407 shut down, from a NZ/Australia combination beam, C1 came back with only the Australia coverage beam. SBS and other NZ services were simply gone - short of being rediscovered on a dish in the 20 metre class. NZ radio stations taking the BBC radio feed from B3 were suddenly without - the BBC. The answer? A "temporary" feed on 12.595 of the BBC and then a return of the 12.407Vt footprint to include NZ a week later.

Most reports suggest the design objectives of C1 have been met (see "Soapbox", p. 8). Short, of course, of knowing with measurement detail how well the Eastern Asia C1 footprint may work. SF reports from Hawaii suggest C1 vertical is "there" on 1.2m dishes; one reader notes, "I am still trying to get my limited

Executive summary

- Who's Hot(ter?) - National "B"
✓ NT, WA, Southern Tasmania, Norfolk, Lord Howe, New Caledonia, North Island (NZ)
- ✓ Who's Hot(ter?) - National "A"
Hawaii, Johnston Island, Sydney, Alice Springs, WA, Norfolk
- ◆ Who's down - National "B"
S. Island (NZ), Vanuatu, NE Qld
- ◆ Who's down - National "A"
Upper half of Qld (coastal), possibly PNG + Solomon

knowledge of Australian TV around what we are seeing - a 1.5m is probably required for glitch free reception during tropical downpours." Another unexpected report from America's chemical waste dumping ground, Johnston Island some 700 miles south-west of Honolulu, further defines the 'Hawaiian Spot Beam': "On a 3m Ku dish, we have signal!"

Hawaii's inclusion in a -10 dB spotbeam focus point continues to baffle all but the Optus C1 designers with as many theories as there are professionals judging the coverage. Most point out, "If Foxtel wants to, it can directly link into C1 from Hawaii using Murdoch's new DirecTV programming base originating in the states. Dare we hope that the Sci-Fi channel might be sent to Australia in this manner?" *We doubt it!*

The most dramatic differences are on National "B" (pay-TV) into central Australia / NT; as much as +12 dB hotter than before. One Austar installation firm reported to SF late in July, "we have more than 600 installs booked at this stage waiting for the go-ahead to begin." Now there is signal to spare, even on "modest" 90cm dishes. But there's a glitch; the July 26 Northern Territory News headlined, "Red Tape Hits TV Dish Cost," revealing that even in remote/rural Australia, bureaucracy has stuck its finger into the machinery of progress.

As the twin maps (p. 8) illustrate, the winners far outnumber the losers and those who did lose did not have much to begin with (also see Soapbox, p. 8). For a tiny handful on Norfolk Island, dish sizes plummeted from the original 2.4m region to down under 1m. That's OK, the 2.4s are still required for B1 reception bringing in NZ's Sky (and TVNZ's FTA) bouquets making this the *only* spot where the *sum* of all pay services easily outnumbers anything either Australia or New Zealand have available individually.



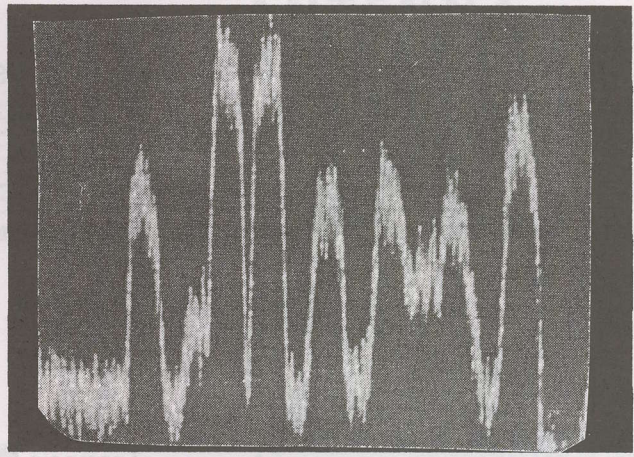
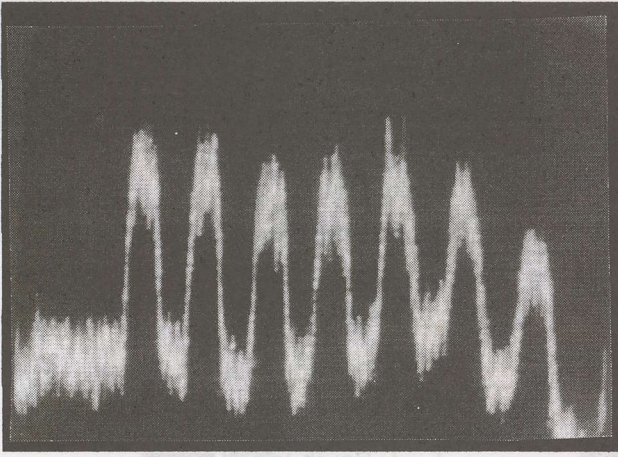
When 12.407Vt was switched from B3 NZ/national to C1 NA, SBS was one (temporary) loss for Kiwi viewers; BBC NZ radio feeds another.

The schedule - as it unfolded

- 16-07: Hz - 12.438 > 12.438; 12.689 > 12.689; 12.376 > 12.398 (all NB).
- Vt: 12.407 > 12.407 (NA); 12.336 > 12.367 (NA + NZ).
- 27-07: Vt - 12.367 to NA + NZ
- 28-07: Vt - 12.720 > 12.720 (NA); 12.527 > 12.527 (NA)
- 31-07: Hz - 12.501 > 12.518; 12.564 > 12.558 (both NB)
- 03-08: Hz 12.626 > 12.598 (NB); 12.313 > 12.279 (NB)

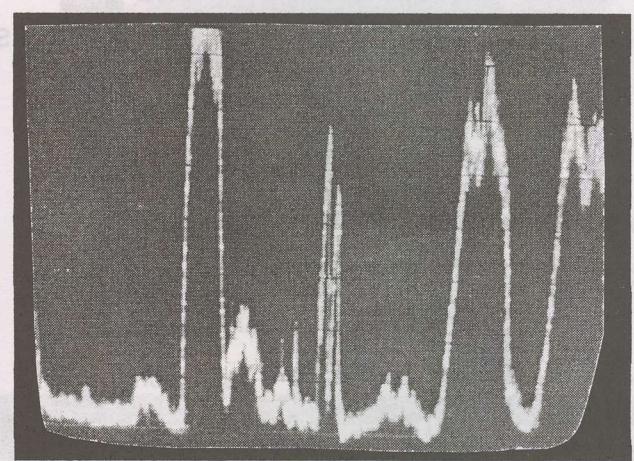
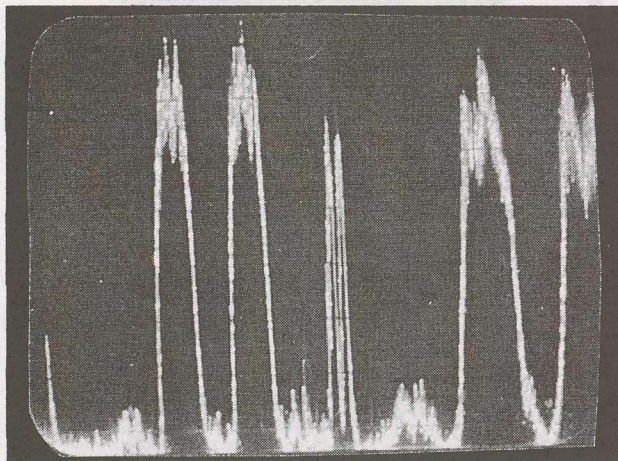
Nomenclature:

- NA is National "A" beam (Aurora-Vt) tightly confined to Australian coast line with "bonus" spot beams to Hawaii, Christmas Island.
- NB is National "B" (Pay-TV, Hz) with some expected spillover allowing reach to Norfolk, Lord Howe.
- EA is East Asia including Taiwan, plus spot beam to Hawaii (no reports to date)



July 14 (left): Optus B3 Hz before the first-phase switch over.

July 28 (right): Optus C1 Hz + Optus B3 Hz after the first three horizontal transponders (12.438 > 12.438, 12.689 > 12.689, and, 12.376 > 12.398) were put into operation.



July 14 (left): Optus B3 Vt before first-phase switch over.

July 16 (right): Optus C1 Vt + Optus B3 Vt after the first vertical transponder (12.407 was on National A at this point - did not reach NZ), 12.336 > 12.367 was activated.

Offshore, setting Norfolk (and even more lightly populated Lord Howe where NZ reception has *not* been reported) aside, there are at best sketchy reports. One says the Hawaii sub-footprint from the National A beam (SF#99, p. 19-21) appear to be present at something approaching the 40-42 dBw levels forecast. One beam on C1 with no reports to date is the "East Asia" footprint, covering a huge expanse of central and eastern China with a monstrous 54 dBw predicted. This beam also has a -10 dB (44 dBw) spot sub-footprint into Hawaii.

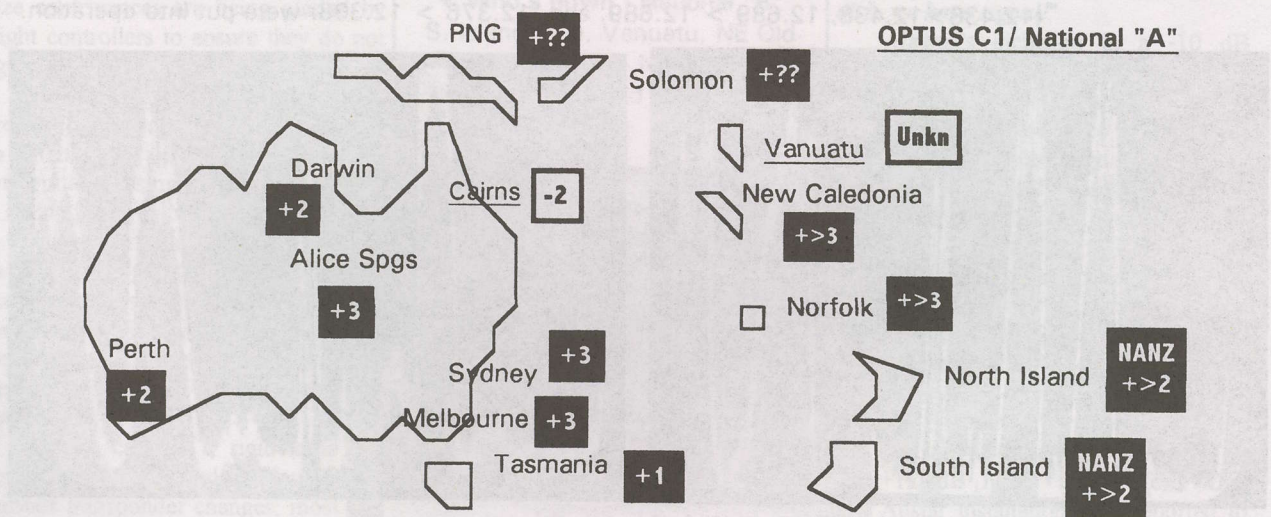
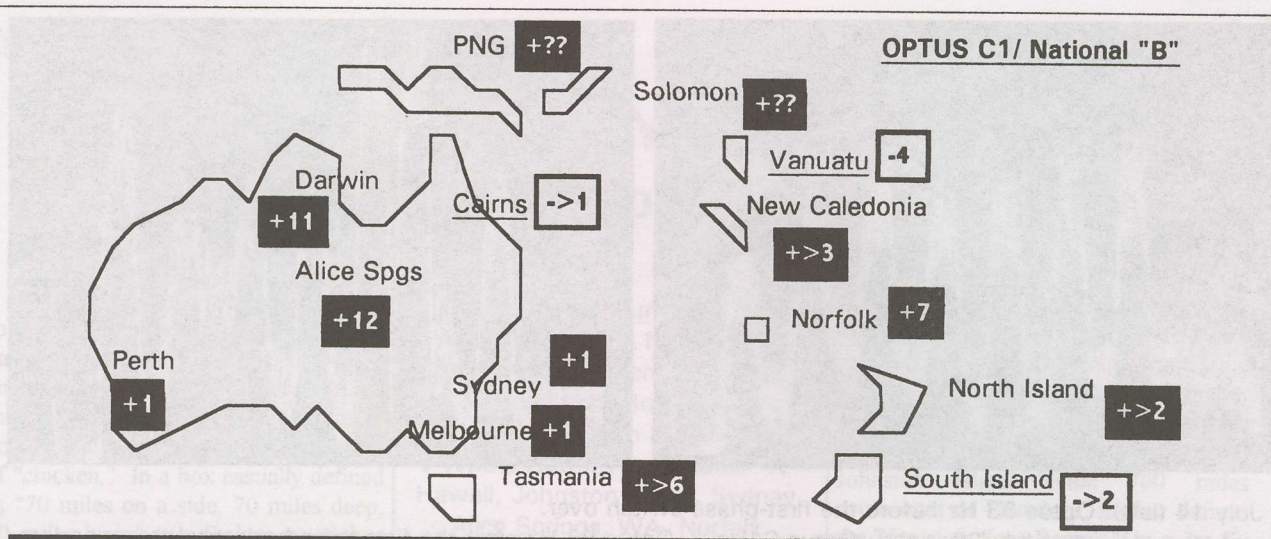
PNG reports are also sketchy - perhaps an act of "self-defence" out of fear that if "too much is said" something might change. Both the National "A" and National "B" were predicted to graze the southern coastal areas of western PNG (as well as neighbouring West Irian), and the troubled Timor. Don't be too surprised if we start hearing tourist reports of "Footy Channel Parties" from these outlying segments of Indonesia quite soon. Another interesting sub-footprint was predicted to encompass the tiny Australian outpost of Christmas Island, barely 250 km

due south of Jakarta. At -10 dB from the boresight maximum of 52 dBw on the National "A" (that's Aurora and Globecast only for now - sorry, no Australian Footy on this polarity - vertical), the possibility that those with 2m + Ku capable dishes *even in Jakarta* might have reception is high.

The summary appears to be very positive for so quickly after the turn-on. But this is a highly complex satellite with more first-ever (read: unproved in use) antenna pattern variations than has been assembled previously. History teaches us that when so many diverse "footprint beams" are compressed into a satellite, there have *always* been unexpected "ghost" footprints; spots of reception totally unpredicted. One example: 1980-era North American C-band satellites that were received in Tahiti, directly behind the satellite proper *opposite* where the beams were intended.

What comes next is a SF reader search mission. The satellite is up, operating with good to excellent coverage. Now we need as a group to define the "real" limits of this new machine. And reports to SatFACTS, please!

Note: Spectrum analyser screen shots done at SatFACTS in northern New Zealand.



SUMMATION of reports received (above). Top illustration is of National "B" (Austar/Foxtel) reports analysed. Bottom is National "A" (or, NANZ for NZ), providing Aurora/Globecast services.

Reports - Soapbox

"Signals in Vanuatu (north east of New Caledonia) are -4 dB from B3 (Hz) and in fact B3 was too weak to be useful. We were not 'there' before and we certainly are not there now!" "I had a panic attack when 12.407 disappeared on my 90cm dish; but now it is back; Thank goodness." (Dunedin, NZ) "In Far North Queensland, with 85cm offset, EmTech 210B, C1 signals average 92% whereas B3 averaged 81%; an improvement if not dramatic." "Vertical 12.407 up by 7 dB when on NA beam before the switch back to NZ/NA; the 12.367 Globecast however from C1 using NZ/NA is simply not there suggesting we are better off here with NA than with NZ + NA." (New Caledonia) "No change noted - 60cm in Christchurch (NZ); 12.367." "Using 90cm dish in Auckland, 98% before change and 98% after." "Globecast (12.367) in western NSW - on NA + NZ beam, signal quality on UEC 642 has climbed from 56 to 84%." "Locations where Optus predicts C1 will be at lower levels than B3 (Foxtel/Austar Hz transponders): Mackay, Prosperpine, Rockhampton, Ingham, Townesville" (All Qld, from 'Availability Variations' published by YES - Optus). "12.407 and 12.367Vt now 100% on Jonsa 90cm; were 80 and 70% respectively on B3." (Western Australia) "On 90cm offset, 12.407Vt rose from 66% to 98%; July 16), (WA) but with the retransfer of 12.407 back to NA + NZ, it went back down." "Here in Central Australia on 90cm, 12.438Hz is 92% whereas previously we had no signal at all! On vertical, 12.367 is 20% better than B3's original 12.336." "12.367 C1 has dropped here at southern tip of South Island (NZ) from 94% to 60% on 60cm." "Here in western NSW, it appears both National 'A' and National 'B' are almost equal, hovering between 96 and 100%." "12.407 rose significantly from 56 to 96% on July 16th, then dropped back to 80% July 27 when I understand they returned to NZ + NA beam." (NSW) "Aug 3 after 12.313 > 12.279, one of C1 beacons *briefly* measured at +9 dB above level of strongest Hz carrier - *how did they do that???*"

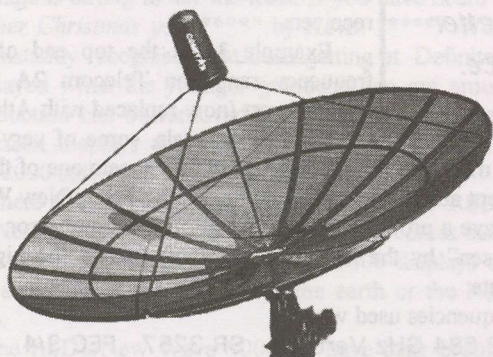


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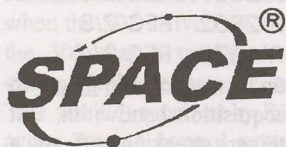
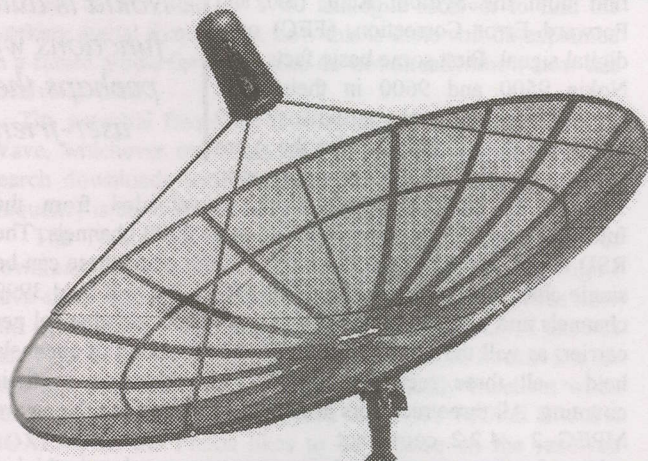
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Perhaps there is a "better" choice?

Direct Hands-On Comparison: Nokia versus Humax versus RSD ODM

To DX satellite satisfactorily it is fair to say that a receiver is required that will find both the Symbol Rate, (Sr) and Forward Error Correction, (FEC) of a digital signal. First some basic facts. The Nokia 9500 and 9600 in their basic format will hold only a derisory 300 channels; not enough to cover the Astra series one craft at 19.2 degrees east.

With DVB 2000 installed, easily downloaded from the Internet, the memory is extended to over 2000 channels. The RSD ODM 300 will hold 999 channels and all of these can be single channel per carrier. The RSD ODM 302 will hold 3999 channels and once again all of these can be single channel per carrier, as will the New Wave 9000. When talking of channels held - all three receivers include radio channels in their counting. All three receivers are MPEG-2 compliant. None are MPEG-2 - 4.2.2. compliant.

Now for the comparison. It is accurate to say that the Nokia 9500S has a *marginally* better threshold than the RSD receivers that it is being compared with. However it will not detect channels of low signal pressure using the auto detect search. (Please note that the receiver used had the auto symbol rate and forward error correction processor installed, more about this later.) The RSD/New Wave receivers found the signal, but would not display video or audio. The Nokia 9500S has an annoying habit of going for a stronger signal many megahertz away from the inserted parameters. The Nokia has a search parameter of an estimated 30 MHz, whereas the RSD/New Wave receivers have more confined search parameters which I estimate to be of some 6 MHz, unless the signal is particularly strong and then maybe it will extend its search to some 10 MHz.

Example 1. I set the Nokia over the frequency of 11.043 GHz Horizontal on the Satellite W1 at 16 degrees East. The Nokia did not find the resident channel at that frequency, TMF from Belgium, but detected a data feed at 11.057 GHz. Whereas both RSD's detected the correct channel on their first sweep.

Example 2. A weak signal on 2F3 at 0830 Hrs BST on 05 September 2001; 11.071 GHz Horizontal. The Nokia would not auto detect at all, but the RSD ODM 300 found the channel on its first sweep, and the RSD ODM 302/ New Wave 9000 on its second sweep. The picture was pixellating badly on both receivers, but the subject matter was still discernible. The Nokia was given the encouragement of a correct symbol rate, but still failed to find anything. When the forward error correction status was inserted, the receiver paused for a while

If the reason you want a Nokia is automatic search functions with DVB2000, perhaps there is a better user-friendly choice.

before detecting the signal it was sitting over. I must be fair at this stage and say that the Nokia picture was a fraction more stable than those of the RSD's. The audio was about level between the three receivers.

Example 3. At the top end of the frequency range on Telecom 2A at 8 degrees west (now replaced with Atlantic

Bird 2) there were five Italian channels, some of very odd content I must add. The Nokia would only locate one of these, when swept across the five frequencies. The RSD's/New Wave did not have a problem, locking up all five without error. The one "chosen" by the Nokia to scoot off to had the highest symbol rate.

The frequencies used were:

12.684 GHz Vertical.	SR 3257	FEC 3/4
12.702 GHz Vertical	SR 2500	FEC 2/3
12.696 GHz Vertical	SR 2500	FEC 2/3
12.691 GHz Vertical	SR 2892	FEC 2/3
12.687 GHz Vertical	SR 1879	FEC 3/4

However the Nokia's tuning range can be restricted in theory to a spot frequency by adjusting the acquisition bandwidth. But even then I have found the receiver streaking off to a somewhat stronger (nearby) signal

The RSD/New Wave receivers will store all found channels by use of a simple on screen display, whereas on the Nokia they appear in a long list where you cannot define the satellite. The RSD's/New Wave also display the satellite name, frequency and symbol rate when individual channels are accessed. All the Nokia gives you is the channel name and you have to manually sort the channels into their various satellites, and notes have to be consigned to paper where various satellites begin and end. *This has to be updated manually every time a new channel is added!*

However there is a computer link system available that alleviates this particular problem with the Nokia. To that I add this argument: I do not expect to have to buy a computer to resolve the shortcomings of a receiver!

(Absolutely personal thought. I believe that Nokia have made their name on a false premise, in that, yes their receivers do present decent video and audio, but they are destroyed utterly by the restrictive amount of channels and awful menu and channel gathering systems. Also their receivers will not work with all types of LNB as I found out to my expense. Nokia's customer services in the UK I also found to be wanting in no uncertain terms. It has taken a very clever German who has manipulated the software to a finite degree that has really given Nokia their "good" name)

The RSD/New Wave receivers will add a channel immediately as it has been detected, they will reject a found channel if that channel already exists in the satellite list. The Nokia requires further menu juggling and button pushing to add the found channel to the single long list.

Authored by Roy Carman, Email
r.carman@ntlworld.com

In SF#107, DXer Carman reviewed a little known fully automatic search machine from China/USA. Here he reviews prior "automatic search" offerings. This is a "SF Writing Contest" entry.

On screen displays with the RSD's/New Wave are more straightforward to use than those of the Nokia. A beginner using DVB2000 on the Nokia could soon find him or herself having heart failure when first broaching the on screen display! But an exceedingly good receiver handbook is available via the Internet, which is more than can be said for the Nokia *original* handbook! I found I had only to refer to the highly understandable RSD/New Wave handbooks in extreme cases, as each on screen display is fairly self-explanatory.

When the Nokia was first switched on after the DVB2000 was installed, the Vicar was visiting with us. He dropped his cup of tea on the carpet and spit his scone all over the TV screen when he heard the introduction song to DVB2000. The language is strong to say the least. If you have heard the song "Father Christmas you ****" by Kevin ***** Wilson, you will instantly recognise what I am getting at. Definitely not to be played when the younger grandchildren are around. This introduction can be removed by use of one of the myriad of on-screen displays that can be accessed by the use of the DVB2000 software.

There are no such hazards with either the RSD 300 or 302/New Wave 9000. The RSD ODM 300 comes instantly on when cued, but the 302/New Wave 9000 displays a lead in with a picture of a satellite over the earth or the New Wave Logo.

The RSD's/New Wave 9000 *do* have their problems; the 302/9000 version especially. The RSD ODM 302 was the successor to the 300; it doesn't perform so. In fact at the time when the 302 arrived on the market I wrote to RSD saying that the 302 was a retrograde step on the 300, except for its channel holding capacity, and definitely not an improvement. This was not received by RSD very well. Firstly, it had an over active remote control setting, the receiver would do two or three jumps in the on-screen display each time a button was depressed on the remote control. This was corrected by a software upgrade. Now, many people are reporting that a button has to be depressed two or three times to get the on screen display to react. *Out of the frying pan into the fire!*

Very often the 300 and 302/New Wave 9000 will download a channel and when you go to view the channel content, you will be informed that the channel is encrypted, "Please Insert Cam" appears on screen. Often this turns out to be untrue. I have loaded the received data onto another receiver only to find out that the channel is very clearly free to air.

With the RSD's you have to select the satellite you wish to check a frequency on. This in itself is easy to do. You will find that if you have carried out several searches of a couple of frequencies on the 302, the receiver takes it into its head to slip back to the previous data of the last satellite the receiver was on. It's very easy to miss this event happening, resulting in the satellite change not being noticed and newly found data having been downloaded onto the *wrong* satellite heading!

Fortunately the RSD ODM 300 does not suffer with these problems, and is the far more positive of the two RSD receivers.

I haven't finished with the quirks of the 302/New Wave 9000 yet. When you have been watching a programme for some time, you cannot get the receiver to behave properly in the search mode or any other mode. Switching off and switching back on again is the only way of clearing the gremlins, 'forcing' the receiver to function correctly again.

Also the 302 certainly does not like to be in close proximity to such things as receiver amplifiers. It reacts by duplicating every channel down load, oddly though this only happens on

single channel per carrier channels. I have had the 302, duplicate a channel 301 times!!!! Admittedly the 302 doesn't appear to do this when I move it away from the other electronics in the cabinet. I must also admit I have yet to suffer this problem with the New Wave 9000. I think by now that you the reader would have gathered that the 300 by far, is the better of the two RSD receivers. To that thought I also concur.

Getting back to comparisons then. Both the RSD's/New Wave 9000 do not adjust to the accurate frequency that a channel is working on, they are reliant on what you, the user, inserts as the frequency.

I use an Echostar LT 8700 analogue receiver to find the working digital frequencies, how this is done will be explained in a future article for those who do not already know how this receiver is used.

The potential frequency is then loaded into the RSD/New Wave, whichever one I am to use, and set to search. If the search downloads with digital parameters, then the inserted frequency is the one the receiver displays.

The Nokia will correct the frequency at the time of download, and this to me is an endearing function, although I have since discovered that it will vary by a single MHz now and again. Before the Nokia arrived in my armoury, I used to insert the found digital data into the Praxis 9500 Pocket Sat, an excellent little free to air receiver, (especially excellent when her-in-doors does not like the idea of "ANY MORE BLACK BOXES") as the Praxis likes to be precise on the received frequency. Often I had to change the frequency by a couple of megahertz on the data I had discovered.

The symbol rate information given by both RSD's/New Wave 9000 are often a little out as well. For example the SR of 27.500 will download as 27.531. 5.632 will appear as 5.640, 6.111 as 6.117, 6.666 as 6.671, and so on. This also occurs on the Nokia but it is limited to only one or two baud. The correct symbol rate figure is soon learned and therefore it does not present much of a problem. Channel changing reaction times are about the same on all three receivers, *maybe* the Nokia has a *slight* edge here. For discovering received data, the Nokia will tell you infinitely more than the RSD's. The only info that the RSD's/New Wave 9000 will give is, the symbol rate, Forward Error Correction, and the PIDs for video, audio, PCR (Clock) and text. If you like to search the Nokia's DVB2000 numerous on screen displays you will find not only what the RSD/New Wave 9000 receivers display but a whole host of other information. Whether it interests you or not is another question, and is also dependent on your technical expertise.

I have a final gripe about the RSD over the Nokia and that is the CAM slot is at the rear of both the 300 and 302 receivers. RSD's answer to this is that it keeps the card and CAM away from the children. OK - if you can access easily the rear of the receiver. Most guy's set ups that I have seen and played with, this is a pretty difficult thing to facilitate. The New Wave 9000 doesn't have this problem, the redesigned case has placed it to the front. The Nokia's CAM slot is conveniently on the front, although it is disabled on the 9500S.

So I will now summarise these three receivers.

All three receivers do have auto symbol rate and auto forward error correction function. The RSD's/New Wave 9000 search function can be observed as it happens, with the Nokia you input the frequency, reduce the symbol rate to 0 and FEC to ---, and wait and wait and wait, until either you get a result on the signal present display, or simply give in. The RSD's/New Wave 9000 are much quicker in searching.

The RSD's/New Wave 9000 once they have found a working MPEG-2 channel will download it immediately. The Nokia you need to do 'other' on screen display functions. With all three receivers, to discover the working PIDs you have to come out of on-screen display and then re-enter the on screen display to the PID position.

The Nokia gives you a reasonably accurate frequency, Sr and FEC. The RSD's/New Wave 9000 display the frequency you inserted and the Sr can be several numbers out, but the defect soon becomes easily recognised.

The Nokia has a slight edge on video and audio quality. When receiving an NTSC channel the bottom quarter of the on-screen display drops out of sight; this is a real pain in the proverbial when you carry out your next search. The only way out is either change to a PAL channel or be brave and mess about in the red OSD. NTSC does make the OSD larger on the RSD's, one thing however you do not lose any off screen. The RSD's/New Wave 9000 have a far better channel listing set up, compared to the virtually non defining Nokia system. *Unless, of course, the Nokia is linked to a computer.*

When searching through already installed channels, all three receivers will adjust to new PIDs. That is to say many broadcasters can use the same single channel per carrier frequency on a transponder (for news and special feeds) and use the same Sr and FEC, but *different* PIDs. For example UK broadcasters more often than not use Video 308, Audio 256, PCR 8190. Italian Broadcasters often use Video 4194, Audio 4195, and PCR 4194.

The Nokia has a slight edge on threshold level. The RSD's/New Wave 9000 can be *seen* to be carrying out a search, the Nokia you just hope something 'good' is happening. The RSD's/New Wave 9000 on screen displays are infinitely easier to navigate than the myriad of choices that are available on the Nokia. The Nokia to a beginner can be very daunting, whereas the RSD's/New Wave 9000 tend to be easy and self explanatory. Sadly you cannot buy new any of the RSD and Nokias now. It will have to be a second hand purchase. However the New Wave 9000 is soon to be sold into the UK. RSD have passed all their receiver production over to a South Korean company, hence the New Wave 9000; and Nokia now fit a cheaper Latvian built processor to their 9500 and 9600 receivers that does not facilitate the Auto Sr function. If offered one of the Nokia and you want to check that it has Auto Sr, look down through the air louvers on the top of the receiver (rear, left) and look for the following lettering: **NDT 1006A**. If NDT is not present on the tuner can, then the receiver will not facilitate Auto Sr. If you see the letters DF1ST you will need to *enter* the Sr on any search. Stick a

note of this in your wallet, as you may run into a receiver at a boot sale and this will allow you to buy wisely. They do turn up at boot sales quite often, mainly because the seller doesn't understand satellite television DXing, and to him it's just a useless piece of junk that Sky has outmoded. Just how wrong some people can be!

The RSD ODM 300, 302, and New Wave 9000 are Auto Sr. I don't think RSD made any other commercially available receivers. Well which do I find the better receiver? I go for the RSD ODM 300, then the RSD ODM 302/New Wave 9000 and lastly the Nokia. I want a receiver that tells me about what I am looking at, not one that goes off elsewhere ignoring the obvious.

I have tried other Auto Sr receivers and sadly none, but none of them come near the capability of these three receivers. Huth, a German satellite receiver producer have available the Huth 4060 DP V which advertises an auto symbol rate function. As of yet I have failed to get a hold of one of these receivers to test. However I have tested the Humax 5400, which boasts a search system of a kind. The Humax menu offers you several different satellites, each with a *set list of symbol rates*, to which you can add four further symbol rates of your own choosing. The receiver is then sent off in its search mode. It will search all of the symbol rates now inset against every forward error correction, e.g. a symbol rate of 5.632 will be checked against the forward error correction rates (Viberti Bit Rate), FEC for short as 5.632 1/2, 5.632 2/3, .632 3/4, 5.632 5/6, and 5.632 7/8. It will then go to the next symbol rate (5.633 is logical but most skip ahead by 3 or 4 such as 5.636) and do like wise, and on through the symbol rate list. It will do this every 6 MHz. At this point it is worth reminding you that *both* polarities of the signal, vertical and horizontal have to be searched. If you consider the Ku Band spectrum, which runs from 10.700 GHz to 12.750 GHz, this process, checking through some 16 Symbol rates each with five different forward error correction rates, can take a long, long, time. I searched the Satellite NSS K at 21.5 degrees west, using the longest list of symbol rates already hard stored in the receiver, and four of my own choice. The receiver was set to search at 0800 Hrs and at the same time next day was still searching. In fact the procedure took some 36 Hours to complete. *Ouch!* One of the problems is that you cannot set the frequency search parameters that need to be searched. NSS K visible frequency spectrum here to the United Kingdom is 11.450 GHz to 11.750 GHz, and also 12.500 GHz to 12.750 GHz. The Humax *insists* on searching from 10.700 GHz to 12.750 GHz - *complete*. So a lot of wasted searching takes place. In fairness the system is designed to search the likes of the Astra I Series of satellites and HotBirds. This is a very poor and wasteful way of DXing which can be likened to fishing; you only get a bite when the fish are there, or frequencies are in use. The Humax IRCI 5400 produces good video and audio, but its menu system and the way it stores downloaded channels is derisory. Again this receiver fails to delineate by satellite (i.e. Nokia's approach), and you have to really work hard to sort the channels into the five favourite channel categories. The reason for the Humax IRCI 5400 satellite receiver being popular is definitely *not* for its setting up, but rather it's onboard Irdeto CAM (decryption device) can be hacked to also decrypt the Viaccess, Irdeto and SECA encryption systems! And with cards arriving on the scene with massive memories, it has huge potential for the pirating trade. What the whole thing comes back to is that to DX - an auto symbol rate receiver is an essential item.

Your Opinion?

Of course you have one! SatFACTS is looking for "opinion makers" who feel strongly about any and all aspects of the home dish / satellite world.

Have something to say?
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JOYSAT

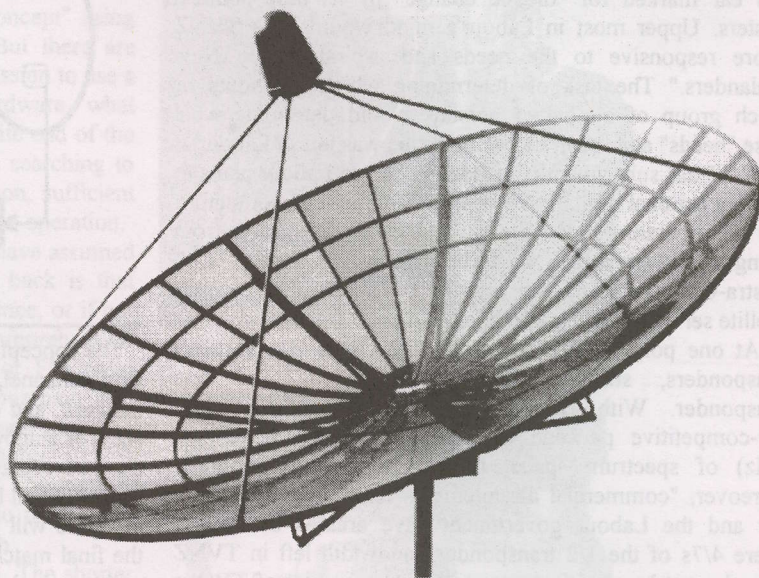
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TVNZ has a competitive answer

Rugby World Cup:

"Sky (pay-TV) is not going to have it all their way!"

When New Zealand's present Labour Government took control of various state owned enterprises 4 years ago, TVNZ was ear marked for "drastic change" by its new political masters. Upper most in Labour's mind would be a TVNZ "more responsive to the needs and aspirations on New Zealanders." The task of determining which individual or which group of appointed persons would determine what those "needs" and "aspirations" might be was left to Labour.

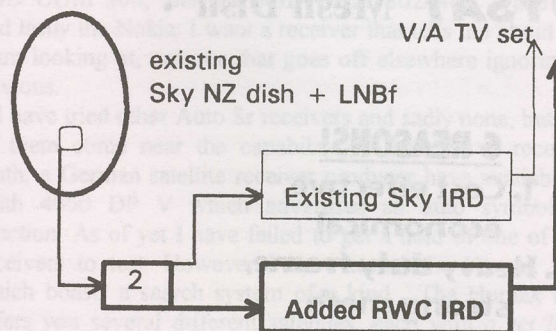
TVNZ has subsequently abandoned its pre-Labour plans to create a national digital service while commercial competitor Sky NZ, operating in a competition vacuum, has grown from strength to strength. A TVNZ plan to partner with Telstra-Clear (Saturn) to provide a national FTA + pay satellite service was also scrapped.

At one point TVNZ "controlled" 2 Optus B1 (vertical) transponders, subsequently reduced to 1/2 of one transponder. With two, TVNZ could have fielded a Sky-competitive package of programming; with 1/2 (27 MHz) of spectrum space, it has lost that opportunity. Moreover, "commercial arrangements" forced on TVNZ by Sky and the Labour government have created a scenario where 4/7s of the 1/2 transponder bandwidth left in TVNZ control must be used in support of Sky's carriage of TVOne and TV2 (TVNZ) services. Which leaves TVNZ with only 3 programme channels for future development; hardly enough to be "competitive" to Sky in any serious way.

It is therefore something of a surprise to find TVNZ actually doing something new, unique and different with a portion of the 3/7ths it still controls (and pays monthly rent to maintain).

RWC - Rugby World Cup. Starts in October, runs for ten weeks. TVNZ has the sole New Zealand rights which will be put to FTA on TV One's terrestrial network. Ho-humm; good for Rugby fans of course.

But TVNZ is doing more. Pay close attention FTA installers in New Zealand - there is a windfall heading your way.



The concept at TVNZ is to create a dedicated Rugby World Cup "channel," available outside of the TVONE terrestrial network, and outside of their commercial obligations to Sky NZ, for Rugby fans. From match one (October 10) through the last replay (December 20) the amount of match-play available will build, day by day, match by match. The satellite schedule will grow as the matches are played, so that when the final match has been played, the entire series of matches will be scheduled over approximately one additional month in replay fashion.

FTA installers can cope with the sale and installation of a second, dedicated, FTA receiver for the TVNZ "RWC Channel" quite simply by installing a two-way splitter on a home, pub, club's existing Sky NZ dish (making certain the splitter has one power passing output port - connected to the existing Sky IRD); the second output on the splitter feeds the new FTA receiver for TVNZ's RWC service.

If the existing TV set(s) is (are) fed with modulated UHF out of the pre-existing Sky IRD, it would be best to use a SCART or RCA-RCA plug line to connect the new RWC receiver to the TV set and allow the viewing to push "A/V" (or as otherwise marked) on the TV set to take the direct audio and video feed from the RWC receiver.

Details - TVNZ's Satellite Fed Rugby World Cup Soccer Channel

Start date: Friday October 10 (Australia v. Argentina)

End Date: Tuesday December 20

Satellite/where to find: Optus B1, 12.456 vertical, Sr 22.500, 3/4 (pgme ch 5 likely)

Coverage: All RWC will be broadcast live on TVONE and simulcast on the above Optus B1 channel.

Bonus coverage: RWC Highlight shows broadcast on TVONE (terrestrial) will also be broadcast on the special Optus B1 "RWC" channel. Additionally, RWC repeat telecasts will follow each live telecast for "approximately 12 hours per day" *only on* the (FTA) satellite channel. RWC delayed repeated showings will "build" as each match comes along creating a ever larger "RWC Channel" service as the 48 matches are played.

Other FTA satellite programming: Holmes, "some prime viewing hour" TVONE programming will also appear on the special RWC channel.

Restrictions: This is a genuine FTA service; clubs, pubs and others with a desire to have 12-hour plus daily RWC coverage will benefit by being equipped with 12.456 receivers.

Neither TV3 nor Sky will have any of these broadcasts, even on a time-delayed basis.

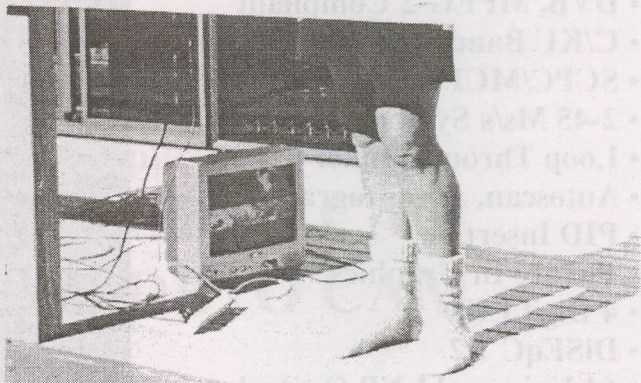
2.4 GHz TV links using License Free off-the-shelf hardware

The concept of "sharing" (as in rebroadcasting) satellite received signals to homes/locations which do not have a satellite dish and receiver has attracted many from the time when SatFACTS introduced the "shared dish concept" using SDSstv.com equipment (SF#83, July 2001). But there are practical problems. First is "licensing" - or permission to use a transmitter "in the public airwaves." Second is hardware - what exists is either terribly low-grade or at the opposite end of the scale, frightfully expensive. What we have been searching to locate is a "happy medium" - priced within reason, sufficient quality to produce adequate results and trouble free operation.

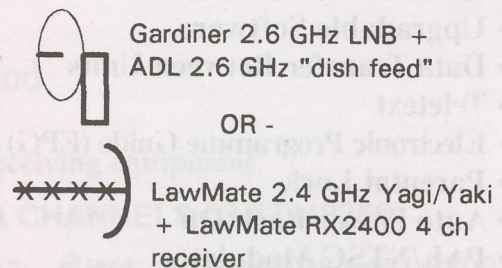
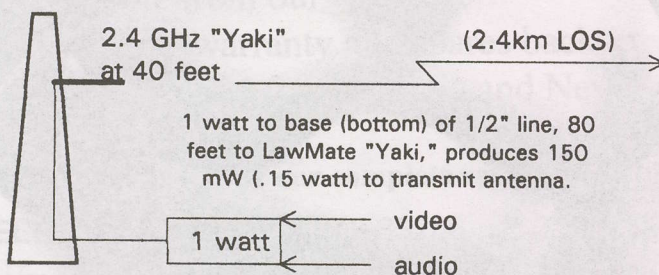
There is a third element. User skills. What we have assumed from the first SF article more than two years back is that anyone reading this publication has some experience, or if not experience, background, allowing reasonable comprehension of how "microwaves" differ from say band I or FM radio service. Sadly, this was a bad assumption on our part. The reader who understand what "line of sight" means", or who understands "signal blockage from vegetation," is unfortunately in the minority of all readers.

At the risk of alienating that minority who do understand how microwaves work, these quick rules of thumb:

✓ Microwave means "short-short" wavelengths. The shorter the wavelength, the "shorter" the signal coverage. Long-waves (AM broadcast radio) travel far, hugging the surface of the earth. Microwaves travel in a straight line, from the (elevated) transmitting antenna to the reception antenna - and demanding of LOS or "line of sight" (a clear, unobstructed "view" of the receiving antenna from the transmitter). AM radio bends over hills, buildings, forests. Microwaves do not - if you can't "see through" the blockage, microwave cannot penetrate the obstacle either. LOS is "literal" with microwaves.

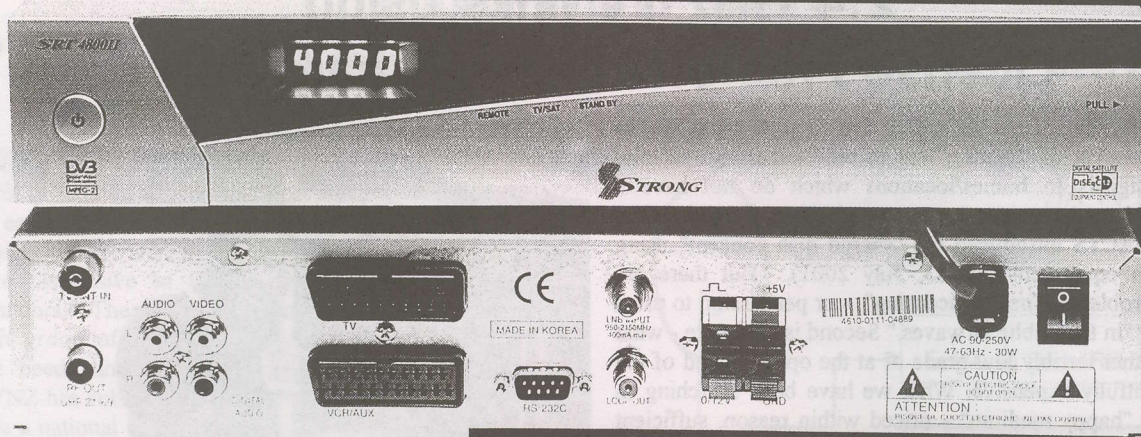


SF's John Taylor homes in on 2+km 2413 MHz signal using LawMate Technology yagi/Yagi.



Linking - the "legal" question

"Sharing" (redistributing) a satellite (or other) TV programme service via microwave is fraught with legal challenges. In NZ and Australia, using the L-band frequency region is a "no-no" unless you are a licensed ham radio operator, stick to the 1230 -1300 L-band segment, and rebroadcast only non-commercial services. But the 2.4 GHz "unlicensed" band allows up to 1 watt transmitted power (eirp) although you will "share" this RLAN/WLAN "band" with many other users connecting PC to PC. Equipment for both L-band (1080/1120/1160/1200 MHz) and 2.4 GHz (2413/2432/24512/2470 MHz) is surprisingly reasonably priced (1 watt output transmitter - NZ\$400) but as SF has found in field tests, the receivers available as "companion" pieces to the transmitters are basically crap. Naturally we went the next step - to work out what would make these budget priced transmitters provide decent coverage. Part of many.



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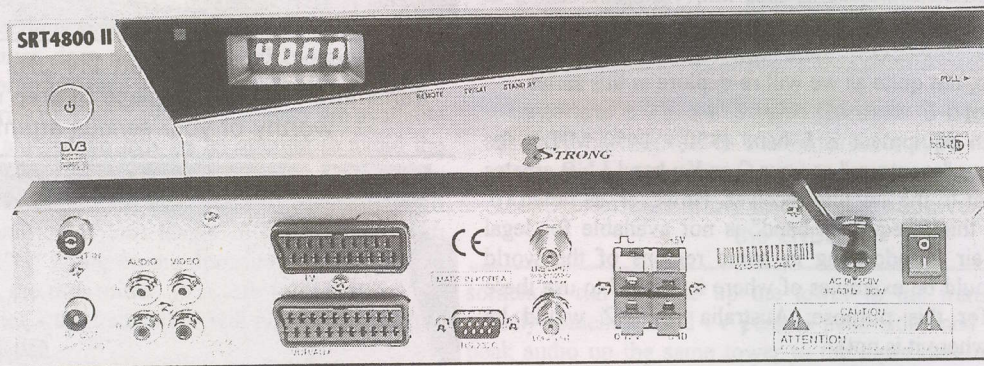
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✓ Without respect to frequency, all transmitted signals become weaker the further they travel from the radiating (transmitting) antenna. Distance from the transmission antenna, and the amount of signal you can expect at a new (more distant) point is easily calculated; the maths are very simplistic. Each time the distance is doubled, the measured "signal voltage" goes down by 6 dB, assuming only that the transmitting antenna can "see" both the first (closer) reception point and the second (more distant) reception point.

Therefore if you can the ability to calculate or actually measure the signal level at say 1 km, you can accurately "forecast" the amount of signal at 2 km, 4 km and so on; as long as "LOS" exists at each new reception point. Does that mean that lacking LOS, there will never be signal - no reception? No, not quite as we will re-explore in this series.

The equipment

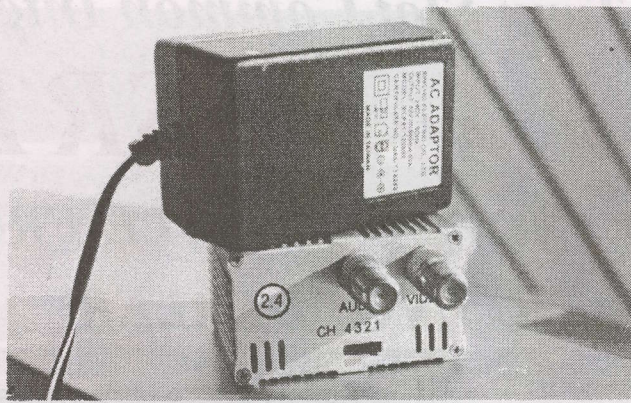
SDStv.com equipment is L-band (950 - 1450 MHz); the same frequency "spectrum" as your C or Ku band LNB creates to interconnect to the satellite receiver. However, as noted (p. 15, bottom), this "frequency band" is not available for legal through the air broadcasting in some regions of the world (Niue, Fiji would be examples of where it *is legal* to use these frequencies for this purpose; Australia and NZ would be examples of where it is not).

There are several UHF and microwave frequency bands where unlicensed "broadcasting" *can take place* provided the transmission equipment meets local regulatory power limits. One such band, available almost universally world-wide, is 2,400 - 2,483.5 MHz or 2.4 to 2.483.5 GHz. This bandwidth is "shared" with dozens of different "signal radiation" categories - microwave ovens, PC to PC com circuits (WLAN, RLAN), "wireless TV cameras" (to mention only 3). Most regulatory bodies establish "maximum transmission power limits" for use of this unlicensed band (unlicensed means buy the equipment, put it into operation without having to make application for permission to do so). New Zealand, for example, says you may "radiate 1 watt of power" in this band without a license.

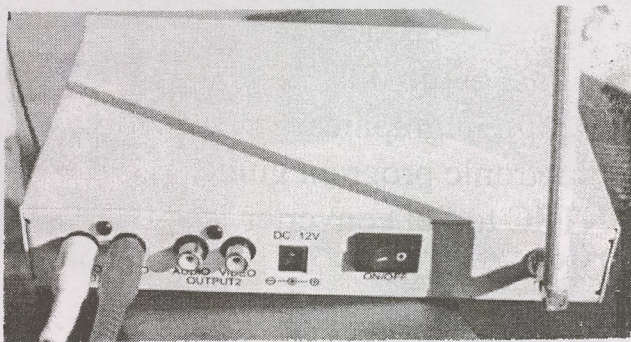
"Radiating" 1 watt requires explanation. A 1 watt transmitter delivering 1 watt to a simplistic (0 dBg or decibels of gain) transmission antenna "radiates" 1 watt. The same transmitter delivering 1 watt to a 6 dBg "yagi" antenna "radiates" 4 watts - because the antenna "passively amplifies" (increases) the transmitter power by the 6 dB of gain it possesses. Therefore a 6 dBg yagi fed the full 1 watt of transmitter power would be illegal in NZ; assuming you are "caught" doing it.

LawMate Technology Co., Ltd, a Taiwanese firm (www.lawmate.com.tw), manufactures various L-band and 2.4 GHz range transmitters with power levels from 0.1 watt (100 milliwatt/mW) to 4 or even 6 watts. Their agency representative in New Zealand is Merit Li-Lin New Zealand Limited (www.meritcctv.co.nz). Merit stocks a wide range of 2.4 (but not 1.2) GHz equipment as well as surveillance and other "privacy invasion" devices. LawMate ostensibly is a supplier of privacy invasion equipment for use by "law agencies" (hence the firm's name) but special products on their web site reveal their "real" business - making it possible for one person to "spy" on another (see their GM-2000 Target Phone and GM-1000 Goes Phone as two examples).

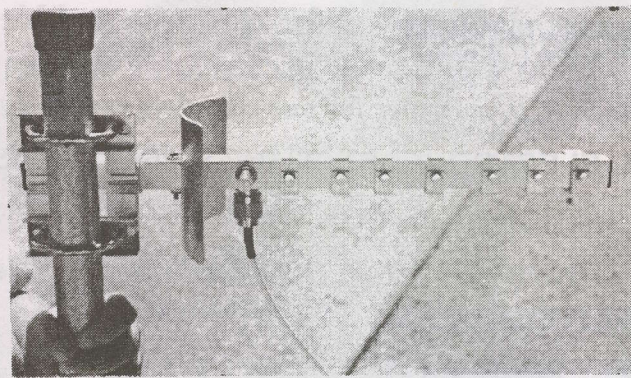
One of the more interesting products from LawMate is the RP-1224S/H "Repeater Station." It receives in the 1.2 GHz (L-band) range, using a LawMate 1.2 GHz yagi antenna and companion LawMate 1.2 GHz receiver, and then couples (within the package) to a LawMate 2.4 GHz transmitter. The



ABOVE - LawMate 1 watt 2.4 GHz (4 channel) transmitter. BELOW - "piece of crap receiver" not worthy of your serious attention.



BELOW - LawMate "Yagi" (Yagi) is 9 element antenna which they claim to be resonant in 2.4



concept is if you lack LOS from the intended "origination point" you can "repeater link" from a building roof or other "elevated" site through the (repeater) system.

The basic LawMate transmitter is compact (60x48x35mm - see photo above). There are three connections and no user adjustments; V(ideo) and A(udio) in - RCA sockets - and 12 V

dc (a 500 mA power pack is required for the 1 watt version). A modest 12V battery would operate it for several days and Laurie Mathews of Auckland reports success with a standard 9V battery.

The transmitter is sold with a right-angled connected "whip antenna" which is quite useless for anything greater than a couple of hundred metres. The RF output connector is something known in the trade as "SMA" which is unlike anything you have ever previously used. It is possible (with great effort) to locate SMA>Type "F" or other "transition (adapter) fittings - our warning is don't even *think about* plugging the 1 watt transmitter in until you have a suitable SMA male to something else adapter in place, and antenna. Why? The transmitter does not like (it will blow up) when there is an improper impedance connected to the SMA fitting.

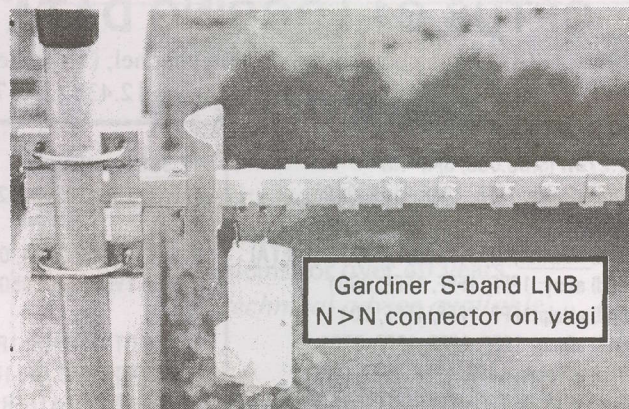
A companion series of Yagi LawMate antennas are available (they call them "Yaki" which may be an attempt to avoid the copyrighted Yagi name, the patented Yagi design, or, it may just be a bad job of translating Cantonese to English!), each comes with a short (under 1m) length of SMA cable (with fitting) and a type "N" fitting on the opposite end - N goes to the Yagi, SMA to the transmitter. It is safe to use their Yaki with their transmitter - the transmitter will not "blow up" due to impedance mismatch.

But a 1 metre length of cable is at best a challenge because it means the transmitter and the transmitting (Yaki) antenna must be within 1 metre of one another. As transmission range depends upon LOS this typically suggests the transmitting Yaki must be on a roof, on a tower or otherwise situated to take advantage of "height" (being higher means you can see - sight - further). Alas, 1 metre of cable means you must place the transmitter at the same location. Out-of-doors, unprotected, fed with a consumer 12V dc supply and two RCA jack cables run from a distant point where the audio and video originate is bad engineering practice. And unsafe. All of which re-enforces the belief that these guys are really in the "snoopy video + audio" business, providing equipment to "eyedrop and eavesdrop" on unsuspecting persons.

Philosophical questions aside, we mounted their YA-2413 13 dBi (or 10.7 dBi) Yaki 40 feet above ground, and placed their 1 watt transmitter model on 2413.0 MHz 80 feet away with 1/2" 75 ohm aluminium jacketed (CATV grade) cable between the two. Line loss. Our 1 watt (measured - they are correct in their claim) transmitter diminished to 0.15 watt at the end of this 80 foot run. So our radiated power (erp) was .15 watts times 10.7 dB of gain or around 1 watt. Legal.

Then 2.4 km distant we went to a site with LOS to our transmitting Yaki, installed an identical TA-2413 Yaki and connected it through their 1 metre length of supplied SMA cable to their model RX-2400 receiver. We were disappointed; yes, there was signal (the 2400 has RCA sockets for V and A output which we connected to a standard TV set) but not much. Certainly not enough to have "consumer grade reception."

Plan "B." Disconnect the Yaki, fit a SDStv.com "active Logi" antenna (21 dB of gain versus the 10.7 dBi claim of the LawMate Yaki) to the system and try again. Now we had quite acceptable (P4 whereas P5 is blemish free) pictures and P5 sound. Some quick math. By "dumping" the 1 watt transmitter output to 0.15 watt through 80 feet of hard-line, we were 8 dB "down" from the signal we would have had if the 1 watt transmitter was at the 40 foot tower level within 1 metre of the Yaki transmit antenna. So one option would be to somehow mount the 1 watt transmitter in a weatherproof container,



LawMate's YK-2413 with Gardiner S-band LNB directly connected to the antenna's type-N fitting. Downline output is now in L-band where normal TVRO practices apply and L-band receiver powers the LNB.

somehow run 12V dc up the tower to the transmitter and equally somehow send 1V peak to peak video and 2V peak to peak audio up the same tower to the input baseband sockets on the 1 watt transmitter. None of this seemed very attractive - making all of this weather and waterproof would be a larger, more expensive project that what we had expended to this point for the YA-2413 antenna and 1 watt transmitter.

Plan "C." Leave the transmitter where it was safe and dry (indoors), and within a short RCA-RCA jumper cord run from the source input video and audio. And beef up the receiving end. Gain in the system can be done at either end - make a more sensitive reception system and you achieve the same result as increasing the radiated transmitter power. The premise is the same as with satellite reception - a 2.4m antenna has more gain, therefore produces better pictures, than a 1.2m antenna when the satellite signal is weak.

Plan "C" involved taking a Gardiner S-band LNB and S (Cakrawarta intended) band feed for use as a substitute for the LawMate Yaki. And then we'd replace the LawMate RX-2410 receiver with a "real" receiver - nothing special however (a Winersat rack mounted, nearly ten year old, L-band item).

First, the Gardiner has gain at 2.4 GHz. How much? Unknown because it was built for 2.6 GHz, but certainly not the 50 dB it is rated for at 2.6. Then the ADL feed for 2.6 - again, it has "some gain" at 2.4 but unknown as to amount. Now because 2.413 was down converted to 1235 MHz L-band, we could "play" in familiar territory, and use a handy measurement tool - the Skandia Electronics (Melbourne) supplied SATLOOK Mark III meter (SF#87, p. 10). Locating test equipment (with the ability to "measure signal level" and to actually "look at and listen to" the V + A on 2.4 GHz) is a challenge. SATLOOK solves that, working at L-band.

Big time signals. From scratchy to super powerful. We then doubled the (LOS) distance to 4 km, then 8, then 16. We could not lose the signal even at 16 km. Very impressive signal levels.

Signal quality? Another matter. LawMate has optimised the 1 watt (and we assume others from 0.1 watt to 6 watts) for something less than "broadcast quality" video. And their FM "deviation" is someplace around 11 to 12 MHz - slightly on the low side for quality FM video. But it is a start and we'll attack what you might do to improve the performance in a broadcast video application in our September issue.

OPTUS C1 LOGGING DATA - (as of August 05, 2003)

(d) = data channel, (r) = radio channel, (TV) = television channel; see "nomenclatures" below.
Hz "homing" frequency is 12.438 (29.473, 3/4); vertical 12.407 (30.000, 2/3).

12.278H (Sr30.000, 3/4) "NB"

#1/(d) aGuide; 1FFF, 1FFF, 1FFF, 0101
#2/(d) aCar; 1FFF, 1FFF, 1FFF, 0623
#3/(d) aGames; 1FFF, 1130, 1FF0, 1001 (FTA)
#4/(d) aPay; 1FFF, 1FFF, 1FFF, 0601
#5/(d) aHelp; 1FFF, 1FFF, 1FFF, 1011
#6/(d) aCont; 1FFF, 1FFF, 1FFF, 0701
#7/(d) aPromo; 1FFF, 1FFF, 1FFF, 0801
#8/(d) aBtStR; 1FFF, 1FFF, 1FFF, 1423
#9/(d) aEv; 1FFF, 1FFF, 1FFF, 0901
#10/(d) aDemo; 1FFF, 1FFF, 1FFF, 1444
#11/(d) a110; 1FFF, 1FFF, 1FFF, 1702
#12/(d) aSAF; 1FFF, 1FFF, 1FFF, 1701
#13/(d) aMyDet; 1FFF, 1133, 1FF3, 1201 (FTA)
#14/(d) aTmail; 1FFF, 1132, 1FF2, 1301 (FTA)
#15/(d) aGmSub; 1FFF, 1FFF, 1FFF, 1501
#16/(d) aGmMkr; 0021, 0022, 006A, 0024
#17/(d) 9oG; 1FFF, 1FFF, 1FFF, 1407
#18/(d) 9oH; 1FFF, 1FFF, 1FFF, 1412
#19/(d) 9oI; 1FFF, 1FFF, 1FFF, 1408
#20/(d) 9oJ; 1FFF, 1FFF, 1FFF, 1FFF
#21/(d) 9oK; 1FFF, 1FFF, 1FFF, 1FFF
#22/(d) 9oL; 1FFF, 1FFF, 1FFF, 1FFF
#23/(d) 9oM; 1FFF, 1FFF, 1FFF, 1FFF
#24/(d) 9oN; 1FFF, 1FFF, 1FFF, 1FFF
#25/(d) 9oO; 1FFF, 1FFF, 1FFF, 1FFF
#26/(TV) FYI; 0025, 0026, 006A, 0028
#27/(d) aHome; 0029, 002A, 006A, 002C (FTA)
#28/(d) aDemo; 1FFF, 1FFF, 1FFF, 1FFF
#29/(TV) GAMES; 002D, 002E, 006A, 0030
#30/(d) IATV2; 1FFF, 1FFF, 1FFF, 1FFF
#31/(TV) CH98; 0031, 0032, 006A, 0034

12.398Hz (Sr29.473, 3/4) "NB"

#1/(d) Gd; 1FFF, 1FFF, 0F80, 0102
#2/(d) I10; 1FFF, 1FFF, 1FFF, 1FFF
#3/(d) SF; 1FFF, 1FFF, 1FFF, 0115
#4/(d) MD; 1FFF, 1FFF, 1FFF, 0110
#5/(d) Tm; 1FFF, 1FFF, 1FFF, 0111
#6/(TV) ABC; 0200, 0280, 1FFE, 0117 (ABC SE feed; Text PID 0204, sub-titles p. 801, FTA; wide screen.)
#7/(TV) DISN; 0201, 0281, 1FFE, 0101
#8/(TV) CNNI; 0202, 0282, 1FFE, 0107 (FXTel)
#9/(TV) Cart; 0203, 0283, 1FFE, 010C (FXTel)
#10/(TV) skyr; 0204, 0284, 1FFE, 010D (copy)
#11/(TV) mov1; 0205, 0285, 1FFE, 0106 (copy)
#12/(TV) natgeo; 0206, 0286, 1FFE, 010B (copy)
#13/(TV) ffx sa; 0207, 0287, 1FFE, 0119 (copy; w-s)
#14/(TV) main; 0208, 0288, 1FFE, 0108 (copy)

12.398 (continued)

#15/(TV) twc; 0209, 0289, 1FFE, 0104 (copy)
#16/(TV) CMC; 020A, 028A, 1FFE, 0103
#17/(d) TVG:Guides:9502; 1FFF, 1FFF, 1FFF, 1FFF
#18/(d) OTV:GAMES; 1FFF, 1FFF, 1FFF, 1FFF
#19/(d) OTV: SET UP; 1FFF, 1FFF, 1FFF, 1FFF
#20/(d) OTV: WEATHER; 1FFF, 1FFF, 1FFF, 1FFF
#21/(d) RD: RADIO; 1FFF, 1FFF, 1FFF, 1FFF
#22/(d) OTV: AUSTAR; 1FFF, 1FFF, 1FFF, 1FFF
(Radio on 12.398H)
#1/(r) Tone; 1FFF, 0294, 0F81, 0100 (n/o)

12.438H (Sr 29.473, 3/4) "NB"

#1/(TV) BBC; 0200, 0280, 1FFE, 0100
#2/(TV) FFX; 0201, 0281, 1FFE, 0101 (NSW-ACT version; wide screen)
#3/(TV) FOX; 0202, 0282, 1FFE, 0102 (Austar version)
#4/(TV) UKTV; 0203, 0283, 1FFE, 0103
#5/(TV) HALL; 0204, 0284, 1FFE, 0104
#6/(TV) FX; 0205, 0285, 1FFE, 0105
#7/(TV) Ch6; 0206, 0286, 1FFE, 0106 (Fox Kids, Classics)
#8/(TV) FOXN; 0207, 0287, 1FFE, 0107
#9/(TV) Blm; 0208, 0288, 1FFE, 0109
#10/(TV) Cart; 1FFF, 0289, 1FFE, 0456 (audio only; not real Cartoon Network)
#11/(TV) TCM; 020A, 028A, 1FFE, 0457
#12/(TV) FFX; 020B, 028B, 1FFE, 010E (Qld version; wide screen(w-s))

12.518H (Sr 29.473, 3/4) "NB"

#1/(TV) Hist; 0200, 0280, 1FFE, 0101
#2/(TV) FOX; 0201, 0281, 1FFE, 0102 (Fxtl)
#3/(TV) mMAX; 0202, 0282, 1FFE, 0103
#4/(TV) FFC; 0203, 0283, 1FFE, 0104 [w-s]
#5/(TV) TWC; 0204, 0284, 1FFE, 0105 (FXTel)
#6/(TV) FX; 1FFE, 1FFF, 1FFF, 1FFF (n/o)
#7/(TV) Shw2; 0206, 0286, 1FFE, 0107
#8/(TV) SKYN; 0207, 0287, 1FFE, 0108
#9/(TV) FFX; 0208, 0289, 1FFE, 0109 (Vic version; wide screen)
#10/(TV) FFX; 0209, 0289, 1FFE, 010A (SA version; wide screen)
#11/(TV) FFX; 020A, 028A, 1FFE, 010B (WA version; wide screen)
#12/(TV) Ch2; 020B, 028B, 1FFE, 010C (Fxtl promo)
#13/(TV) Ch 7; 020B, 028B, 1FFE, 010D (Fxtl promo)
#14/(TV) Ch9; 020B, 028B, 1FFE, 010E (Fxtl promo)

12.518H (continued)

#15/(TV) Ch10; 020B, 028B, 1FFE, 010F (Fxtl promo)
#16/(TV) Ch13; 020B, 028B, 1FFE, 0110 (Fxtl promo)
#17/(TV) Ch47; 020B, 028B, 1FFE, 0115 (Fxtl promo)
#18/(TV) Ch48; 020B, 028B, 1FFE, 0116 (Fxtl promo)
#19/(TV) Ch41; 020B, 028B, 1FFE, 0117 (Fxtl promo)
(Radio on 12.518H)
#1/(r) Tone; 1FFF, 02EF, 1FFE, 0118 (n/o)

12.558H (Sr 29.473, 3/4) "NB"

#1/(TV) NGEO; 0208, 0288, 1FFE, 0110
#2/(TV) MAIN; 0200, 0280, 1FFE, 0100
#3/(TV) STC; 0201, 0281, 1FFE, 0101
#4/(TV) SKYR; 0202, 0282, 1FFE, 0102
#5/(TV) SBS; 0203, 0283, 1FFE, 0103 (SE)
#6/(TV) MOV1; 0204, 0284, 1FFE, 0104
#7/(TV) MOVX; 0205, 0285, 1FFE, 0105
#8/(TV) MOVG; 0206, 0286, 1FFE, 0106
#9/(TV) ODSY; 1FFF, 1FFF, 1FFF, 1FFF (n/o)
#10/(TV) MTV; 020A, 028A, 1FFE, 010A
#11/(TV) SKYN; 020B, 028B, 1FFE, 010B (not Sky News; copy of Disney channel)
(Radio on 12.558H)
#1/(r) 01; 1FFF, 0F01, 0F00, 0111 (lgt class.)
#2/(r) 02; 1FFF, 0F04, 0F00, 0112 (new age)
#3/(r) 03; 1FFF, 0F02, 0F00, 0113 (Italia)
#4/(r) 04; 1FFF, 0F03, 0F00, 0114 (radio Z)
#5/(r) 05; 1FFF, 0F18, 0F00, 0115 (news +)
#6/(r) 06; 1FFF, 0F05, 0F00, 0116 (rhythm)
#7/(r) 07; 1FFF, 0F06, 0F00, 0117 (country)
#8/(r) 08; 1FFF, 0F07, 0F00, 0118 (top 100)
#9/(r) 09; 1FFF, 0F08, 0F00, 0119 (smooth)
#10/(r) 10; 1FFF, 0F09, 0F00, 011A (mood)
#11/(r) 11; 1FFF, 0F0A, 0F00, 011B (cl. gold)
#12/(r) 12; 1FFF, 0F0B, 0F00, 011C (specials)
#13/(r) 13; 1FFF, 0F0C, 0F00, 011D (Astr ra)
#14/(r) 14; 1FFF, 0F0D, 0F00, 011E (retro)
#15/(r) 15; 1FFF, 0F0E, 0F00, 011F (undergrd)
#16/(r) 16; 1FFF, 0F0F, 0F00, 0120 (just rock)
#17/(r) 17; 1FFF, 0F10, 0F00, 0121 (latin)
#18/(r) 18; 1FFF, 0F11, 0F00, 0122 (blues)
#19/(r) 19; 1FFF, 0F12, 0F00, 0123 (soul)
#20/(r) 20; 1FFF, 0F13, 0F00, 0124 (lounge)
#21/(r) 21; 1FFF, 0F14, 0F00, 0125 (hot hits)
#22/(r) 22; 1FFF, 0F15, 0F00, 0126 (urban)
#23/(r) 23; 1FFF, 0F16, 0F00, 0127 (adult)
#24/(r) 24; 1FFF, 0F17, 0F00, 0128 (euro)

Nomenclature: Following "service" designator (i.e. Mov1) is (a) VPID, (b) APID, (c) PCR, (d) PMT. "n/o" means not operating. ABC/Austar w-s is 2.5 Mbit/s; Footy w-s 6.5 Mbit/s.

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(Av-Comm Pty Ltd ACN 004 174 478)

12.598H (Sr 29.473, 3/4) "NB"

#1/(TV) **Cart**; 0200, 0280, 1FFE, 0101 (Austar, Optus version)
 #2/(TV) **TWC**; 0209, 0289, 1FFE, 0102 (Austar version)
 #3/(TV) **CNBC**; 0202, 0282, 1FFE, 0103
 #4/(TV) **WMOV**; 0203, 0283, 1FFE, 0104
 #5/(TV) **TVSN**; 0204, 0284, 1FFE, 0105 (FTA)
 #6/(TV) **CNNI**; 0205, 0285, 1FFE, 0106 (Austar, Optus version)
 #7/(TV) **ESPN**; 0206, 0286, 1FFE, 0107
 #8/(TV) **OVAT**; 0207, 0287, 1FFE, 0108
 #9/(TV) **EXPO**; 020A, 028A, 1FFE, 0115
 #10/(TV) **RAI**; 0201, 0281, 1FFE, 0109
 #11/(TV) **ANT**; 0208, 0288, 1FFE, 0116

12.688H (Sr 29.473, 3/4) "NB"

#1/(TV) **TV1**; 0200, 0280, 1FFE, 0100
 #2/(TV) **SHOW**; 0201, 0281, 1FFE, 0101
 #3/(TV) **ENC**; 0202, 0282, 1FFE, 0102
 #4/(TV) **FS1**; 0203, 0283, 1FFE, 0103
 #5/(TV) **ARNA**; 0204, 0284, 1FFE, 0104
 #6/(TV) **lv**; 0205, 0285, 1FFE, 0105
 #7/(TV) **NICK**; 0206, 0286, 1FFE, 0106
 #8/(TV) **DISC**; 0207, 0287, 1FFE, 0107
 #9/(TV) **FS2**; 0208, 0288, 1FFE, 0108
 #10/(TV) **LIFE**; 0209, 0289, 1FFE, 0109
 #11/(TV) **CMDD**; 020A, 028A, 1FFE, 010A
 #12/(TV) **LIFE**; 0209, 0289, 1FFE, 010C
 (NOTE: #10, 12 have same V and A PIDs, airing the same programme channel.)

Vertical Side C1**12.367V** (Sr 30.000, 2/3) "NANZ"

#1/(TV) **SET-Asia**; 0488, 0460, 0488, 1389
 #2/(TV) **Zee TV**; 04EC, 04C4, 04EC, 138A
 #3/(TV) **Zee Cinema**; 0550, 0528, 0550, 138B
 #4/(TV) **Star Plus**; 05B4, 058C, 05B4, 138C
 #5/(TV) **TRT Int**; 0774, 071C, 0744, 138D (FTA)
 #6/(TV) **Trinity**; 067C, 0654, 067C, 138E (FTA)
 #7/(TV) **Da Ai TV**; 06E0, 06B8, 06E0, 138F (FTA)
 #8/(TV) **AbuDhabi TV**; 0745, 0720, 0745, 1390 (FTA)
 #9/(TV) **HRT**; 07A8, 0780, 07A8, 1391
 #10/(TV) **TV Korea**; 0425, 0400, 0425, 139C
 #11/(TV) **MAC TV**; 01F5, 021C, 01F5, 139D (FTA)
 #12/(TV) **Duna**; 01F6, 0226, 01F6, 139E
 #13/(TV) **BVN**; 01F7, 0230, 01F7, 139F (FTA) (Radio on 12.367V)
 #1/(r) **RAW FM**; 1FFF, 06BA, 06BA, 1392 (FTA)
 #2/(r) **TRT FM**; 1FFF, 071E, 071E, 1393 (FTA)
 #3/(r) **VOT**; 1FFF, 04C6, 04C6, 1394 (FTA)
 #4/(r) **ABS Radio**; 1FFF, 0462, 0462, 1395 (FTA)
 #5/(r) **Tamil Radio**; 1FFF, 052A, 052A, 1396 (FTA)

12.367V (continued)

#6/(r) **SNG IFB**; 1FFF, 058E, 058E, 1397, (FTA)
 #7/(r) **DMX Music**; 1FFF, 0656, 0656, 1398
 #8/(r) **Kossuth Radio**; 1FFF, 0228, 0228, 1399 (FTA)
 #9/(r) **RNW3**; 1FFF, 0232, 0232, 139A (FTA)
 #10/(r) **Emirates FM**; 1FFF, 0722, 0722, 139B (FTA)
 #11/(r) **RNW1**; 1FFF, 0402, 0402, 13A6 (FTA)
 #12/(r) **RNW2**; 1FFF, 03FF, 03FF, 13A7 (FTA)

NOTE: 5th set of 5 entries is text PID from here on.**12.407V** (Sr 30.000, 2/3) "NANZ"

#1/(TV) **TUNE**; 0035, 0036, 0035, 003A, 1FFF (FTA - test card)
 #2/(TV) **SBS SE**; 0200, 0201, 0206, 003A, 0204
 #3/(TV) **SBS WA**; 0230, 0231, 0206, 003A, 0233
 #4/(TV) **BTV 1**; 0023, 0021, 0023, 003A, 1FFF
 #5/(TV) **BTV2**; 0040, 003F, 0040, 003A, 1FFF
 #6/(TV) **BTV3**; 004D, 0026, 004D, 003A, 1FFF
 #7/(TV) **SKY 1**; 0041, 002A, 0041, 003A, 002B
 #8/(TV) **SKY 2**; 0041, 0043, 0041, 003A, 002B
 #9/(TV) **SKY 3**; 0041, 002A, 0041, 003A, 002B
 #10/(TV) **SKY 4**; 0041, 0044, 0041, 003A, 002B
 #11/(TV) **SKY 5**; 0041, 0042, 0041, 003A, 002B
 #12/(TV) **SKY 6**; 0041, 002A, 0041, 003A, 002B
 #13/(TV) **SKY 7**; 1FFF, 1FFF, 1FFF, 003A (Radio on 12.407V)

NOTE: SMA radio formats were #1-7 on B3, now gone from C1.

#8/(r) **SMA BUS1**; 1FFF, 0027, 0027, 003A
 #9/(r) **SMA BUS 2**; 1FFF, 0049, 0049, 003A
 #10/(r) **QTAB**; 1FFF, 0039, 0039, 003A
 #11/(r) **NIRS**; 1FFF, 0038, 0038, 003A
 #12/(r) **RPH**; 1FFF, 003C, 003C, 003A
 #13/(r) **BBC Radio**; 1FFF, 004B, 004B, 003A
 #14/(r) **CBAA**; 1FFF, 004A, 004A, 003A
 #15/(r) **SBS R SE**; 1FFF, 0202, 0206, 003A
 #16/(r) **SBS R NT**; 1FFF, 0203, 0206, 003A
 #17/(r) **SMA BUS 3**; 1FFF, 0045, 0045, 003A
 #18/(r) **UCB**; 1FFF, 0037, 0037, 003A
 #20/(r) **SBS R WA**; 1FFF, 0232, 0206, 003A
12.527V (Sr 30.000, 3/4) "NA"
 #1/(TV) **ABC WA**; 0320, 0321, 0320, 0020, 0322
 #2/(TV) **GWN TV**; 0045, 0046, 0045, 0020, 1FFF
 #3/(TV) **WLK**; 0025, 0026, 0025, 0020, 1FFF
 #4/(TV) **WIN**; 0600, 0601, 0600, 0020, 0602

12.527V (continued)

#9/(TV) **ABC TV NT**; 0340, 0341, 0340, 0020, 0342
 #10/(TV) **IMP TV**; 0400, 0401, 0400, 0020, 0403
 #11/(TV) **Info CH. 31**; 0410, 0411, 0410, 0020, 0412 (Radio on 12.527V)
 #1/(r) **RABS TONE**; 1FFF, 0044, 0044, 0020 (FTA)
 #2/(r) **ABC FM WA**; 1FFF, 0324, 0324, 0020
 #3/(r) **ABC RN WA**; 1FFF, 0326, 0326, 0020
 #4/(r) **ABC RR WN**; 1FFF, 0325, 0325, 0020
 #5/(r) **990 AM**; 1FFF, 003C, 003C, 0020
 #6/(r) **ABC RR WS**; 1FFF, 0327, 0327, 0020
 #12/(r) **ABC FM NT**; 1FFF, 0344, 0344, 0020
 #13/(r) **ABC RN NT**; 1FFF, 0346, 0346, 0020
 #14/(r) **ABC RR NT**; 1FFF, 0345, 0345, 0020
 #15/(r) **Caama**; 1FFF, 0420, 0420, 0020
 #16/(r) **Teabba**; 1FFF, 0421, 0421, 0020
 #17/(r) **5PY**; 1FFF, 0422, 0422, 0020
 #18/(r) **2CUZ**; 1FFF, 0423, 0423, 0020
 #19/(r) **PAKAM**; 1FFF, 0424, 0424, 0020
 #20/(r) **PAW**; 1FFF, 0425, 0425, 0020
 #21/(r) **Arrow**; 1FFF, 0426, 0426, 0020 (FTA)
 #22/(r) **8HA**; 1FFF, 0427, 0427, 0020
 #23/(r) **Mulba**; 1FFF, 0428, 0428, 0020
 #24/(r) **BIDJARA**; 1FFF, 0429, 0429, 0020 (FTA)
12.567V (Sr 30.000, 2/3) "NANZ"
 #4/(TV) *was ABC-TV; no longer in use* (Radio on 12.567V)
 #4/(r) **ARRN**; 1FFF, 0750, 0750, 0020
 #5/(r) **SPORT 927**; 1FFF, 0751, 0751, 0020 (Data on 12.567V)
 #1/(d) **IP PIDS TSS**; 1FFF, 1FFF, 1FFD, 0020, 0950
12.720V (Sr 30.000, 3/4) "NA"
 #1/(TV) **ABC TV SA**; 0330, 0331, 0330, 0022, 0332
 #2/(TV) **SBS SA**; 0220, 0221, 0206, 0022, 0223
 #4/(TV) **ABC TV Q**; 0310, 0311, 0310, 0022, 0312
 #5/(TV) **Seven Central**; 0500, 0501, 0500, 0022, 0502
 #6/(TV) **SBS QLD**; 0210, 0211, 0206, 0022, 0213
 #8/(TV) **CLK**; 0021, 0020, 0021, 0022, 1FFF
 #10/(TV) **ABC TV SE**; 0300, 0301, 0300, 0022, 0302 (Radio on 12.720V)
 #1/(r) **ABC FM SA**; 1FFF, 0334, 0334, 0022
 #2/(r) **ABC RN SA**; 1FFF, 0336, 0336, 0022
 #3/(r) **ABC RR SA**; 1FFF, 0335, 0335, 0022
 #4/(r) **SBS R SA**; 1FFF, 0222, 0206, 0022
 #6/(r) **REF TONE**; 1FFF, 0100, 0100, 0022 (FTA)
 #7/(r) **ABC FM Q**; 1FFF, 0314, 0314, 0022
 #8/(r) **ABC RN Q**; 1FFF, 0316, 0316, 0022
 #9/(r) **ABC RR Q**; 1FFF, 0315, 0315, 0022
 #10/(r) **TAIMA**; 1FFF, 0504, 0504, 0022
 #11/(r) **SBS R QLD**; 1FFF, 0212, 0206, 0022
 #12/(r) **ABC JJJ**; 1FFF, 0307, 0307, 0022
 #13/(r) **ABC PNN**; 1FFF, 0308, 0308, 0022
 #14/(r) **ABC RR NQ**; 1FFF, 0317, 0317, 0022
 #16/(r) **ABC RR V**; 1FFF, 0309, 0309, 0022
 #17/(r) **ABC FM SE**; 1FFF, 0304, 0304, 0022
 #18/(r) **ABC RN SE**; 1FFF, 0306, 0306, 0022
 #19/(r) **ABC RR SE**; 1FFF, 0305, 0305, 0022

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 August 2003

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym
Them3/78.5	SkyChAust	3695/1455H	up to 3	3/4	5(000)
	Indivision	3685/1465H	1	3/4	6(830)
	MRTV-Myn	3676/1474H	1	2/3	6(000)
	Korean Central	3665/1485H	1	2/3	3(367)
	TARBS ME mux	3640/1510H	12TV, 12 radio	3/4	28(066)
	Ch Nepal	3626/1524V	1	3/4	15(556)
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26(667)
	SE asia Mux	3569/1581H	2+ TV	3/4	12(500)
	RR Sat mux	3551/1600H	8TV, 10 radio	3/4	13(333)
	JAIN TV	3538/1612V	1TV	3/4	3(300)
	PTV1 +	3521/1629V	1TV, 1 radio	3/4	3(333)
	TARBS	3520/1630H	12TV, 12 radio	3/4	28(066)
	TVK Cambodia	3448/1702H	1TV	1/2	6(312)
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26(667)
	KCTV/Korea	3424/1726H	1TV	3/4	3(366)
	Thai Global	3425/1725V	up to 7?	2/3	27(500)
InSat 2E/83	ETV mux	4005/1145V	6+ TV	3/4	27(000)
	Hyd Dig 2E	3910/1240V	1	3/4	5(000)
	Kairali TV	3699/1451V	1	3/4	3(184)
	Indian mux	3643/1507V	3	3/4	19(531)
	ETV Mux#2	3485/1665V	4+TV	3/4	27(000)
	Sky Bangla	3430/1720V	1TV	3/4	6(000)
ST1/88E	MMBN	3632/1518V	12TV	3/4	26(667)
NSS6/96E	New MUX	12.727V	? + TV	7/8	27(500)
	Test MUX	12.647V	? + TV	3/4	28(066)
	Test MUX	11.480V (?)	? + TV	7/8	26(000)
As2/100.5E	Shandong TV	4070/1080H	1TV	3/4	6(811)
	Euro Bougt	4000/1150H	6TV, 21r	3/4	28(125)
	Sichuan TV	3946/1204H	1TV + radio	3/4	4(420)
	Reuters News	3905/1245H	1TV	3/4	4(000)
	WorldNet	3880/1270H	4+/28radio	1/2	20(400)
	Hubei/HBT	3854/1296H	1	3/4	4(418)
	Hunan/SRT	3847/1303H	1	3/4	4(418)
	Guan./GDT	3840/1310H	1	3/4	4(418)
	In. Mongolia	3828/1322H	2	3/4	8(397)
	APTN Asia	3799/1351H	1	3/4	5(632)
	Reuters/Sing	3775/1375H	1	3/4	5(631)
	Liaonin/Svc2	3734/1416H	1	3/4	4(418)
	Jiangxi/JXT	3727/1423H	1	3/4	4(418)
	Fujian/SET	3720/1430H	1	3/4	4(418)
	Qinghai TV	3713/1437H	1	3/4	4(418)
	Henan/Main	3706/1444H	1	3/4	4(418)
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27(850)
As2/100.5E	Macau MUX	4148/1002V	5TV	3/4	11(850)
	Feeds	4086/1064V	1	3/4	5(632)
	Dubai MUX	4020/11430V	4+, radio	3/4	27(500)
	Jilin Sat TV	3875/1275V	1	3/4	4(418)
	Shanghai BN	3846/1304V	1	3/4	4(800)
	HeiLongJian	3834/1316V	1	3/4	4(418)
	JSTV	3827/1323V	1	3/4	4(418)
	Anhui TV	3820/1330V	1	3/4	4(418)
	Shaanxi/QQ	3813/1337V	1	3/4	4(418)
	Guan/GXTV	3806/1344V	1	3/4	4(418)
	Fashion TV	3795/1355V	1	3/4	2(626)
	Myawady	3766/1384V	1	7/8	5(080)
	Saudi TV1	3660/1490V	7+ tests	3/4	27(500)
As3S/105.5E	Telstra I-Net	12.596V	no TV	5/6	30(000)
	Zee bouquet	3700/1450V	10TV	3/4	27(500)
	Macau MUX	3713/1437H	2TV	3/4	5(868)
	Arirang TV	3755/1395V	1	7/8	4(418)
	Now TV +	3760/1390H	up to 8TV	7/8	26(000)
	Star TV	3780/1370V	7(+TV)	3/4	28(100)
	Star TV	3840/1310H	7(+ TV)	3/4	27(500)
	Star TV	3860/1290V	5(+TV)	3/4	27(500)
	Star TV	3880/1270H	20(+TV)	7/8	26(850)
	Star TV	3920/1230H	4+ TV	7/8	26(850)
	Star TV	3940/1210V	6(+TV)	7/8	26(850)
	CNNI	3960/1190H	8(+TV)	3/4	27(500)
	Star TV	3980/1170V	6+TV	3/4	28(100)
	Star TV	4000/1150H	8(+TV)	7/8	26(850)
	Sahara digital	4020/1130V	8TV	3/4	27(500)
	Pakistani TV	4090/1060V	1+TV, radio	3/4	6(666)
	Sun TV	4095/1055H	1	3/4	5(554)
	TVB Mux	4010/1040H	3	3/4	11(230)
	CCTV bqt	4129/1021H	4(+ TV)	3/4	13(240)
	Zee Bqt #2	4140/1010V	8(+ TV)	3/4	27(500)
Cak1/107.5	Indovision (S-band)	2.535, 2.565, 2.595, 2.625, 2655	33(+ TV)	7/8	20(000)
T'Kom/108E	IndoBqt	3460/1690H	up to 6	3/4	28(000)
C2M/113E	TPI	4185/965V	1	3/4	6(700)
	Anteve	4144/1006V	1	3/4	6(510)
	Indo Mux	4080/1070H	5+ TV	7/8	28(125)
	Indostar	4074/1076V	1	3/4	6(500)
	SCTV	4048/1102V	1	3/4	6(618)
	Indonesian Mux	4000/1250H	6+ TV	3/4	26(085)
	Satelindo	3935/1215H	1	3/4	6(700)
	Bali TV	3926/1224H	1	3/4	4(208)

Receivers and Errata

CA (#1, 3); FTA audio #2 (dm)
Tests June 2003; not permanent
erratic service
Global footprint, changes 02/03.
CA + 2 FTA(AITV, IRB3)(DM)
New 03/03; FTA
Thai + Indian services; FTA (DM)
MRTV3, MRTV (DM)
3TV, 5radio currently in use (DM)
PIDs 4132/4133
frequency change
Feeds to TARBS Australia and PAS-8 (DM)
FTA
3FTA: TV5, VTV4, ATN Bangla (DM)
Not 24 hour
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
corrections 12/02
Several new ETV here: Asia beam
New - November 2002
Nagravision, some FTA; erratic
Close to horizon; LNBf skews towards Hz!
PowerVu; may be NE Asia beam
TARBS was testing here - uplinked from Thaicom
New - October 2002
FTA TV + radio
New April 2003
Was 3923H; sometimes FTA
FTA; multiple audio services
FTA SCPC, teletext, 2 radio
FTA SCPC, teletext
FTA SCPC, radio APID 81
FTA: #1 Mongolian, #2 Mandarin
Sometimes FTA, also 3895Vt
FTA & CA
FTA SCPC, radio APID 256
FTA SCPC, teletext, radio APID 81
FTA SCPC, + radio APID 80
FTA SCPC, + 2radio (APID 80)
FTA SCPC, + radio
Thru TARBS Aust, occ FTA
5 chs TV, FTA, some tests
FTA SCPC feeds
FTA including sport
FTA SCPC, + radio
V1110, A1211 + 2 radio; FTA Jan 2003
FTA SCPC
FTA SCPC, + radio
FTA SCPC + radio
FTA SCPC, radio APID 81
FTA SCPC, radio APID 257
FTA as of May 01, 2003
FTA SCPC - difficult to load
FTA MCPC; Yemen, MBC Europe tests
Signal useful for dish testing - no TV
Mediaguard (SECA) CA, 2 FTA
New June 2002; low res MUX
FTA SCPC; New PIDs V3601, A3606 June 2003
CA : NOW, Bberg, Indus, MTA FTA
NDS CA (Pace DVS211, Zenith)
Star News India (Eng) FTA; V514, A648
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DV211, Zenith) In transition 06-2003
Star Sports Asia (+), FTA NTSC; V512, A640 English
NDS CA as above
PowVu CA; new SR Apr 29
NDS CA (Pace DVS211, Zenith)
NDS CA w/ 4(Chinese) FTA
New Sr, Dubai MUX
New to digital June 2003; V308, A256
"History Channel" testing SCPC
MATV Chinese movies FTA; + CA
moved from 4115
Mediaguard (SECA) CA
NDS CA using RCA/Thomson,
Pace IRDs; 2.535 has 2 FTA
also 3586H/17.500, 3496H/19.615
FTA SCPC, NT/NC only
change from 4055V; FTA SCPC
Global TV - erratic new FEC 06/03
FTA (new 06-03); V2201, A2202
FTA SCPC; NT, New Caledonia only
undtable platform - not always there
test card - only - reported
FTA, may not be active

Bird	Service	RF/LF & Polarity	# Program Channels	FEC	Msym
	Indo. MUX	3880/1270H	3+ TV	7/8	28(121)
	GlobalMUX	3760/1390H	up to 11 TV?	7/8	28(121)
	Brunei/Sing	3733/1417H	1TV	3/4	6(000)
	TBN/Trinity	3727/1423H	1 TV	3/4	3(000)
	Unknown	3605/1545H	1TV	3/4	2(900)
	RCTI	3473/1677H	2	3/4	8(000)
	Myawad TV	3706/1444H	1	3/4	5(924)
As4/122E	Speedcast data	4120/1030H	0 - data only	3/4	27(500)
Jc3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(000)
	Asian bqt	3960/1190V	up to 8	7/8	30(000)
Jc2A 154	Ckynt	3880/1270V	up to 12	3/4	30(000)
	BYU tests	3915/1245V	2	3/4	3(703)
MeaSe2	New Mux	12.532H	17	3/4	41(500)
	Astro Mux	11.602H	up to 17TV	3/4	41(500)
	VTU MUX	11.522V	3 TV	3/4	9(766)
B3/152	bird moving				
C1/156	Globecast	12.367V/T2	13TV, 12radio	2/3	30(000)
	Aurora	12.407V/T3	13TV, 12 radio	2/3	30(000)
	Aurora	12.527V/T6	11TV, 19 radio	3/4	30(000)
	Aurora	12.567/T7	2+ radio (only)	2/3	30(000)
	Foxtel???	12.607V/T8	Clone of 12.518H	3/4	29(473)
	Aurora	12.720V/T10	10TV, 19 radio	3/4	30(000)
	Austar	12.278H/T11	31 data (some TV)	3/4	29(473)
	Austar/Foxtl	12.398H/T13	11 data, 11TV, 1 r	3/4	29(473)
ABC FTA	Austar/Foxtl	12.438H/T14	12TV	3/4	29(473)
	Austar/Foxtl	12.518H/T16	11TV, 8 fill, 1 radio	3/4	29(473)
	Austar/Foxtl	12.558H/T17	11TV, 124 radio	3/4	29(473)
	Austar/Foxtl	12.598H/T17	11TV	3/4	29(473)
	Austar/Foxtel	12.688H/T20	12TV	3/4	29(473)
B1/160	ABC NT fd	12.258V	1TV, 3 radio	3/4	5(026)
	Occ. feeds	12.380H	1 TV - *	3/4	6(111)
	Occ. feeds	12.384V	1 TV - *	3/4	6(111)
	Net 7 service	12.397H	1	3/4	7(200)
	Central 7	12.354H	1TV + 1 radio	3/4	3(688)
	Imparja mx	12.379H	2TV + 8 radio	3/4	5(424)
	7 digital feeds	12.397H	1TV	3/4	7(200)
	Feeds to NZ	12.411V	1 TV	3/4	6(111)
	Sport feeds	12.420V	1	3/4	6(110)
	SBS Mux	12.420H	3+ TV, 2+ radio	5/6	12(600)
	TVNZ DTH	12.456V	5+TV	3/4	22(500)
	Nine Net	12.512H	1 TV typ.	3/4	5(632)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(500)
	Sky NZ	12.644/671V	9TV	3/4	22(500)
	ABC HDTV	12.603H	5TV	7/8	14(300)
	Sky NZ	12.707/733V	8 TV	3/4	22(500)
	Mix 106.3	12.574H	1 radio	3/4	1(851)
P8/166	TARBS3	12.326H	13TV + radio	3/4	28(066)
	TARBS	12.526H	13TV + radio	3/4	28(066)
	TARBS2	12.606H	13TV + radio	3/4	28(066)
	TARBS5	12.646H	testing	3/4	28(066)
	TARBS4	12.726H	13TV + radio	3/4	28(066)
	JEDI/TVB	12.686H	11+ TV	3/4	28(126)
	ABC A-P	4180/970H	21V, 2 radio	3/4	27(500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(125)
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(470)
	FOX MUX	4040/1110V	up to 5TV	7/8	26(470)
	NET +	4121/1029V	1 TV	3/4	4(774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(470)
	Discovery	3980/1170H	8 typ.	3/4	27(690)
	CalBqt/Pas8	3940/1210H	up to 3+ FTA	7/8	27(690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(500)
	FilipinoMUX	3880/1270V	up to 8TV+radio	5/6	28(694)
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(000)
	CCTV Mux	3829/1321H	up to 4	3/4	13(240)
	TVBS-N	3836/1314V	1FTA, 4+ CA	3/4	22(000)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(000)
	Discovery Asia	3769/1381V	Upto 5 TV	3/4	13(240)
	MTV	3740/1410H	8	2/3	27(500)
P2/169E	Off-shore rigs	12.281V	2+ TV, radio	2/3	27(500)
	WA PowVu	12.637(5)V	4TV, 8 radio	1/2	18(500)
	NBN-TV	4126/1024V	1TV	3/4	3(075)
	TARBS	4087V	9TV + radio	3/4	21(000)
	TVB(S)	4020/1130V	1TV	3/4	6(620)
	Feeds	3966/1184V	1	2/3	6(620)
	Feeds	3957/1193V	1	2/3	6(620)
	Feeds	3929/1221V	1	3/4	10(850)
	Feeds	3912/1238V	1	2/3	6(620)
	Feeds	3898/1252V	1	2/3	12(000)
	Middle East	3836/1314V	4 typ	3/4	13(331)
	Feeds	3803/1347V	1	3/4	6(000)
	PAS mux	3743/1407V	3	3/4	21(800)

Receivers and Errata

FTA; Sr change 01/03 erratic
 test cards (11), new Sr/FEC 01-03
 FTA share time; Brunei 23 hrs, Sing 1 hr
 New PIDs 02/03; V177, A180
 multiscreen, may have no video
 FTA SCPC; Australia, New Caledonia, some English
 Tests, may be erratic if even operating
 3 data chs, useful for dish tracking
 PowerVu; some FTA (Ch. 1 & 3)
 CA & FTA NTSC; Japan, Taiwan
 Cnet (Taiwan) tests, not full time
 Erratic service; very strong NZ and Australia
 New Sept 2002; unknown source
 Aust East beam - 3 FTA + 14 CA
 WA only? Skew path, intended Asia
 scheduled to shift to 152E
 Aust, NZ 90 cm; 6 TV FTA
 Aust, NZ 90 cm
 Australia NA only (leakage to Norfolk, New Cal)
 Aust, NZ 90 cm
 Unknown reason for being here
 Australia NA only (leakage to Norfolk, New Cal)
 CA, subscription available Australia
 CA, subscription available Australia, Norfolk
 CA, subscription available Australia, Norfolk
 CA, subscription available Australia, Norfolk
 CA, subscription available Australia, Norfolk
 CA, subscription available Australia, Norfolk
 CA, subscription available Australia, Norfolk
 VR32, A833; occ. power drops -10 dB
 * - plus 12.451H, 12.460H
 * - plus 12.293V, 12.402V, 12.411V
 Full schedule less commercials - links
 V1280, A1281; occ. 2nd channel
 PIDs vary; also try 12.360, 12.370
 occ. digital feeds; typ fla
 Often NTSC; USA-Australia-NZ
 Weekend footy feeds reported-FTA
 Also 12.456 same params; SBS HDTV + w-s
 FTA 4 channels (TVNZ x 4); + RWC will be here
 testing digital feeds; Sr may vary
 NDS CA, subscription available NZ
 NDS CA, subscription available NZ
 NDS CA, subscription available NZ
 also 12.626, 643, 670, 688, & 706H
 NDS CA, subscriptions available NZ
 Radio SCPC
 TPG/EurodecMDS CA, occ. FTA
 TPG/Eurodec MDSCA, radio FTA
 TPG/Eurodec MDS CA; TRT FTA
 TPG/Eurodec MDS CA
 TPG/Eurdec MDS CA; Thai TV, FTA
 June 2002-Irdeto-2 CA
 Dateline wcast, east PAS2, 3901
 PowVu CA
 PowVu CA & FTA; subscription available
 was PAS-2, previously 3992Vt
 NET25 + FTA; new PIDS April; reload
 PowVu CA; ch 11 DCP-CCP bootloader; new FEC
 PowVu/CA (some audio FTA)
 PowVu CA & FTA (EWTN +)
 FTA at this time
 Myx FTA V1960, A1920 + radio FTA
 Mixed FTA & CA, Taiwan Hallmark, STC
 PowVu FTA, replaces PAS-2 svc
 Difficult because of CCTV cross pole
 was As2; PowVu CA
 PowerVu
 PowerVu; Asian MUX
 # 8 MTV China FTA (V0385, A0386); rest CA
 PowVu CA, WIN, ABC NT
 PowVu CA, WA only - D9234
 3m up (NZ), 1.8m up Australia
 Occ FTA (Syria, Al-Manar) TARBS input links
 feeds to (USA) pay-TV
 PowVu (FTA) occ feeds
 PowVu (FTA) occ. feeds
 PowVu (FTA) occ sport feeds
 PowVu(FTA) occ. feeds
 PowVu (FTA) occ. feeds
 02/03: Now A1.I, Irdeto 2 CA
 PowVu (FTA) occ sport feeds
 test card FTA, others nominally CA

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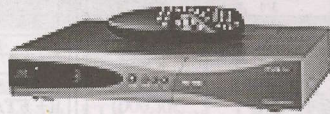
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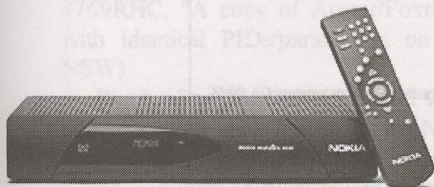
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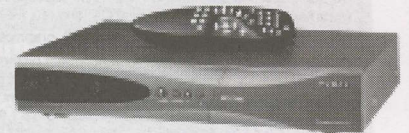
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SatFACTS Digital Watch: Supplemental Reference Data / August 2003

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PA2/169E)	Feeds	4040/1010H	1	3/4	10(.850)
	7thDayAdv.	3872/1278H	1	3/4	6(.620)
	Feeds	3868/1182H	1	2/3	6(.620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)
	HK bouquet	3850/1300H	up to 8	2/3	24(900)
	occ feeds	3776/1374H	1 typ	3/4	5(.560)
	Korean Bqt	3771/1379H	1	3/4	9(.041)
1804/176E	IPSTAR	12.619H	1	2/3	25(.220)
	Tests-NZ beam	12.646H	1	3/4	22(.418)
	RFO Poly	4027/1123R	1TV	3/4	4(.566)
1701/180E	TNTV	11.060&11.514	9	3/4	30(.000)
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)
	TVNZ	4195/955RHC	1	3/4	5(.632)
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)
	TVNZ	4178/972RHC	1	3/4	5(.632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(.680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)
	TVNZ/feeds	4161/989RHC	1	3/4	5(.632)
	RFO-Canal+	4086/1064L	4TV, radio	5/6	12(.041)
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)
	TVNZ feeds	4044/1106R	1	3/4	5(.632)
	NZ Prime TV	4024/1126L	1	2/3	6(.876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(.447)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(.000)
	Ioarana	3772/1378L	1	3/4	4(.566)
	TVNZ	3846/1304R	1	3/4	5(.632)
	10 Australia	3769/1381R	4	7/8	20(.000)
	USA feeds	3749/1401R	4?	?	26(.400)

Receivers and Errata
PowVu occ FTA feeds
Sat. Sun 0030, 0900+JTC?
FTA (occ sport); also try 3863, Sr6 100
FTA-typ NTSC-occ sport, live Shuttle
PowVu CA + FTA (BBC gone)
was 4148Vi, some FTA
occ feeds, typ FTA; also Sr 5.600
Korean MUX, reload 02/03
Tests, late May start; also 12.646H
Testing possible data links; June 2003
SE spot beam; was 4027LHC
east spot, 10TV + r each, vertical pol.
1+ FTA, MediaGd "2"; + 10.975 weaker
DMV/NIL early vers., occ feeds, typ ca
DMV/NIL early vers., occ feeds, typ ca
DMV/NIL early vers., occ feeds, typ ca
'DTS' radio, TV audio FTA some IRDs
DMV/NIL early vers., occ feeds, typ ca
DMV/NIL early vers., occ feeds, typ ca
east hemi 20.5 dBw +; new Sr
DMV/NIL early vers., occ feeds, typ ca
SCPC, mixed CA and FTA feeds
PowVu CA; Auckland net feeds
CA, Leitch encoded
New Feb 2002; very strong NZ, Pacific
FTA SCPC; East Hemi Beam-Tahiti
SCPC, mixed CA & FTA, feeds
PowVu CA & TBN-JCTV FTA
16-OAM (not MPEG-2 compatible)

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

Aston Simba 201. Embedded SECA (Zee, Canal +); review SF#97. MediaStar 61-2-9618-5777.

AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM P/L, 61-2-9939-4377.

AV-COMM R3100(A). FTA, good sensitivity, ease of use exc (review SF May 2002). See above contact.

Benjamin DB6600-CI. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)

Coship 3188C. Review SF#107. Blind search FTA rcvr. Possibly available from Satlink NZ www.satlinknz.co.nz. Buy with caution.

eMTECH eM-100B (FTA), eM-200B (FTA + Cix2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)

Humax F1-CI. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).

Humax ICR1 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, SF#76.

Humax IRCI 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available.

Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)

Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.

Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.

ID Digital CI-24 Sensor. New August 2003; claims new low noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.

MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. 61-2-9618-5777

MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777

MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.

MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738

Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.

Nokia 9200/9500. When equipped with proper software, does Aurora, pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)

Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replacing; Aug 29 (2003) "drop-dead" day; all will be "turned off" on that date.

Pace DVR500. Original DGT400 modified for NBC (PAS-2)/RSA use, with CAM equivalent to DGT400 but more reliable.

Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.

Panasat 620/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax +27-31-593-370. No longer work with Austar/Foxtel.

Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but never available in Australia.

Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH (below) 222; terminated

Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review SF#51. SATECH 61-3-9553-3399.

Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)

PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). Scientific Atlanta 61-2-9452-3388.

Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.

SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-3749)

SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above).

Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).

Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.

Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, Aurora. Strong Technologies 61-3-8795-7990.

Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +. Strong Technologies (above); review SF#103.

Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84); Strong Technologies, # above.

UEC Atlas/Titan. New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.

UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty/P/S. Norsat 61-8-9451-8300.

UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.

UEC700/720. Single chip Irdeto built-in design for Foxtel, unfriendly for FTA. Power supply problems, seldom sold to consumers, propensity to fall off back of trucks.

Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447

Xanadu. DVB compliant special-priced receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)

Accessories:

Aurora smart cards. New v1.6 now available, 1.2 no longer available for RABS. Price now A\$105, Sciteq 61-8-9306-3738.

PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

WITH THE OBSERVERS

AsiaSat 4/122E: "RAI International (4) testing 12.274V; uncertain which beam this is." (KL, Thailand)

InSat 3A/93.5E: "MTV India 3985V, briefly FTA, is now CA." (KL, Thailand) "Analogue P4 here on 3.7m: Sahyadri 3942/1208V, Gurjari 4103/1047V, Punjabi 3743/1407V. Kashmir 3784/1366V is P2.5 - all audios 5.5 MHz." (David L., NSW)

Intelsat 804/176E: "RFO Polynesie has moved; 4027L to 4027R, Sr 4.566, 3/4 - East Hemi beam;" (Philippe, Tahiti)

JcSat2A/154E: "Weekend July 19-20, 3880Vt, Sr 30.000, 3/4 bouquet of 12 TV, 8 radio all CA except 'HATV Hakka TV Taiwan;' then gone." (DM, NSW) "This was Cskynet (Taiwan) testing." (C. Sutton, NZ)

NSS 6/96E: "Fashion TV has changed PIDS (V513, A514) on 12.727V; test card 11.543V appears to have shut down." (Younger, NT) ("12.727, Sr 27.500, 7/8 first noted 12 July." (William R, Aust) "12.647 TARBS test is missing." (Anthony L, NT; it had 12 programme channels at peak, Sr 28.066, 3/4) "Try 11.480, apparently NE Asia beam, for Mux (Sr 26.000, 7/8 in PowerVu)." (Mickey T, Taiwan)

Optus B1/160E: "Correction: second SBS Mux is 12.456H (not .452) but it does not have a PMT so Nokia will not do automatic PID; further, using same PIDs from first Mux (12.420H) will not load it either." (IF, Qld.) "Sky NZ has added 'Spice 2' (making 3 'adult' channels now) 12.671V, V514/A652; and 12.734V now loads SBO Movies (x 2) suggesting they are taking control of this ex-TVNZ transponder." (Craig S, NZ) "Using Sr 6.111, 3/4 - number of new occ feeds noted on 12.384V, 12.393V, 12.402V, 12.411V, 12.380H, 12.451H, 12.460H." (Thomas)

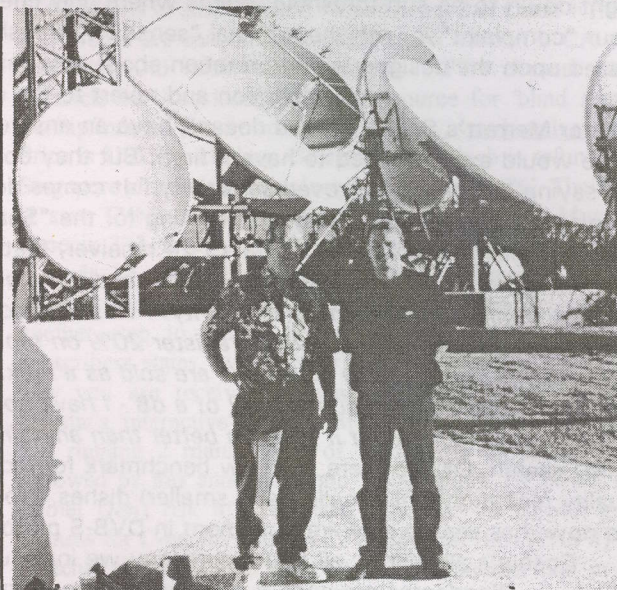
Optus C1/156E: "JC-TV has left Globecast (12.367V) while MAC-TV, Chinese, has begun." (Bernard, NSW; see complete current listing p. 22 here. JC-TV is youth-oriented Christian [music] channel, it continues FTA on I701, 3769RHC. "A copy of Austar/Foxtel 12.518H Mux appears with identical PIDs/parameters on 12.607V." (Eugene H, NSW)

PanAmSat PAS8/166.5E: "MTV SE Asia 3740H appears to have gone CA." (Bernard, NT; They advised cable affiliates ([PNG] August 1 was encryption start date. MTV China continues FTA according to reports.)

Soapbox: "CNBC is teaming with MGM to expand distribution of MGM movies beyond presently reached India, New Zealand and Korea; CNBC spare data space (PAS-8) will be used ." (Clyde W, Singapore) "Kmart Australia offering 'Free Foxtel/Austtar installation' with purchase of any Sanyo TV or DVD player." (IF, Qld.) "If someone such as Satlink

AT PRESS DEADLINE

PNG reports confirm that C1 vertical transponders, always very marginal on even large dishes, are now solid (up approximately 5 dB from B3) and more importantly - that nightly loss of signal caused by either B3 "wobble" or B3 power-down is a thing of the past. Now - can we go to work to create an accurate "coverage map" for C1?



RECENT visitor. Steffen Holzt, Pacific IP Services (Noumea; right) with Coop at SatFACTS to discuss high speed satellite Internet to your dish from PAS-2. We saw it work, SF will begin reports this spring.

ABC's digital multi-channel service
has now ceased.

ABC children's programs can be viewed on
the main channel from 7am - 10am and
3pm - 6pm, Monday to Friday.

KIDS as political pawns. Beef between ABC network and government managers turns "ugly."

obtains a CISPR approval for a new satellite receiver (such as Coship), does that not allow others to import the same receiver

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. "Screen grabs" sent via e-mail should be in jpeg format. Deadline for September 15th issue: September 3 by mail or 5PM NZST September 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

What the hell is happening to receivers???

The SatFACTS introduction to the all-scanning, all finding Coship receiver (SF#107, p. 6) now appears to be but a tip point on the proverbial iceberg. Everything we have known, and expected, from digital STBs is changing. Fast; very fast. Tim Heinrichs, the USA man from the state of Georgia who first introduced the concept of a fast moving all-scanning - all finding receiver, suggests to SatFACTS, *"The floodgates are now open - watch out for what follows!"*

IRD sensitivity. SatFACTS has editorialised about the software designers passion to "kick-on the blue screen" too early - depriving DX enthusiasts of the ability (if not joys) to "follow a weak, pixelating signal right down to no sub-threshold points where only checker block patterns are left on the screen." Indirectly, our "complaint" is with the artificial "sensitivity threshold" created when the processing software decides, based upon the designer's interpretation about how many errors will be acceptable, it is "time" to switch off the reception and revert to the obnoxious blue screen display.

Peter Merrett's Sciteq Pty Ltd doesn't have an answer for this one yet (although when there is an answer we would expect Sciteq to have it first). But they do have a better machine - an IRD with what some are saying is "greatly improved sensitivity." It comes down to a radically improved "satellite tuner" design originating at Japanese designers working for the "Sharp (TV)" folks in Japan. Sciteq early in August began shipping their brand new ID Digital CI-24 receiver, featuring this new tuner. As Merrett reports to SatFACTS, *"When I attended the London (satellite) show there was the usual sales hype about a 'new tuner' with (greatly) improved threshold sensitivity. I was sceptical but when two samples arrived for our check-out, I became a believer. Signals which register 20% on top of the line competitive units and are prone to pixelate register 50% on the ID CI-24 and are sold as a rock. The actual improvement in the (Sharp brand) tuner sensitivity may only amount of 1/2 of a dB - I have no way of determining the extent of actual improvement - but it is much better than anything we have previously seen here."*

IRD search. OK, so there is a new benchmark for receiver sensitivity - which directly translates to getting quality reception with smaller (and smaller) dishes. From the first Skandia 888s and Scientific Atlanta 9222s, to now, has seen a slow improvement in DVB-S performance but nothing really stellar in one leap. Until the Coship's all search, all find technology we introduced in SF#107. Now as Heinrichs observes, *"the floodgates are open."* All because of a Chinese firm calling itself Zarlink Semiconductor (www.products.zarlink.com/profiles/ZL10312). Zarlink's initial foray into creating a "DVB-S on a chip" IC device, the MT312 (aka Fujitsu MB871.2250), turns out to be the powerhouse in the Coship 3188C. But as fast as the ink dried on SatFACTS #107 the Coship 3188C became history, because Zarlink has upped the ante with a new, improved chipset that Heinrichs and others knowledgeable in the world of STB design believe will totally take over both the satellite and terrestrial TV world in the coming months.

The ZL(TM)10312 is aimed squarely at the rapidly growing Asian and Middle East FTA satellite box world where FTA (free to air) reception remains the primary service choice of millions. The newly announced ZL10312 is a part of a chipset which reduces all of the usual signal processing steps into a fully integrated system. You start with a Zarlink SL1925/1935 "satellite tuner chip," marry that to a Zarlink 10312 demodulator chip and you have an automatic all-scanning, all finding MPEG-2 DVB Compliant nucleus that comfortably fits into the palm of a five year old child with room to spare (the 10312 is only 7mm by 7mm, 64 pin LQFP - low-quad flat pack - design). Moreover, Zarlink has pulled the pricing rug out from beneath the competition - for what in the STB manufacturing world is "small volume" - 1,000 pieces from the Zarlink factory - the price each for what is essentially a fully automatic receiver is only US\$3.85. No, that is not a complete receiver - that's the "smart part" required to build a complete receiver.

There is more. The 10312 has a newly designed "sleep pin" which when selected by the RCU cuts power consumption by 1,000-fold (when not asleep - it draws a very respectable 300 milliwatts). Most IRDs when told to "sleep" don't - they merely disconnect the video and output (or RF) outputs leading the user to believe their power consumption has been reduced. In fact, it typically remains the same - 30 watts consumed is a benchmark. And still more. The 10312 includes a direct interface to the latest version of DiSEqC (2.2) which means dish movers including H-to-H drives can be operated with the RCU controls. But the hallmark of the Zarlink system is and remains its ability to do "super fast scan and loading" of all SCPC, MCPC and even data services identified by the user as being located between any two user entered frequencies - such as 950 low end, 1450 high end (or other numbers the user enters to initiate a search).

Downside? There may be one (as in we suspect but have not yet proven to our satisfaction). The Zarlink tuner companion system (SL1925/1935) appears to be, as Roy Carman wrote in SF#107, "not quite as sensitive as a Nokia running with DVB2000." The Nokia has never been much of a gauge of sensitivity itself (being less than the best) so using it as a comparison is not a compliment to the original Coship 3188C. Now with the introduction of the "new-improved" Sharp "third generation satellite tuner" in the ID Digital CI-24, there may yet be a "missing element" from the designers at Zarlink. If Sharp is truly onto something better with their new tuner, we would expect Zarlink to be hot on the trail of absorbing the design tricks found in the Sharp tuner into their own product line. The STB world just got exciting - *once again!*

without obtaining a 'new' permit?" (Philip T, Christchurch; Actually, no; A valid certificate has two elements on it - the name/model number of the IRD, and, the name of the importer. CISPRs are granted to individual importers for a specific product, the product approval does not 'flow' to others. However, once the original product has been certified, others can import the product by citing the approval number of the original provided they also file for and receive their own approval in their own name. Bureaucracy amuck.) "Reading and studying Rolf's review of Dreambox (SF#107): there is an absence of Firewire sockets to connect a high-def monitor or digital camcorder. With the optional 'keyboard' to make use of Internet functions, the ability to connect a high res monitor seems essential." (AI, NSW) "Regarding upgrading HSS-100C receiver with new 'chip'- it is actually a 2-chip set replacing a 2-chip set." (IF, Qld.) "I believe pay-TV piracy involving the modification or replacement of smartcard data is a soon to disappear 'profession.' The new cards have dedicated security functions to prevent SPA/DPA attacks, an active shield to

prevent physical attack, voltage/frequency/temperature monitoring. But there is a new technology called 'smartcard sharing' involving a device that plugs into the USB port of the Dreambox. This is a 'host' for (up to) 8 different smart cards, a 'first step' towards a smartcard sharing server, where the data of these 8 smart cards is shared over Internet with a virtually unlimited number of users." (RD, RSA; For each door that closes, a new door opens. Imagine what happens to those Asian firms who have recently tooled up to turn out hundreds of thousands of smart cards!) "Confirming that Canal + (1701, Ku) did as pre-announced switch to new version 2 CA card July 14th. Old version produces only 1 FTA channel now." (Francis K, Auckland) "Web site source for 'blind search' Coship/Innovia family receivers is www.wavelength.com.sg. Price is US\$56 including 4% sales tax - which is refunded at Singapore airport when you leave the country." (SG, Thailand) "I saw TVNZ testing 16:9 on their 12.456V B1 Mux; on Phoenix 333, switching to 4 x3 mode pan and scan feature." (Laurie M., New Zealand). "Germany's Premiere pay-TV network changing to Swiss-sourced NagraVision October 1 in another step to reduce piracy of their services; letter to subscribers states, 'we together must fight piracy and that is why you are receiving a new smartcard'." (OE, Austria) "Austar's 'interactive' Tr 12.278H aTmail channel (see list p. 20) running 2 minute loop of 'horror movie' audio (FTA) followed by this announcement: 'Subscription TV piracy is a crime! Don't risk it!'" (Edward T, NSW) "It is with great sadness for C-banders that MTV South East Asia (PAS 8) has switched from FTA to CA. This is just another nail in the coffin for this hobby!" (Rohan Brown) "Let's congratulate, not vilify, TVNZ for their RWC innovation!" (LM, Auckland)

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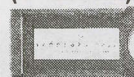
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Dynamic versus "static" compression rates for HDTV

As noted here (p. 20), the Austar version of ABC's "widescreen" service (12.398Hz) has a much reduced data flow of only 2.5 Mbit/s whereas the 'Footy' channels within the Foxtel bouquet are at a higher data rate (6.5 Mbit/s). These are peak readings, a result of the "dynamic" approach to multiplexing (i.e. "use as little data flow as absolutely required to get the image and sound through at any given point in time). True

HDTV requires a different approach. ABC TV NSW, 12.670 (Sr 14.300, 7/8) by comparison runs at a constant 6.5 Mbit/s. Even the test card in the ABC HDTV bouquets run at 6 Mbit/s. The SBS (12.420Hz, Sr 12.600, 5/6) high def runs at a constant 7.6 Mbit/s whereas the SBS widescreen also here runs at 5 Mbit/s and their "World News" offering runs in a dynamic (not constant) mode with peaks at 4 Mbit/s. Others: Central 7 on B1 uses the dynamic approach, peaking at 4 Mbit/s. Finally, all of the ABC HDTV bouquets on B1 contain AC3 PIDs; even the test card channel. If you are into HDTV displays, be conscious that not all data streams are created equal and the image you see may be significantly constrained by being dynamic.

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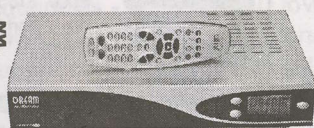
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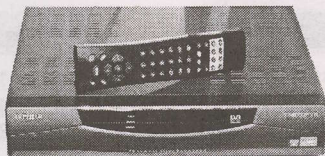


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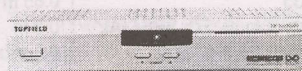
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AT

Sign-off

"In response to tonight's apsattv.com, I have approached (and been approached by) a number of establishments and sports clubs in and around the Hutt Valley since the news broke Sunday. The response has been generally pleasing (and) I have been able to sell a couple of establishments/sports clubs, with others (in the same chains) certain to follow." Bryan

The road to RWC

For New Zealanders (and those fortunate folks on Norfolk with Kiwi-capable satellite dishes) TVNZ's announcement that a special "Rugby World Cup Channel" was being created for the period October 10 - December 20 is akin to having Christmas arrive early. But there is confusion, and some nay-sayers who refuse to accept that TVNZ can pull this off. Or that anyone will care when all is said and done. Let's try to set the record straight.

TVNZ walks a very delicate line suspended in space between an all-powerful Murdoch run Sky NZ pay TV and a Government quite determined to reformat the national TV service in their own image. Not many years ago, TVNZ was driven by capitalist minded folks who built upon the "first in - first to serve" tradition of the original BCNZ channel one. But the world of capitalism and profits stands still for no one and as viewing habits changed to reflect the stellar marketing performance of Sky New Zealand's pay-TV product, TVNZ had to adjust. Not all of those "adjustments" have gone well, nor as planned; the debacle with Saturn being a "missed opportunity" never again to be on the table.

TVNZ at one point "owned" sufficient transponder space on Optus B1 to mount a formidable "competitive DTH platform" to Sky. Alas, a Government unfriendly to the profit motivated TVNZ business plan would have no part in that and today TVNZ "owns" one-half of one transponder; just enough "bandwidth" to create (if and when they wished, and are allowed to do so) a modest digital bouquet of 6 or 7 or 8 programme channels via satellite. Unfortunately, four of those programme channels are already in use feeding TVOne (x 2) and TV2 (x 2) to Sky homes located in southern North Island and South Island. Which leaves TVNZ with 2 or 3 or maybe 4 "unused" programme channels of bandwidth.

Dennis Harvey, speaking for TVNZ, says about the RWC Channel:

"We have the ability to add extra channels to the satellite viewing and we are using the RWC to trial it and find out our capabilities to do some technical testing. It's a good time for us to do it because of the bulk programming."

As the sole owner of Rugby World Cup "rights" in New Zealand, they are faced with some difficult scheduling decisions. There are to be 48 matches, not all of them occurring when New Zealanders will find it comfortable or convenient to be glued to a television set. Moreover, if they took TVONE and totally turned it over to RWC between October 10 and the late November final match, it would rip their commercial schedule (and the viewing habits of folks who want news at 6PM, Holmes at 7PM etc.) to shreds. RWC is a big time, viewer collecting event but not every man, woman and child in New Zealand loves Rugby to a level that

would allow this to happen. The unused, spare satellite capacity is an escape valve for the scheduling dilemma. Some of the Rugby matches can be re-routed to the satellite service, others occurring at times inconvenient to New Zealand viewing can be repeated on a time delayed basis exclusively on satellite.

It works out to nearly 900 hours of RWC coverage, of which some portion but far less than half will be available on TVONE's existing terrestrial network as well as through the TVONE channel carried by Sky NZ as a part of their satellite service. But the total 900 hours will only be on FTA satellite.

There are many side effects to the plan. A spokesman for TVNZ tells SatFACTS, "(one) aim (of this plan) is to drive FTA set top box takeup."

An installer we spoke with voiced one of the more common concerns:

"The biggest question - 'what comes next?' - after RWC is finished? It is this uncertainty alone that seems to be the thing that causes most people to think twice. I believe TVNZ should come clean and publicise it's future intentions, otherwise chances are (many) people won't connect if they don't perceive more of a future for their investment."

TVNZ's Harvey refuses to be drawn into "what happens next" - because he has not a clue. *"This trial has no commercial advantage for the company."*

The most likely first-served here will of course be the sports clubs and bars. As the schedule here illustrates, from 3AM to 4PM every day for 71 days, solid Rugby only on satellite. These may not be the hours with the heaviest patronage of bars and clubs but for

21 "weekend" days it is a reasonable bet that pubs so equipped will open early and where legal stay open later than normal. And for the true-black Kiwi fans at home, having RWC Rugby "on the screen" when the sun comes up and continuing exclusively on satellite until 4PM daily for 71 days is bound to drive some FTA satellite system sales. The cost? A few hundred dollars. The comparison? What does it cost one person to travel to Auckland to attend just one match live? Total cost - travel, lodging, food and drink and the all important gate-entry-ticket?

Sky NZ. Is there a competitive thing here - is TVNZ really - as our front cover suggests - "kicking Sky where it hurts?" Of course not - Sky will have the TVONE coverage anyhow. Initial postings on Internet seem to have an unfortunate flavour suggesting TVNZ is 'battling' Sky with this 'bold move.' TVNZ's spare satellite capacity is no threat to Sky and while Sky has the technical capacity to unlock the paying viewer's STBs to engage the RWC channel, as TVNZ tells it, *"They do not have the legal right to do so."* So let us take this for what it is - an opportunity to perform a public service and make a few extra bucks in the process!

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* exclusively on satellite

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29-30
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Hard Core (Serious) "How to do it" References

- Tech Bulletin (TB) **9402**: MATV (master antenna terrestrial) systems - wiring up a home, motel, hotel, camp site from one set of antennas - \$15 all regions
- TB **9404**: Home Satellite Dish Systems. "Newbie" trying to work out what all those terms means and how a home system goes together? Perfect. \$15 all regions
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- TB**9304**: Identifying and eliminating noise interference from fence lines, signs, electrical appliances. How to cleanup marginal TV reception. \$15 all areas.
- TB**9305**: Cable TV - the basics. How a cable system works, how you can build one! \$15 all regions.
- Nelson Parabolic Manual**. The "bible" of building your own 13 foot dish from scratch. Serious stuff for dedicated builders. \$15 all regions (supply limited).

SOFT CORE - recent back issues of SatFACTS (while supply lasts)

- SF#93 (May 2002) - European Piracy, hundreds of piracy web sites - \$10 all regions.
- SF#96 (August 2002) - Nokia BDM, Faster Channel Zapping with Nokia - \$10 all regions
- SF#98 (October 2002) Humax mods, Nexus PC Card, Low power FM broadcasting - \$10 all regions
- SF#99 (November 2002) FunCARDS - how they work, software mods for Humax - \$10 all regions
- SF#100 (December 2002) d-box2 BIG report! AC3 Surround Sound for Nokia, PanAmSat's Terrorist Problem - \$10 all regions
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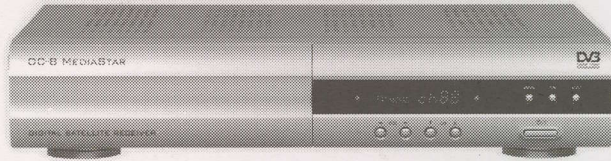
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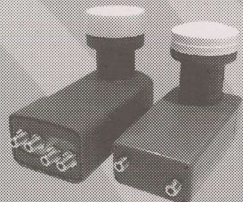


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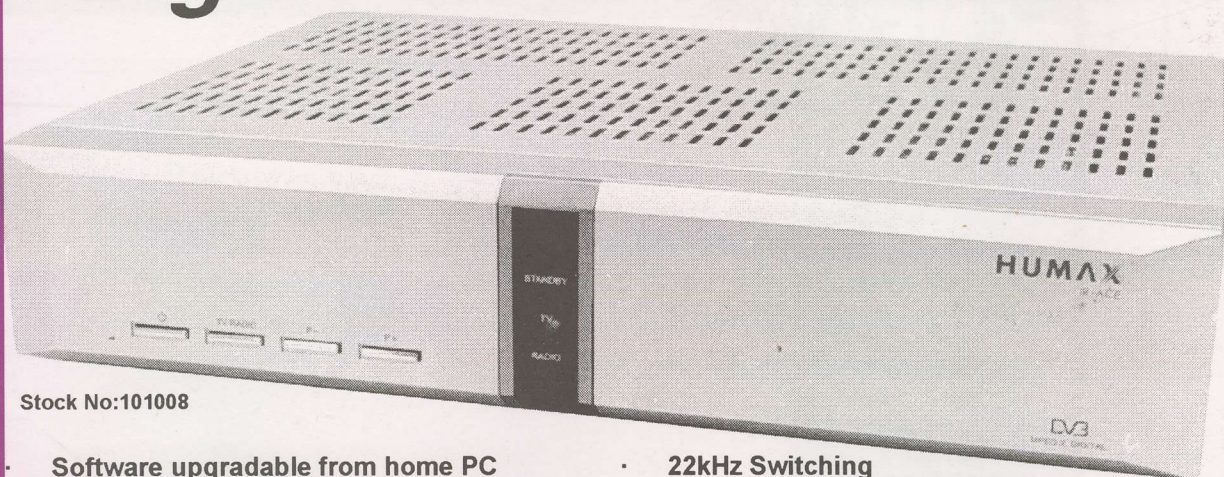
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Conditional Access Interface

Irdeto Embedded 1 Smart Card Reader

Tuner & Channel

Input Connector F-type, IEC 169-24, Female
Frequency Range 950 ~ 2150 MHz
Input Impedance 75 Ω unbalanced
Signal Level -25 ~ -65 dBm
IF Frequency 480 MHz
IF Band width 36 MHz
LNB Power & Polarization Vertical: +13.5 V
Horizontal: +18 V
Current: Max. 500 mA,
Overload Protection

22 kHz Tone

DiSEqC Control Version 1.0/1.2 Compatible
Demodulation QPSK
Input Symbol Rate 1 - 45 Msym
FEC Decoder Convolutional Code Rate 1/2, 2/3, 3/4, 5/6 and 7/8 with Constraint Length K=7

A/V & Data In/Out

VIDEO RCA/Cinch, Video Output (CVBS)
AUDIO R/L RCA/Cinch Volume and Mute Control (Resolution: 20 bits DAC, Max. 2 Vrms)

Data Port

RS 232C Transfer rate 115 Kbps
9 pin D-sub Type

MPEG Transport Stream A/V Decoding

Transport Stream MPEG-2 ISO/IEC 13818
Profile Level MPEG-2 MP@ML
Input Rate Max. 15 Mbit/s
Aspect Ratio 4:3, 16:9
Video Resolution 720 x 576, 720 x 480
Audio Decoding MPEG/MusiCam Layer I & II
Audio Mode Single channel/Dual channel
Joint stereo/Stereo
Sampling Rate 32, 44.1 and 48 kHz
Graphic Engine 3-OSD plane
1-background plane
H/W Bit Blit
~16 bits color

RF-Modulator

RF-Connector 75 Ω , IEC 169-2, Male/Female
Frequency 470 ~ 860 MHz
Output Channel CH21 - 69 for the Remodulator
TV standard PAL B/G/I/D/K selectable by Menu

Power Supply

Input Voltage 90 ~ 250 VAC \pm 6%,
50 Hz/60 Hz
Type SMPS
Power Consumption Max. 30 W
Stand by \leq 9 W

Physical Specification

Size (W x H x D) 260 x 50 x 180 mm
Weight (Net) 1.3 kg