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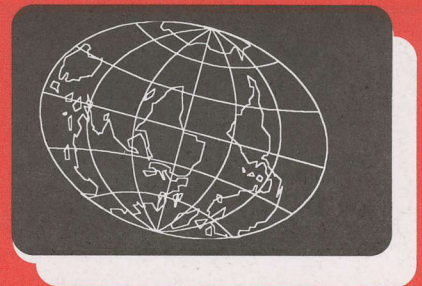
Corrections

Bob Cooper's

MAY 15 1997

SatFACTS

MONTHLY



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

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**CURING IRD
HEAT RELATED
PROBLEMS**

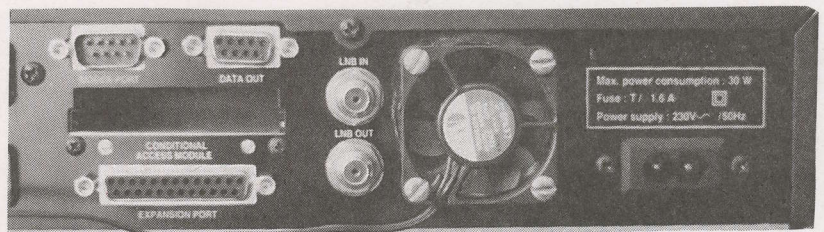
**ON THE ROAD
MEASURING
FOOTPRINTS**

**YES - SUPER
MPEG RECEIVERS
ARE HERE!**

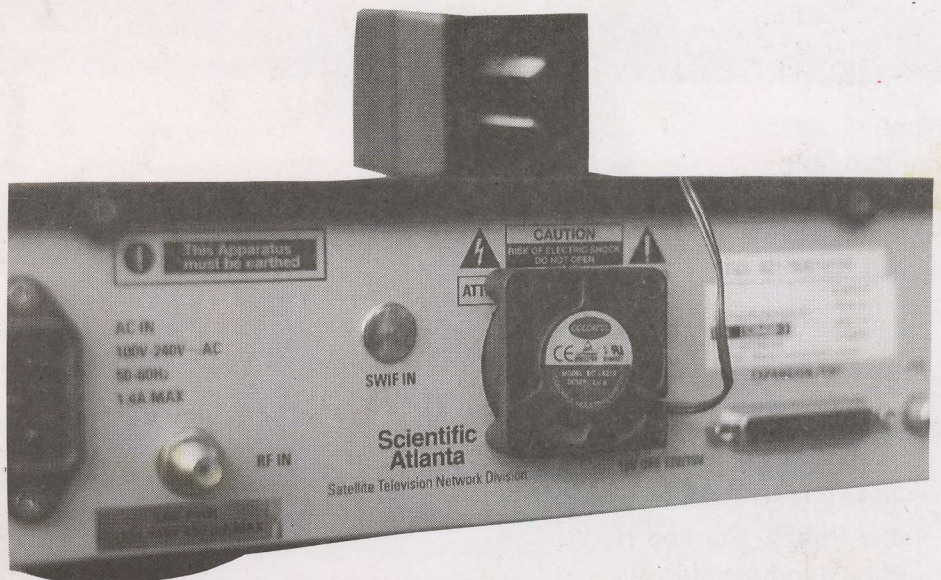
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- ✓ Latest Hardware News
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Vol. 3 ♦ No. 33

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

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

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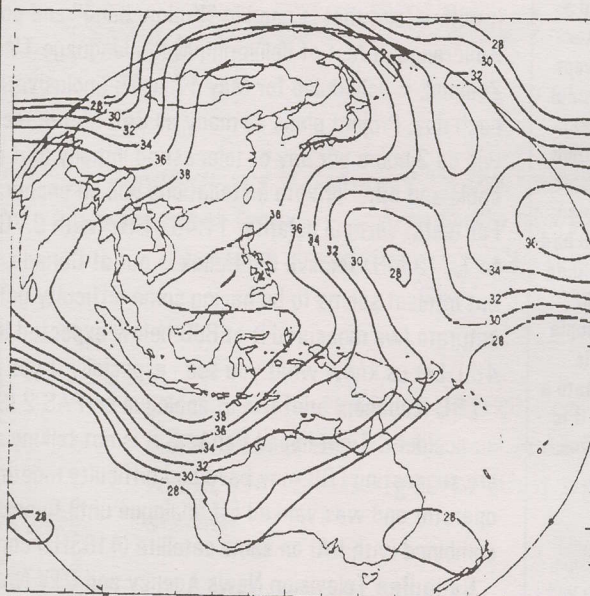
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COOP'S COMMENT

We expected the "big story" for this issue would be the long anticipated release of the Hyundai "does it all" HSS-100 series MPEG-2 receiver. It is not. Yes - the receiver is now available, no, it is not the "big story."

Call it (NZ) Sky "overspill," call it "the bandwagon effect," call it paranoia. Suddenly, without warning, the Pacific and Asia are looking into an empty transponder barrel. All of the desirable birds are now gone - full-up. The operative word is "desirable."

April began with five Ku-band PAS-2 transponders offered for lease; it ended with 4 of the 5 taken (nobody is talking; we believe the new tenant will be American AT&T) and the 5th suddenly priced so high that only a very desperate user might sign a contract. April began with a significant selection of JcSAT-3 C and Ku transponders available. It ended with all of the "3" transponders taken off the market because the Japanese owners suddenly have more users on line than they can handle (plus a mysterious fuel leak on an existing satellite which is rendering it prematurely useless). May began with word of the first Ku-use for Intelsat 702 into Australia and/or New Zealand announced and then quickly a second user.



JcSAT-3 C-band on vertical side - Sayonara!

And a companion announcement that Ku rates on Intelsat have gone up.

April began with a single Internet Ku-band terminal for ISP IHUG operating; May will end with additional terminals in Wellington, Christchurch and Dunedin. April began with a modest increase in Ku-band hardware sales in New Zealand, May will end with terminal suppliers of dishes larger than 1.5m badly backlogged and if you need a 3m or larger Ku-capable dish in a hurry, well - good luck unless you are willing to pay for air freighting of the dish from the states.

The first significant wave of sales activity broke during April, and I feel it is but a small hint at what we can and should anticipate in the way of considerably increased hardware sales and installation business by July. If you sell or install satellite hardware and you are not working 12 hour days - shame on you! Hundreds of new Sky NZ commercial dish installations are going into hotels, motels, clubs; and, private homes are now past the 1,000 dish mark for the tiny 60/76cm size aerial systems. And with the Australian rules preventing competition dropping

dead on July 1st, the surge in sales will wash westward across the Tasman as well. New satellite users mean new satellite terminals and we all benefit from that. The industry has suddenly found its feet and the race is on.

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With The Observers -p. 25; At Sign-Off (The Murdoch Worry) -p. 28

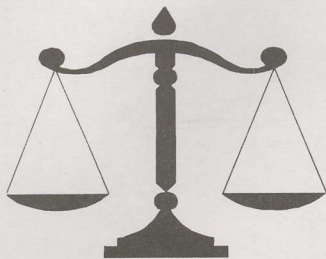
-ON THE COVER-

Red-hot MPEG IRDs are a worry. Actually, any MPEG IRD is a worry. Heat generated by IRDs has been a concern at SatFACTS since we reviewed our first (Pace/Galaxy DGT-400) in March, 1996. Fact: Heat destroys electronic circuits. Fact: MPEG IRDs are at best sensitive to heat, at worst stop functioning when their case temperature approaches the region of 40C. Solution? Cool it off! See p. 6.

(Photo and metalwork by Robin Colquhoun)



May 15, 1997

**Satellite Spectrum Analyser?**

"SatFACTS December 15 advised Barry Ward would describe a satellite spectrum analyser using commonly available parts during SPRSCS '97. As I was unable to attend the Auckland conference, would it be possible to provide an article?"

Dave Dwyer, Christchurch, NZ

The history of the do-it-yourself analyser. Twenty (long!) years ago in a magazine called **Community**

Antenna Television Journal we detailed a do-it-yourself spectrum analyser built around a cable TV set-top converter. Using the varactor tuning function of the set-top, we voltage swept the tuner to force it to speed through the channel range multiple times per second. The output was then detected and displayed on a common garden variety scope. Hundreds - probably thousands of these low-cost analysers (called "The Everyman Analyser") were built - one trade show in 1976 had 140 people in a lecture hall and each was building his own analyser from a kit provided while instructors roamed the floor to make sure people were not making major mistakes. With this background we encouraged Barry Ward to create a similar satellite version. Will we share how it is done in a SatFACTS article? The answer is yes, before the year is out.

Another Potential Satellite User

"Triangle Community Television is preparing to start-up the first New Zealand public-access television service using a licence granted by the Ministry. We will produce new programming, make air time available to others who have been unable to gain telecast time on existing (NZ) television, and we plan to rebroadcast a wide range of public service programmes from around the world. To that end we are looking for assistance in the equipment and techniques. Can you help?"

Hans Versluys, Director,

Triangle Community Television, Auckland

Ethnic minority groups living in the greater Auckland market will be quick to urge importation of TV programming from their home countries.

Step one - identify who the minority groups are;

Step two - study the available TV programming already on satellite. Step three - arrange for its use and plug it in to your transmitter!

NZ SKY To Niue Island?

"I have faxed twice to Sky (Auckland) and called their John Fellet but cannot get an answer to my question. Is the new SKY Sport service possible here? I am a golf nut (not easy on Niue!) and would love the Golf Channel from PAS-2 - alas, CNN is P2.3 and I doubt digital would make the grade."

R.J. Pope, Niue Island

SKY B1 service to Niue very (very!) unlikely. Optus predictions stop far short of Niue, even for 36 dBw footprints. The NZ beam seems very 'tight.'

**PROGRAMMER
PROGRAMMING
PROMOTION****UPDATE****MAY 15, 1997**

Looking for recent movies, in the clear, analogue? Try Mongolian TV (As2, 1470Hz) as early as 0700UTC Sundays, 0900UTC Tues-Sat. Some examples: "*What Does Love Have To Do With It?*" appeared roughly parallel to being on HBO Asia (B-MAC, C2) while Bugs Bunny/Michael Jordan "*Space Jam*" ran early in May - before appearing on pay-TV. Downside? Well, they retain the English audio soundtrack (6.6 MHz sub) but drop it 10-15dB in level, then translate slightly behind and over the top in Mongolian. Now THAT is an interesting form of encryption!

Quickly - get out your Ku-band LNB that is capable of receiving 11.462 GHz, mate it with a feed that is good in "Ku-low band" and point your dish at 177E. Project Amioranga, a test of delivering Maori language TV programming to 15 sites in New Zealand, is scheduled for May 17 to 25 (inclusive) on Intelsat 702 at 11AM NZ time each day. Project plans as many as 840 Marae receive only sites throughout country, will do 2 hours per day of telecasting initially (but not during the test period) and cable and other private installations will be encouraged to carry materials telecast. For tests: Vertical polarity, 11.462 GHz (with 9.7GHz LNB local oscillator, works out to 1,712 MHz receive IF). Uplink is out of Canada, test card is up as SF goes to press but Intelsat seems to be having some difficulty getting the transponder to properly saturate (we measured it at 8dB below expected levels when it first came up May 4th). Let us know what you see - especially if you are outside of NZ!

LBC (Lebanon) brief use of analogue on PAS-2 (SF#32, p.21) was intentional, not an accident. Tight-lipped PanAmSat is not talking about incident but industry wags are suggesting LBC may have had difficulty meeting payment terms with satellite operator and was yanked off analogue until finances are in order. MPEG feed combined with RAI on same satellite (4183Hz) continues at presstime.

Canadian Television News Agency and CTV Network are creating thrice weekly feeds (Monday, Wednesday, Friday 07.30UTC - 19.30 NZT, 17.30 AEST) of "all major events in North America" for use by cable and others. Tune-in California bouquet on PAS-2 (3901Hz), programme channel 2 (nominally test bar) to check it out. Interested? Tel ++1-514-495-6168 or fax ++1-514-273-5338.

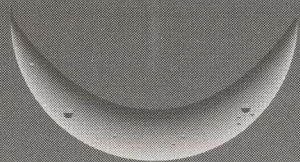
Contacts: JET (Japan Entertainment Television) had official "launch" May 5, is currently operating two (of five; 1 each NTSC and PAL) programme channels in six hour programming blocks that repeats 3 times (=24 hours); they plan to operate 8 hour time blocks with two repeats when fully functional in English, Mandarin, Japanese, and Thai. Their targets are cable and SMATV subscribers in three phases (Australia, NZ and China are in Phase Two). These are early days for Singapore based firm, their organisational skills are still developing. For general information contact Elaine Oh at tel 65-546-4647 (fax 65-546-4648). The mysterious AAR/ART (Arab Radio Television) that appeared briefly in FTA analogue PAS-2 (SF#32, p. 21) and continues in adulterated PowerVu (PAS-2, see listing p. 23 here): Try (Mr.) Karim Abdallah, Executive VP ART-Cairo (tel/fax ++20-2-349-0106). For the Lebanese segments on AAR/ART, try Sheikh Pierre Daher, GM, Lebanese Television International at (tel) ++961-938-938 and (fax) ++961-937-919. Sometimes we amaze even ourselves with what we are able to dig up!

Philippines has renamed old Rimsat R41 (now at 161E) as Agila 1, renaming Agila 1 (scheduled to launch mid year) as Agila 2 (153E likely location).

Intelsat 801, launched to 64E March 1, was scheduled to enter service May 8 but SatFACTS Observer Gregorio Hermosa found Indian ViJay TV already operating on 4175LHC late in April. Western Australians should check this out.

New Release

Skandia is proud to announce the release of the all new DIGISKAN SK888 family of SMS/ADB Digital Satellite Receivers, which has been designed for low cost consumer receiver applications compatible with several digital satellite receiver broadcast systems worldwide. The receiver utilises the MPEG-2 audio/video compression scheme and is primarily DVB compatible.

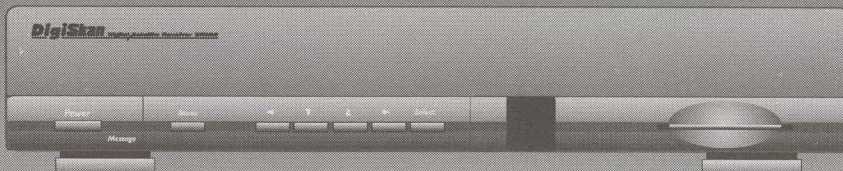


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RAI Frustration

"Have tried to contact RAI's Giovanni De Luca six times and he will not take my call; I am totally frustrated. RAI has destroyed most of the Australian-Italian interest in their service because all soccer games are now blacked out with teletext for the entire duration of the game. I can only assume the Arabs have pressured RAI because the games are on Optus pay TV at the same time as the blackouts. This is very bad because we in Australia miss out what the rest of the world sees FTA on RAI. They need lobbying and perhaps SPACE can do something since you seem to have built a relationship with Giovanni when he was attending SPRSCS in Auckland."

Carl Muller, C & H Electrical Services

Tough problem. As we understand it through Giovanni, a former top exec at RAI made a side deal with a personal friend in the Arab business world and the present RAI management is reluctant to piss off the Arabs by cancelling the contract.

Giovanni believes the 'Arab exclusive' which has been sold to Optus is good for another 10 years. On the other hand, a PowerVu receiver tuned to 997Hz on PAS-2 (Msym 5.632, FEC 3/4) locates a second RAI feed in digital - bunched there with AAR/ART.

As we go to press it remains FTA but has audio problems unless you re-enter the unique audio/video PID numbers. A Nokia d-Box with access to the "red menu screen" gets in nicely but because this feed is in NTSC, you have to either put up with a video freeze every 20 seconds or figure out how to force the Nokia into NTSC.

Chances are when all of this is solved, they will turn this feed into conditional access anyhow and then you are back where you began - watching substitute RAI programming via EBB.

Boys Will Be Boys

"I wish I had taped the local EM TV news coverage of PNG rioting and looting. I swear some of the proud looters showing off their new found treasures on news tape also appear as stars on the EM TV 'Pepsi Fizz' show. I guess they just like being on camera!"

Stu McLeod, Napier, NZ

Now - can you imagine trying to operate an uplink in this environment!

Maybe Yes - Maybe No

"A new digital receiver is coming soon with a built-in teletext module for DW MediaNet! For more information please contact Alex Mack, Nichimen Europe plc, Dusseldorf, Germany fax (+ +)49-211-3551-274. This receiver does all of the free to air MPEG services."

Horst Wieser, Germany

No doubt there is such a combo MPEG + data (Internet via MediaNet) receiver coming. Soon may be an overstatement. Our success ratio with obtaining information from Alex Mack has not been good - readers who are fluent in German may stand a better chance.

Ask a Stupid Question-

"I want to know if I can receive Galaxy for free if I have a normal 18" satellite dish and a Pace receiver?"

Does Galaxy use the DSS system like the USA?

Kenn Leong, Sydney

Nothing about Galaxy is free. No, Galaxy does not use a system even remotely like the US DSS technology. Cable is for techno-idiots, satellite for free thinkers.

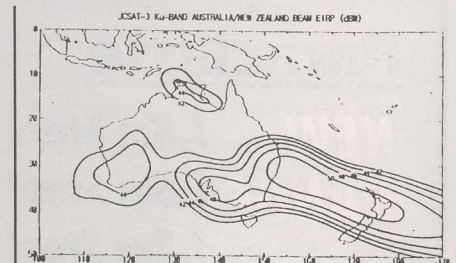
HARDWARE EQUIPMENT PARTS

UPDATE

May 15, 1997

PAS-2 is full - really full. The last 4 Australia-New Zealand Ku beams reportedly were contracted in mid-April and although there is one switchable China OR Australia/NZ beam remaining, PanAmSat appears reluctant to offer it except at full retail price to anyone "down here." On C-band, PAS-2 is "standing room only." Several major projects which were anticipating walking into PanAmSat and picking up transponder space are now in panic mode searching for space on Palapa C1 or even Measat 2. Japan's JcSat-3 was a possible choice until their late April decision to load both C and Ku band transponders with traffic they are taking off of failed JcSat-1 plus add other new customers - shortly. Pity - it turns out the JcSat-3 Ku band footprint for Australia and NZ is banana shaped from Perth to NZ east end at 46 to 48 dBw; perfect for many applications. Next available JcSat - #6 in mid to late 1998. Palapa C1 is at best an unpredictable satellite, and Measat only has useful coverage along Australia's eastern coast (34 dBw in Sydney). Solution? PAS-8 due to launch mid-1998, where PanAmSat suggests "transponder space is already going very rapidly."

The Lord giveth - the Japanese taketh away. Recently first-time available JcSat-3 Ku footprint for Australia + NZ shows original service plan for this satellite. Unfortunately, new demands within Japan for space spectrum have caused this coverage beam to be redirected back to Asian mainland. That's 50dBw in centre (North Island NZ, eastern NSW) which translates to 70-90cm dish; Optus region signal levels. Next possible replacement: JcSat-6 in latter half '98.



Confusion concerning "authorised" sources for suddenly available Hyundai HSS-100C MPEG receivers is rampant. Garry Cratt (AV-COMM PTY Ltd) writes, "(we) are the only authorised importer of this unit in Australia. We have exclusivity for the balance of 1997. (I believe) other sources are supplied by back door importers, based in Hong Kong." Numerous sources are offering what could turn out to be different software versions of the same receiver, about which Cratt notes, "(our) units have software (which is) fitted here in Sydney ... which does PowerVu (FTA) perfectly and it also has built-in NTSC-PAL conversion." We investigate on p. 11.

Skandia SK888, Mark IV version, is now routinely being shipped at A\$680 (retail) with improved software (no more green screen, all prompts on same menu). Price has dropped 13% since receiver was first released in January.

VideoCrypt decoders used by EM TV (and SKY NZ) sell for \$900 in Solomon Islands, making the A/NZ\$125-150 charges seem very reasonable in comparison!

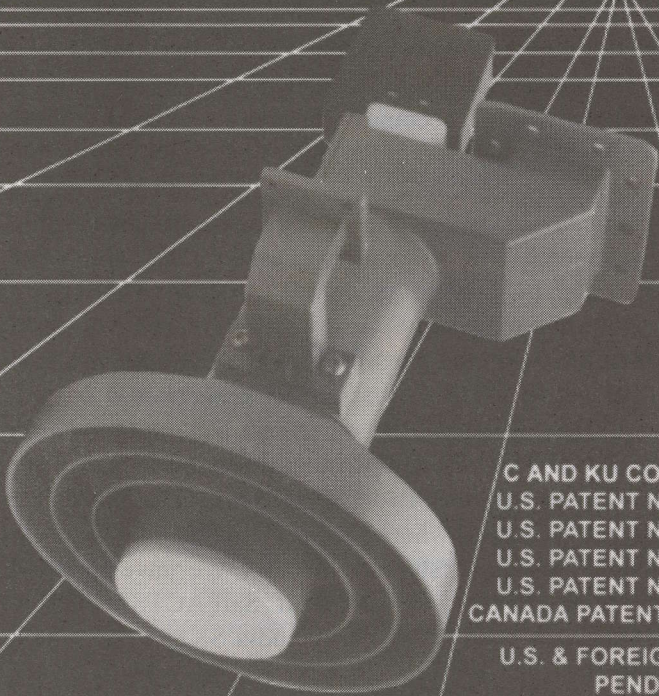
Nokia DVB9200F is recently released European free to air version of the Mediamaster (also called DVB9200S by some sources). Receiver is without conditional access module (one UK source claims it can be fitted later). Information from + +44-1562-752106.

Hello test! Thaicom 3 is temporarily testing (now) at 120E, will swap with Thaicom 1 (78.5E) June 1. "3" includes semi-global C-band transponders 3.4 - 3.7 GHz that cover Australia to Europe.

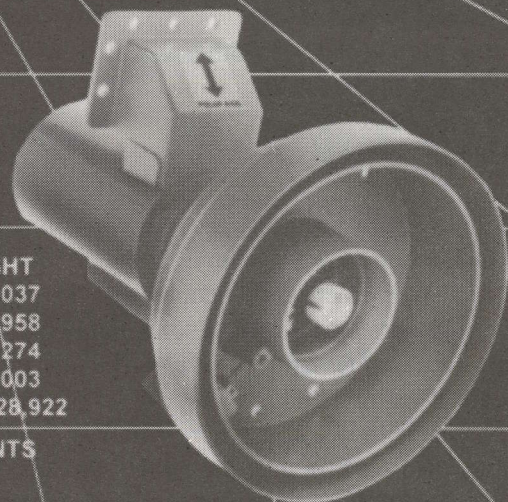
And the band plays on. Several Australian SatFACTS readers, early recipients of HS-100C units through Pacific Satellite, report: "*It does have lip sync difficulties with NTSC PowerVu and is difficult to load with new bouquets*" (see p. 11).

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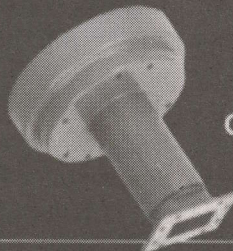
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RED HOT IRDs and what you can do about it

Heat. "The condition of being hot."

Hot: "Having a relatively or noticeably higher temperature."

Temperature: "The degree or intensity of a body in relation to others as shown by a thermometer or perceived by touch."

The majority of MPEG IRD units specify their operating temperature range with the notation that 40C is the top end of the recommended range. By comparison, the human body's "normal" temperature is 36-37.5C (nominally 37C). In other words, if you touch an IRD and any place on the cabinet is uncomfortably hotter than your finger, it is more than 40C.

Disposing of the heat generated within a receiver is always a challenge. Modern solid-state IRDs generate 90% of their total heat in and about components associated with the power supply. Some of these are obvious even to electronic neophytes: The power transformer(s), voltage regulators, some members of the IC (integrated circuit) family have sufficient internal resistance and require enough current to operate that heat is generated. In a world where small is demanded for all component parts, a tiny component has very little outside surface skin to radiate (throw off) this heat. The result? Heat builds up on the component part, radiates or conducts to other nearby parts and in the process the stagnant air inside of the IRD is heated. All of this contributes to the metal or plastic case surrounding the IRD also heating to the point that it has a "noticeably higher temperature."

Even the most mundane of electronic component parts (resistors, capacitors) have operating values affected by the temperature of the part. A simple 100 ohm resistor becomes a 110 or 120 ohm resistor when its temperature rises 20 degrees C. And every part in the IRD has a similar "drifting value" caused by the operating temperature of the part. If a critical design requires a 100 ohm resistor for a particular function, and the designer knows the resistor will rise to 110 ohms because of heat, the value of the resistor may be reduced to 90 ohms when cold - to become 100 ohms when hot.

With every resistor, capacitor, IC and transistor in the IRD changing value as a function of the heat of the part, it is actually something of a wonder that a circuit designed on paper to be correct works at all after the IRD has been turned on for awhile and reaches "operating temperature." And to make life even more

complex for the MPEG IRD designer, the parts (ICs) which have been specifically designed to process the digital data stream are several times more responsive to heat than most of the other parts found in a receiver. When a component part changes value because of heat (or any other reason), the carefully fine tuned circuit it operates within becomes basically detuned. Some circuits have far less tolerance for component value change than others.

Someday IRDs will run cool because as special chip sets created for digital processing are improved generation by generation, newer versions will require less current to operate (less current means less heat generated within the part). But today's IRDs remain heat sensitive - so much so that virtually every IRD now in use must be isolated from other heat generating devices (i.e., not stacked on top of other equipment, and never sandwiched between two heat generators!). They also must not be placed where air circulation is poor (such as crammed inside a "stereo cabinet"). We have reported heat problems in past issues of SatFACTS with the Panasat 520, Pace DVR500, Skandia SK888 and Nokia 9500 S. It is unlikely that a careful test of every available IRD on the market would reveal any that are immune to heat build-up and ultimately erratic performance (soon followed by no performance or outright equipment failure).

It is worth noting that the newly available Hyundai HSS-100 series receiver admits that heat build-up is a problem - and they tackle the problem head-on by building into the IRD a heat exchange fan. (1)

Air flow devices, such as fans, are as old in electronic equipment design as electronics itself. They are normally included in a piece of equipment to improve the flow of air through the unit - moving air conducts heat away from the unit, thereby lowering the operating temperature. There are two schools of thought:

1) Mount the fan so that it sucks nominally cooler air from outside of the unit into the case.

2) Mount the fan such that it sucks air already inside of the case to the outside, in effect dragging out the hot air.

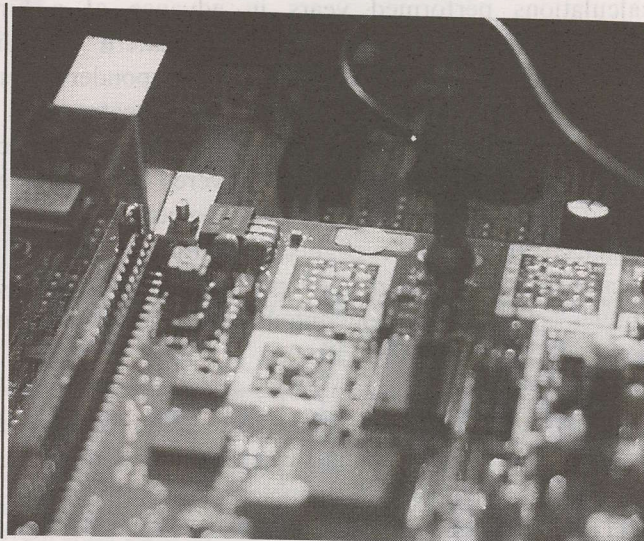
Sucking outside air in through the fan is an all right approach provided the cabinet enclosing the equipment has been purposefully designed to allow the sucked in air to flow through the equipment and somehow escape to the outside. In other words, there must be a pathway for the air to follow - cramming cooler outside air into a case and leaving no place for the air already heated and

-WARNING: Think about this carefully before drilling holes!

Drilling a sizeable hole into the rear apron (cabinet/case) of a satellite IRD can be a dangerous exercise. First the obvious: (1) Your warranty will immediately terminate; (2) Unplug the IRD from power mains before opening the case; (3) Attacking a case with a hole saw is a good way to slice into parts inside the case - parts you cannot replace at the local Dick Smith (!); (4) Might you be safer to simply create a new shelf with plenty of free flowing air for the IRD?

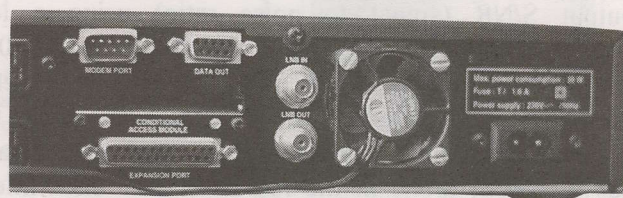
My D9223 cost me close to NZ\$3,000. Ripping a hole in the rear to install a \$12 fan may at first blush seem an act of utter stupidity. I think not. The D9223 runs hot - very hot. And one nasty culprit is a 5 volt regulator mounted at the front end of the digital processor board (see photo below - note upper left corner of photo). SA has chosen to dump so much current in this

regulator that merely brushing it with your finger produces an instant tingle. Force yourself to hold your finger there for three seconds and you come away with a third degree burn. Worse yet, they try to dump (dissipate) this heat through only the circuit board on which it is mounted. In the photo here I have fashioned from a piece of common aluminium a 3 sided "heat sink" which is fastened under the regulator PC board mounting screw. Now I can hold a finger on the regulator and not be burned (other hot spots remain). After solving this "local hot spot" my attentions turned to the full receiver. Stacks of circuits boards, more regulators, all confined in a tight space and surrounded by a semi-airtight metal enclosure; a black metal enclosure at that. Fortunately, as the photo (lower left) shows, SA left space for a 486 CPU fan to be added.



Why not a Pentium fan? Too big, and, the suggested fan is a low current (70 mil consumption at 12 volts) unit. Can you "tap" into the receiver power supply for the 12 volts. You could - I urge you to not even consider such foolishness unless you know for absolute certain the current draw of the fan and the "spare capacity" of the IRD power supply. The last thing you want to do is raise the IRD power supply draw to the point where you create additional heat. The recommended fan comes with a matching wall plug supply.

Another weak point in IRDs: Many use a "glue" to hold parts in place in the vicinity of the main power supply. This glue remains pliable and almost sticky unless it gets too hot - then it becomes rock hard. Inspect your own power supply area carefully - "rock hard" glue is well on the way to becoming a conductor (and creating nasty short circuits). Installing a fan, lowering the temperature, will preserve and protect the IRD for many years - long after the warranty runs out! (*Robin Colquhoun, Auckland [NZ]*)



Fan added: D9223 (left), Samsung (above)

inside is not much of a solution. Yes, eventually the heated air will leak out through unintentional cracks and passageways. No, the heated air will not leave as fast as the cooler air is sucked in.

Sucking hot air out (the fan sucks rather than blows) guarantees the heated air is disposed of (that is the object here) but somehow air must be available to replace the exhausted hot air. So we have the reverse situation of a fan "blower"; now outside cooler air must somehow flow (or "leak") into the container to replace the exhausted hot air. Ideally, because hot air rises on its own, a fan would be placed at the top side of an IRD to suck out the hot air while "matching" air entry slots

would be designed into the container on the bottom side. Unfortunately, mounting a fan to blow air up and out from the top is a mechanical problem so most fans end up someplace on the rear apron of the unit as a compromise.

1/ The Hyundai HSS-100 series specifies the (ambient - i.e., air) operating temperature range as "10 to 45C" with their built-in fan. The TV/COM (subsidiary of Hyundai) parent of the HS-100, (the) Gateway Navigator, claims an operating temperature range of 0 to 50C.

ON THE ROAD with a 1.5m signal survey dish

Satellite coverage is nominally defined by paper calculations performed years in advance of a bird launch. The gain and coverage pattern of the transmitting antenna, married to the transponder output power (in units called dBw or decibels [greater than] 1 watt) goes into a software program designed to produce an overlay of geographic regions covered by anticipated eirp (effective isotropic radiated power). The maps produced show you recognisable outlines of islands, continents, subcontinents covered in concentric ellipses known as contours. Each contour has an assigned signal level number (such as 36 dBw).

If you know the eirp in dBw, at a specific location, tables, charts or mathematical calculation will advise you what the C/NR ([signal] carrier to noise ratio) will be with a dish of 'X' diameter (and conversely, a specified amount of "gain"). For an analogue TV signal occupying 27 to 36 MHz in bandwidth, a C/NR of 8 to 9 dB should produce a sparklie free picture. For an MCPC fully loaded transponder occupying a 36 MHz transponder, a C/NR of 6 dB should produce reception with essentially error-free performance.

Ultimately it is the C/NR that counts in system planning and measurement. You can measure C/NR with a suitable spectrum analyser (unfortunately, a suitable analyser is not one you will purchase for much less than US\$10,000) or you can back into the C/NR "number" for an analogue transmission by measuring the video output S/NR (signal to noise ratio) using a less expensive test instrument (typically around US\$2,500). A digital signal S/NR can be measured but the number is quite meaningless because of something known as the "cliff effect" with digital; a perfect picture automatically has a (video) S/NR in the region of 54+ dB while a picture that is slightly less than perfect has a 0 dB S/NR.

Satellite system operators are at best guarded with their footprint map calculations and well they might be: Virtually every satellite launched in the past ten years has had serious differences between the "projected" eirp footprints and the after-launch measured "real world footprint levels." Consider this: A satellite says it will place a 35 dBw footprint (signal level) over your area. You go to any of numerous published tables (1) and decide you want an antenna system that will produce an 11 dB C/NR for the 27 MHz bandwidth transponder of interest. And that works out to a 2 metre dish. Alas, when the satellite is in the air you find sparklie pictures

on the transponder and then learn the satellite failed to achieve the correct positioning planned; you have only 31 dBw at your location. The 4 dB difference comes right off the C/NR - planned to be 11 dB (very good quality) just became 7 dB (below threshold, marginal reception).

On occasions satellite operators will "clean up" their pre-launch footprint maps after launch by taking actual on-ground measurements. As a satellite may cover 42% of the world's surface, it is usually not practical to make the thousands of individual measurements required to reflect real levels at more than a handful of locations. Palapa operator PTTI has recently released coverage maps they say are based upon actual measurements of C1 (and C2 at 150.5E which claims a 42 dBw centre located over SE Australia).

Actual measurements are of course the accurate way to do this. But frightfully expensive. During late March / early April NZ Distributor Baysat TV sent John Lynam on the road hauling a 1.5m Paraclipse Hydroform dish equipped with a CalAmp LNBF and a Uhaohm EP 316A spectrum analyser throughout most of North Island (NZ). Subsequent tests have been conducted over the balance of North Island and testing is planned for South island as well. What Baysat wanted to know is how As2, C2 and PAS-2 signal coverage varies throughout New Zealand.

Why do this? Three reasons:

1) To determine whether small, inexpensive dishes (such as the 1.5m Hydroform) will in fact produce consumer acceptable reception from the stronger C2 (and perhaps other) signals available. Baysat realises there is a huge difference in consumer resistance between dishes 3m in size and those 1.5m in size. If some services will work on the 1.5m, that suggests a marketing program to reach consumers with an interest in selected programming formats.

2) With Sky (NZ) now operating on Ku, and 60/76cm dishes springing up in rural areas, if consumers could be talked into upgrading to dishes in the 1.5m range, perhaps they could have Sky Ku and various C-band services all on the same antenna system. The tests would prove whether this is possible.

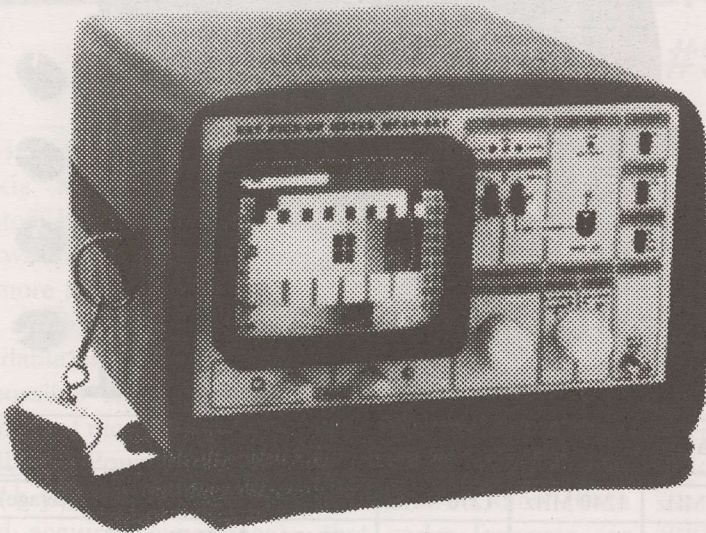
3) And the obvious: By knowing precise signal levels for a variety of transponders and satellites, Baysat would be better able to give specific advice to installers and dealers throughout the country.

First some test conclusions. A quality dish such as the one-piece Hydroform maximises gain so effectively that

PANORAMIC SATELLITE METRE

MC10-SAT

AU\$1599 (TAX-EX)



A PERIFELEC
PRODUCT

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

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

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

SIGNAL STRENGTH :

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

DISPLAY ON 5.5" CATHODE TUBE

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

- Expanded Spectrum with visualisation of the counter-polarisations

- PICTURE :

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

POWER SUPPLY : 12V, 3 AH battery

CONSUMPTION : 1.2 A (without LNB)

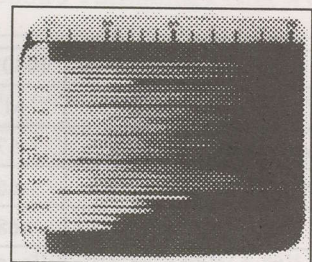
BATTERY LIFE : about 1 hour

CHARGING TIME : about 4 hours

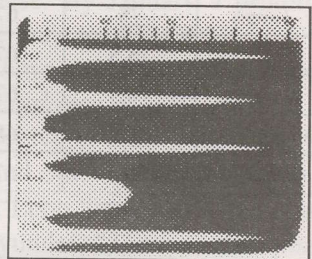
DIMENSIONS : 240 x 140 x 270mm

WEIGHT : 5.1Kg

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



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Lynam adjusts Unaohm analyser (above); French CFI is sparklie-free from C2 on 1.5m Hydroform

Palapa C2 - Horizontal

	990 MHz	1030 MHz	1070 MHz	1150 MHz	1240 MHz	1270 MHz	1310 MHz	1390 MHz	(average)
	CFI	MTV	TPI	HBO(*)	GMA	ATVI	TVRI	TNT (*)	
Auckland	78.5	67.5	78.3	80.3	76	66.3	78.6	77.6	75.4
Mangonui	<u>77.6</u>	66.7	<u>77.2</u>	<u>78.8</u>	74.8	65.5	<u>77.4</u>	76.1	74.3
Napier	78.5	68.2	79.7	80.4	76.2	66.7	79.3	78.2	75.9
Rotorua	78.6	67.5	78.5	80.1	75.2	66.4	78.6	<u>77</u>	75.2
Taupo	<u>78</u>	67.2	78.2	<u>79.5</u>	75.3	66	<u>78</u>	76.7	74.9
Tauranga	78.5	67.7	78.5	80	75.2	66.5	78.4	<u>77.1</u>	75.2
Te Aroha	<u>78.3</u>	67.4	<u>78.3</u>	<u>79.2</u>	76.2	66.3	80	78.7	75.6
Whangapar.	78.5	68.3	78.6	<u>79.8</u>	76.6	66.6	79	77.6	75.6
(average)	78.3	67.6	78.4	79.8	75.7	66.3	78.7	77.4	75.3

Palapa C2 - Vertical

	1009 MHz	1088 MHz	1175 MHz	1250 MHz	1330 MHz	1408 MHz	(average)
	Brunei	Indosiar	CNNi	TV3	RTM	RCTI	
Auckland	68.9	69.9	72.8	71.3	71.5	70.8	70.9
Mangonui	68.4	69.2	72.4	70.7	70.4	70	70.2
Napier	66.2	70.2	72.8	71.5	70.4	71.2	70.4
Rotorua	65.9	69.6	72.9	70.8	71.2	70.4	70.1
Taupo	65.2	68.7	71.2	70.3	70	69.5	69.2
Tauranga	68.9	69.6	72.8	71.3	71.7	70.7	70.8
Te Aroha	69	70.5	73.1	70	68.9	68.5	70
Whangarp.	69.4	70.3	72.9	71.7	71.3	71.1	71.1
(average)	67.7	69.8	72.6	71	70.7	70.3	70.3

Footnotes
Bold face numbers are above average for that transponder.
Underlined means 2m or smaller dish will produce threshold + reception.
 "Averages" in right hand column are mathematical, have little meaning. (*) means encrypted.

it is possible to create consumer-acceptable (threshold or above) reception on many of the C2 transponders even at the 1.5m size. Signal levels do vary +/- more than 2dB on the same transponders for some transponders tested throughout the first testing sequence. This variation may well be within what a satellite operator might classify acceptable, but for planners of home dish installations a 4 dB "window" can be a disaster unless you are prepared. The bottom line here is that within a trading area variations should be much smaller (+/- 0.25 dB)

and once an installer knows from practical experience his own "norm" he should have few on-site surprises.

Worst Cases

Variations ranged from Brunei (over a 4.2 dB window) to CFI (0.6 dB window). The average variation (best to worst) on horizontal is 1.4(8) dB while on vertical it is 2.5(2) dB. This substantiates earlier ad hoc observations concerning the "cliff" nature of C2 vertical coverage.

MPEG-2 DIGITAL update #97-4

Hyundai's HSS-100C and the now many versions of Nokia Mediamaster dominate this month's report. Bottom lines first: The Hyundai is available, apparently in two different software versions, over a pricing delta of more than 100% (around A\$800 to A\$1,695 retail + tax as applicable). Nokia Mediamaster IRDs are now available in so many different versions it is all but impossible to keep up with the creative efforts by a number of mostly European sources.

Will It Do PowerVu?

Ah yes - the big question. Now, we all know (from hard acquired experience) that under fortunate (or fortuitous) circumstances that a Nokia MediaMaster will do FTA PowerVu. Well, sort of. If PowerVu is in SCPC and PAL (we know of no such combination at the present) the Nokia would simply treat it as another processable service. If the PowerVu is in SCPC but NTSC - a problem. At approximately 20 second intervals the video locks up, sputters for a few milliseconds and then unfreezes and starts again. To repeat in 20-22 seconds. If the PowerVu is in MCPC and NTSC (or NTSC and PAL mixed) the MediaMaster may or may not lock on the first programme channel in the bouquet (such as CMT in the California bouquet of PAS-2). And if it does - well, the video will freeze and/or the audio may not be present. In short - no consumer value in this one.

Along comes the Hyundai - they call it the HS-100C. The "C" is Hyundai's method of designating the receiver is intended for the Chinese market. And that is? A group of 10 SCPC and one MCPC MPEG-2 transmissions (As2) originating at provincial centres (such as Hunan, Guandong, Zenghou, Guangxi and others). Their purpose: To supply regional TV broadcasting (11 programme channels in Mandarin, 1 in Mongolian) to Chinese and ex-pat Chinese residents within coverage of AsiaSat 2. Every receiver supplier in the world is chasing this business - some believe the market for receivers will exceed 1,000,000 units within two years.

The receiver operating software required for the 'Chinese Connection' is somewhat unique. With 11 RF transmission channels (holding 12 programme channels), the receiver must be able to stack into memory the tuning parameters for 11 different frequencies. The symbol rate is relatively low (4.418 for SCPC, 8.397 for the singular MCPC). Ideally, the same receiver would also be compatible with the European Bouquet which is also on As2 but most Chinese buyers

have not been sophisticated enough to date to request that capability.

HS-100C units are flowing from Hyundai's Korean factory into China through Hong Kong. Not unexpectedly, some of these receivers are getting skimmed off and being trans-shipped to other destinations. Such as Australia.

The Hyundai story for the Pacific begins with the December 20th edition of Coop's Technology Digest (1), which reported:

"Korean firm Hyundai has two MPEG receivers available for distribution. Model HSS-100 lacks a conditional access module (i.e., should be suitable for FTA MPEG services) while the DBS-100 includes a 'standard' Irdeto CA module. They are looking for distributors in the Pacific. Contact" and it gave a name and Korean contact numbers.

Several alert readers did this; Garry Cratt of AV-COMM was one of these. By January a prototype unit for testing was on the way to AV-COMM. Cratt early in May advised, *"We have exclusivity directly with Hyundai on this unit for the balance of 1997."*

The first HS-100C receivers were scheduled for shipment to AV-COMM (and others [2]) April 30th. At least one would-be stockist, Leon Senior at Skandia, was subsequently advised by Hyundai, *"The initial shipment has been delayed - we will now ship between May 7 and 9."* Pacific Satellite had their units late in April.

About PowerVu: Senior believes, *"I think it does PowerVu quite by accident. This unit was created for the China market, and when we tested a prototype (early April) we found it had two problems with PowerVu: First, the video and audio on our prototype are not in sync when viewing a PowerVu NTSC service. Second, when you scroll through a bouquet (such as California which starts with CMT) and you arrive at the top programme channel (Bloomberg Financial in FTA, The Golf Channel in CA) the receiver stops scrolling 'upward' and locks on the last channel."*

Cratt claims, *"AV-COMM units have different software compared to other imports. Our software, fitted here in Sydney, runs PowerVu FTA perfectly."* Cratt believes those without the special AV-COMM software will find their receivers set for RF (modulator) output with audio offset 5MHz (i.e., as used in China), will not have NTSC-PAL conversion, erratic audio reception and PowerVu audio-video lip sync problems.

Other Australian importers (2) are less certain about the software configuration of the units they should now

be supplying. Antares was asked to supply a unit for test by SatFACTS conditioned on it "doing PowerVu perfectly." They declined to supply a unit. Pacific Satellite, an Australian branch of the Hong Kong firm of the same name, assures us their version does PowerVu (and many others) "perfectly" but could not supply a unit for our evaluation prior to press deadline. Kristal Electronics advises their unit is being sourced "through AV-COMM."

Nokia Confusion Galore

SF for April reported the availability of a Mediamaster with a product number of "2052" (also reported as 2053). It has now been determined this is in fact a software version created for the China market. It has two primary shortcomings: It will not do NTSC, and, it has difficulty handling the 11 different input frequencies required for memory stacking of all of the Chinese services.

During the past month as many as a dozen versions of Nokia software have appeared; all are from private (i.e., not Nokia) sources and seem to originate within Europe. Some enterprising Europeans are actually purchasing a quantity of Nokia MediaMasters, loading them with software of their own creation and then reselling their versions as "special receivers with special qualities." One, for example, is promoted in Europe as "The Dream Receiver."

The dreams as best we can determine are mostly wet. This is not to detract from the enthusiasm shown by the Europeans creating their own software versions but as we go to press the top Europeans in this field are advising us, "There is still not a software version that does NTSC PowerVu properly." That there will ever be remains to be seen.

One NZ reader advises:

"Big night until 3AM playing with the Nokia d-Box using software obtained from some Europeans that is entered through the infamous red screen menu. I got the receiver to tune-in CMT, BBC World plus TCS (Singapore) plus ABN plus ART Australia and RAI all in PowerVu by entering the PID numbers for each service. Unfortunately it does not like the NTSC format signals and every 20 seconds or so it locks up."

One of the European "experts" is a Martin Wienecke, promoting himself as a guru on the Mediamaster d-box. A SatFACTS reader e-mailed Wienecke:

"I have been told the d-Box has trouble locking onto PowerVu. Is this correct?"

His response:

"The d-Box has no problem locking to PowerVu 625 line signals. The only problems occur when the box receives a 525 line signal in any DVB modus (PowerVu Phase 3 is DVB compatible) - the screen size is reduced to 70% and around every 20 seconds the picture freezes up. This effect can be eliminated by using the red/debug

menu choosing sub menu 4 encoder register 61 set to 07 (3) (the sync value for 525 lines). Now the picture should be perfect but has one disadvantage - you have to leave the on-screen-display (OSD) on the screen."

Those who have tried the Wienecke 525/625 solution report they cannot make it work. So you have a choice - PowerVu NTSC that freezes up at 20 second intervals, or, if you believe Wienecke, non-freezing video but a permanent on screen display of the secret red menu instructions at the bottom of the screen.

Or - you may simply be trying to use the Mediamaster with PowerVu by starting off from the wrong software base. It appears that Nokia software versions 1.43, 2.00 and 2.1 may have the best chance of being red menu 'corrected' for NTSC operation; software versions 1.63, 1.713, and 1.719 are - according to knowledgeable European reports - not red screen adjustable for proper NTSC operation.

To further complicate the Nokia world, an English firm with the apparent co-operation of Nokia has brought the 9200F to market - a "free to air" C and Ku version that is sold without a conditional access module. The "F" version is UK origin; an identical sounding model, the 9200S, is available in Europe outside of the UK. Quoted pricing is in the UK530 range.

If that is not sufficiently confusing, there is one more well publicised version in Europe (plus ten or more less well known software version units); the "Mascom/Nokia 9200." Doctor Dish of Germany's Tele-Satellit magazine writes about this model, *"the new Mascom/Nokia 9200 has been tested and we found some difficulties storing SCPC signals. A newer version of the software for this unit is expected the week of May 12-17 which should improve the ability to store SCPC, better handling of the A/V PIDs as well as selecting a bandwidth."*

None of this is going to endear any presently known version of the Mediamaster to the non-technical consumer. It may be the most desirable receiver within the European enthusiast community but nothing we have seen yet suggests it is capable of handling the wide range of C + Ku, SCPC + MCPC services we have available in the Pacific and Asia.

Recommendation? If you want a receiver to play with but must have DVB and PowerVu in one box, without glitches, buy with the clear understanding you can return it for full credit if the IRD does not perform to your satisfaction!

1/ Yes, you have been meaning to subscribe to Coop's Technology Digest. This is the sort of thing you miss by not subscribing! See form, p. 29.

2/ For full list of Hyundai sources, see p. 24.

3/ The red screen debug menu is best entered directly from the first Mediamaster menu ("Welcome to..."). To another SatFACTS reader, Wienecke advised switching to NTSC by setting encoder register 61 to either 03 or 05, not 07.

THE WAIT IS OVER

**HYUNDAI HSS-100C
IS HERE!**

Digital receiver for free to air channels from AsiaSat 2, PanAmSat 2, Palapa C2, Thaicom (78.5E) and more! This brand new Hyundai has been upgraded with new software making it excellent for cable, SMATV, or home DTH use. This is the **ONLY** receiver available in Australia and New Zealand able to receive all **FTA** digital channels with the ability to add new channels as they come into operation!

JUST HOW GOOD IS THE HS-100C? IMAGINE THIS!

Thaicom 78.5E: CNN, TTV, ESPN, HBO, Channel 5, itv, Channel 9, Discovery, Channel 3, TNT, Star Sport, Channel 7

AsiaSat 2 100.5E: European Bouquet (5TV, 12 radio!), All (12 total) Chinese SCPC/MCPC programme channels, APTV, WTN, Star Plus, BSKY News

Palapa C2 113E: MEGA TV Bouquet

PanAmSat PAS-2: Hong Kong PowerVu bouquet (FTA only), NBC Bouquet (all channels), CCTV China (3 channels), TCS Singapore (2 channels), California Bouquet (FTA only) and Discovery Singapore (FTA only)

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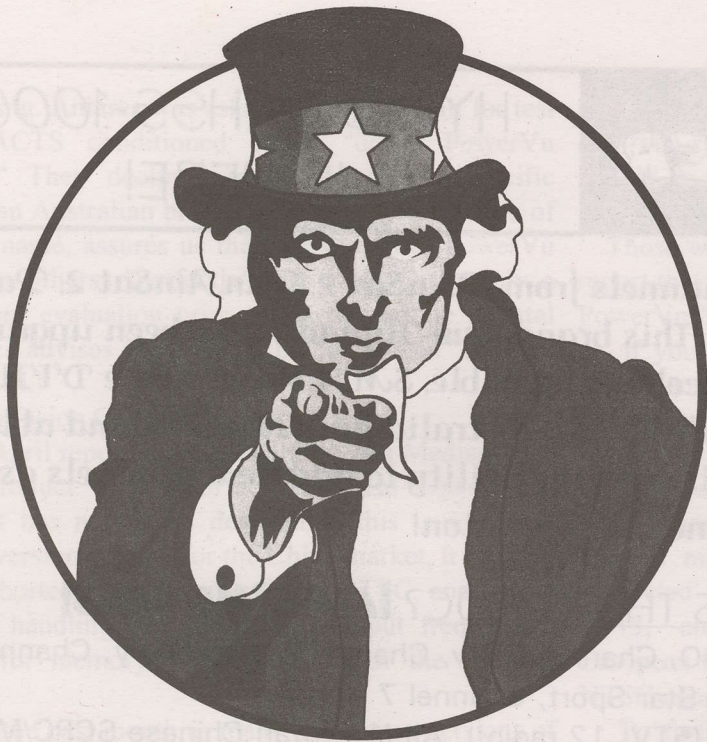
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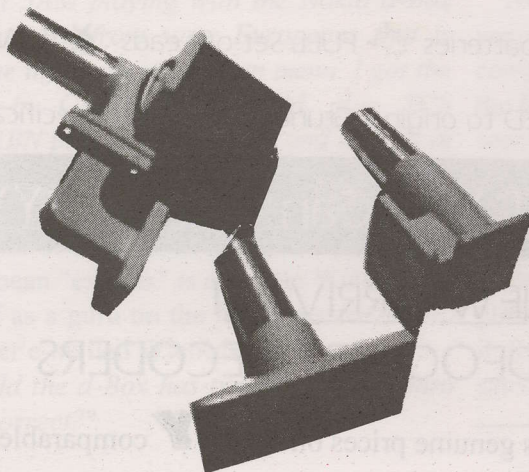
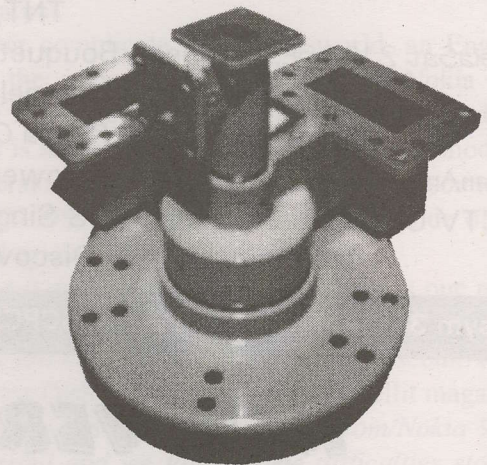


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across the Pacific and Asia.**

SL-7900RP: 500 channel memory Hi-Fi Stereo satellite receiver with full motorised actuator dish control built-in. Two IF inputs (950-2050 MHz); Standard 27/18 MHz IF bandwidths, plus 32 step threshold extension for signals as weak as 3dB C/N; Fully tuneable audio sub-carrier range (5.5 - 9.5 MHz) independent on L and R channels; Selectable wide (280kHz) and narrow (150kHz) audio bandwidth with J17, 50uS or Hi-Fi 1600 de-emphasis; Full polarizer control; TV modulator (E21-E69) + 3 SCART 21 pin outputs, separate L and R RCA audio outputs. Every function (including antenna, feed settings) logged into memory for instant recall - totally automatic channel search with companion handheld IR remote. Consistently rated by leading publications "Most versatile, low threshold, ultimate consumer receiver" world-wide. Truly, the next best thing to being hard wired to the satellite.

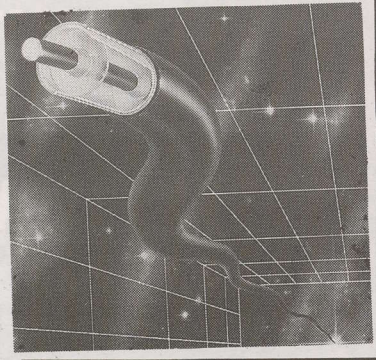
SL-7900RP from Bay Satellite TV Ltd, P.O. Box 3311, Napier, NZ. Tel 64-6-843-5296 (Fax 64-6-843-6429)

with software by....

PALCOM

State of the Art Simplicity

The CABLE Connection



Some Examples of Exchangeable Programming
1703/57E: Sun Music, Sun Movies, Gemini, Sun TV,
AsiaNet
PAS4/68.8E: Sony Entertainment TV, Doordar,
MTV Asia
S14/96.5E: Madagascar (in French, for Pacific)
As1/105.5E: Prime Sport, Star Movies, Star Plus,
Phoenix Channel, EL TV, Zee TV, Zee Cinema
C2/113E: ATVI (for areas out of its limited
footprint), MTV Asia (same)
R42/142.4E: RAJ-TV

Exchanging Programming

Within the readership coverage of this publication are individuals/firms located in 41 different countries of the world. The major ones would be obvious, others less involved in the satellite revolution (Greece, Syria, Iran, Kuwait et al) more of a surprise. A Global Beam satellite covers 42% of the surface of earth; some spot beam satellites less than 1%. Within that mix of geographic locations, beam coverage and satellite access are hundreds (more like thousands) of different programme channels. The more fortunate SatFACTS reader in Europe or North America can access nearly 500 separate programming channels, the less fortunate in places like Niue and Tahiti ten or fewer (and most of those are not received well).

A lengthy letter from reader Alek Zapara reporting on his service with a 2.4m dish in a suburb of Perth (Western Australia) and an accompanying VHS tape of reception from Intelsat 1703 (57E) started the wheels grinding.

Alex receives a number of services from 1703 and PAS-4 which are simply not available to eastern Australia, New Zealand and central Pacific viewers. Some of the services are FTA, some are by subscription. Those that are subscription include certain non-redistribution "contracts" making it an illegal activity to tape and sell or exchange the materials with others. *No such restrictions apply to FTA services.*

As a cable TV system operator, there are programming sources available to Alex which if available here in New Zealand we would place on the cable system; Sun Movies and Sun Music, for example. And, I may well have available to me services which would appeal to an individual, an SMATV operator or a cable operator elsewhere. There seems like there should be some sort of reasonably clear-cut "business" plan here.

VHS tape provides a convenient, readily available transmission medium. Some will argue the quality is not good enough - that is a judgement call that will only be answered by each potential user carefully weighing the alternatives and the cost of using a higher definition format. Some services, such as Sun Music, probably start off with an uplink quality no better than high grade VHS so little is lost if you select an identical record and

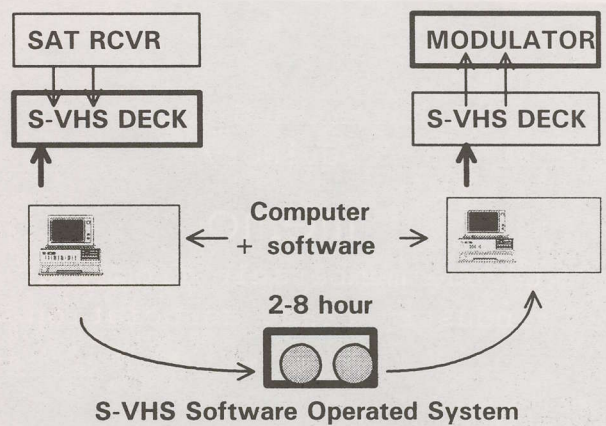
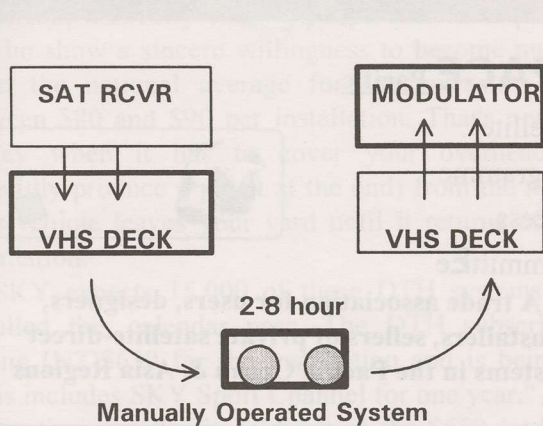
playback quality level. VHS machines are easily programmed to record for a specific period of time, and correspondingly to playback in the same pre-programmed manner. Cable operators in New Zealand have worked out some clever but inexpensive methods of operating two or more VHS machines in tandem to allow a software program to start and stop machines to a second-exact timing sequence (we'll say more about this next month).

If VHS is simply not good enough for you (subject as always to the care and quality put into the original recording), S-VHS is a suitable step-up. Properly used, S-VHS has reproduction quality numbers that rival TV broadcast standards. And S-VHS machines are usually designed to be computer controlled which means you can tell it when to record, when to stop; when to play, when to rest quite simply through a low-cost computer system. We'll discuss one such system that easily runs 4 to 8 separate S-VHS machines next month.

If Alek Zapara was to record for reuse Sun Movies at his Perth home and ship the tape off to a cable system in New Zealand, the cycle begins. Once used, the tape then goes to a second and third user in New Zealand, then to an SMATV system in Noumea, then to a cable operator in PNG, then to a hotel in Tahiti and finally it is shipped back to Alek for re-recording. At the risk of offending the "purists" who believe any tape smaller than 1" and longer than 1 hour is a crime against video quality, let us suggest the tape is 8 hours in record and playtime.

At each stop it is loaded into a same-format playback machine and the machine is adjusted to run it straight through, rewind it, and play it back again. And again. Now we have 24 hours of programming on a single 8 hour tape. At that point the tape is ready to be shipped to the next user. Many of the suggested services here (above) would suffer only mild degradation in a long play (VHS or S-VHS) format. We say this with some experience - as we have been doing just this for 10 months now and not one cable subscriber has ever complained about the quality of our long play tape video.

Costs. At the recording end there is a dedicated satellite receiver, one or more tape machines (at least one per TV programme channel, perhaps two) and tape. There are transportation costs which can be made quite economical if a week of tapes are shipped in the same



shipment via common parcel post. At each stop there is a tape machine for playback and a suitable (cable, SMATV) modulator.

A cable or SMATV system to create a direct -from-satellite channel would have to invest in a satellite receiver and a modulator anyhow. A reasonable quality analogue receiver will come close to the cost of a VHS machine for playback; an S-VHS machine will cost considerably more. In the event the original signal is digital, the cost of a digital receiver for the cable headend would be close to the cost of an S-VHS machine.

In a simplistic scenario, Alek Zapara is a seller and everyone else in the chain is a buyer. The more buyers in the chain, the lower the cost per tape for each link (tape stop). Alek determines his return for supplying a product after computing his cost to get set-up for the service. From the vantage point of the cable or SMATV operator, acquiring programming in this manner shifts that particular channel of programming from "free to air" to a level of "pay" (subscription). In a real FTA situation, after investing in the satellite receiver, modulator and any accessory equipment the cable operator has no further programming costs. In a pay TV situation, the initial equipment is but the first expenditure. A service such as CMT costs US\$0.30 per subscriber per month - a service such as CNNi US\$0.85 per subscriber per month. With 100 subscribers as an example, the cable operator should be willing to pay something between US\$35 and US\$85 per month to have a new channel of programming available that is "exclusive to cable."

A project such as this would best function as a co-operative - all of the "buyers" (those in the chain) would pool resources to offset the origination and transport costs of the service. Some

services would appeal to a wider user base (including educational institutions) while others would cost more to use simply because there are fewer users in the chain.

Yes, we would all like to have direct high quality digital feeds from hundreds of sources. No, for at least the present that is not practical for many of us. And while our suggested list of programming (p. 16) only deals with Indian/Pacific region satellites commonly available, certainly in the overall SatFACTS universe there are many more possible channels (WGN or WTBS from the USA would be fantastic!). If you have an interest in such a project, as a source or as a link in the user chain, why not drop us a line (Cable Connection, PO Box 330, Mangonui, New Zealand). Something good could come of your interest!

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Telephone: 315-452-0709 Fax: 315-452-0732

Literature: Ileen Feinberg
Technical: Dave Dann, Tracy Warren,
Steve Shafer, Glyn Bostick

a technical and marketing
advisory

memo

to the membership from your
industry trade association

SPACE Pacific

Satellite
Programme
Access
CommittEe



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

The launch of the New Zealand SKY Network analogue (Videocrypt encoded) single channel pay service (April 21 was formal start date, prior transmissions were considered "tests") propels this country into the 21st century. Following an established relationship with terrestrial TV transmission aerial installers, SKY has awarded dish system installation contracts to firms that "bid for the right" to be a SKY DTH installer. SKY claimed "more than 1,000 system installs" by May 1st, a sizeable percentage of which (perhaps 15%) going into motels, pubs and other commercial venues.

What we are witnessing is the birth of an industry; firms and people (many of whom have difficulty spelling "sattelite" if their business cards and letterheads are an indication) who have suddenly become "experts" in a field they only recently heard about or actually chose to ignore until early in April. By the sheer volume of installs, SKY "disc installers" in a matter of weeks have put in more DTH systems than the older and more experienced people and firms have managed to create in a decade of trying.

With this volume comes a guarded recognition that there are going to be some very successful new entrants into the world of satellites in New Zealand, people who ask for and even demand "recognition" of their importance. We would do well to examine how this new breed may one day come to be an integral part of "our" industry.

SKY selected installation firms after asking for "bids" from aerial installers who had previously done terrestrial

(UHF [TV]) installs. The detail-filled 49 page contract makes the installer liable for his or her workmanship for a period of 5 years (i.e., if it breaks and it was the installer's fault, he fixes it at no cost to SKY nor the SKY subscriber). SKY has divided New Zealand into 21 "viewing regions" and for most there are two separate contracted installation firms. The contract firms in turn usually elect to treat their contract almost as a "franchise" and most have gone into the marketplace to hire subcontractors. A contractor may cover a region as large as "All of the Far North, from Whangarei to Cape Reinga" (60km in width, nearly 250km in length) while a subcontractor may cover only a single community and the immediate rural areas.

The contractor is responsible for all work done by a sub, and to be a qualified sub requires an investment in a suitable vehicle, tools, a signal level meter, insurance, mobile telecommunications (usually a cell phone) and a willingness to play by the rules as spelled out in the 49 page contract signed by the contractor. An installer has no time off, no holidays (if there is a trouble call, you are contract bound to service it within a number of hours [never more than 24], no matter how remote the location). One of the first installs we heard about involved a five hour drive for the installer (including waiting for a ferry that does not run to a schedule) and when he got to the distant site he learned it was powered by a diesel generator only 6 hours each day (you guessed it - he had arrived only 30 minutes before it was scheduled to be switched off for 18 hours!). As you can imagine there has been (and continues to be) a

MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer." All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) each January in Auckland. Members also participate in policy creation forums, have correspondence training courses available. To find out more, contact (fax) 64-9-406-1083 or use information request card, page 30, this issue of SatFACTS.

SPACE congratulates Richard Falkowski (Genesis Satellite) and Adam Bickley (Golden Bay Services, Ltd) on their appointment as SPACE Certified Installers upon successful completion of the SPACE/Mark Long course.

significant difficulty finding people who are qualified, or who show a sincere willingness to become qualified when the national average for subcontractor pay is between \$80 and \$90 per installation. That's not much money when it has to cover your overhead (and hopefully produce a profit at the end) from the moment your vehicle leaves your yard until it returns after the installation.

SKY expects 15,000 of these DTH systems to be installed this calendar year. The DTH subscriber is paying (NZ)\$650 for the installation and is being told "This includes SKY Sport Channel for one year." The contracting installer is paid out of the \$650 (at his/her contract bid rate) and the subcontractor paid out of the fees received by the contractor. SKY typically retains 10% of the contractor fee for up to 90 days after SKY receives the initial invoice as insurance against "claims."

The SKY subscriber owns nothing; every piece and part of the 60 or 76 cm antenna system (+ LNBF, mount, cable, connectors, clips, Uniden SQ500E analogue receiver, Videocrypt decoder, SCART leads et al) remains the property of SKY. Thus, if SKY averages \$140 per installation for the labour content, it has \$650 - 140 or \$510 in hardware on site (and, in theory, to collect back if the subscriber fails to renew the agreement at the end of the year). Another way to look at this is to say that the SKY DTH subscriber is paying SKY \$510 for a year of SKY Sport service (\$42.50 per month).

SKY plans by mid-1998 to replace the single channel analogue service with a digital bouquet of approximately 20 programme channels. To support this, SKY has a lease agreement to utilise 3 Optus B1 transponders (NZ beam). SKY will initiate digital service on the two additional transponders while the analogue Sport continues to run, and send installers (for a fee to be determined) back to each subscriber for a receiver swap-out. All of this presumes the subscriber will agree to the new digital service package and the rates required by SKY to be paid for the new package.

By the time SKY converts from single channel analogue to multi-channel digital, those who are today struggling for \$80-90 per DTH installation will be veterans. Many will have gone on to more lucrative work, others will have merged operations buying out or taking over nearby installation firms. Some will even be making money at all of this (against all odds) and a few will have discovered there is far more to "satellite" than SKY's service.

While their present trials and tribulations may amuse us, we should not miss any opportunity to bring them into the larger, more professionally rewarding satellite world. They may not qualify as "real installers" today, but one day they will. To that end we should recognise that while they may be burdened by their relationship with SKY today, tomorrow is another day. And those who survive are people we want in this industry!

KONIG ELECTRONIC

Field Strength Meters

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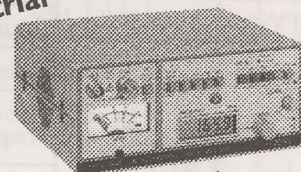
Combined Field
Strength Meter

APM 381

Satellite - Terrestrial - MDS

IDEAL
FOR
SAT TV - TV
& MDS
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Hand Held Cable & TV
Field Strength Analyzer

APM 340

The Field strength analyzer
of the future for TV and
CATV facilities

SK No. 5777



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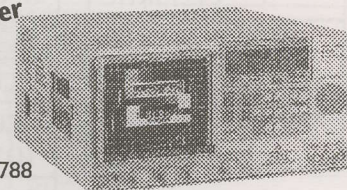
Field Strength Meter

APM 746 SAT

Professional multistandard
field strength meter
for worldwide
application

IDEAL
FOR ALL
PROFESSIONAL
INSTALLATIONS

SK No. 5788



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SatFACTS Pacific/Asian Region Orbit Watch: 15 May 1997

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Free-to-Air 57E to 80E

Sun Music	57E/703 1400RHC
Sun Movies	1342RHC
Gemini	1257RHC
Sun TV	1220RHC
AsiaNet	1170RHC
WorldNet	1100RHC
NEPC	1090/LHC
TVi	1020LHC
Muslim TV	975LHC
ViJAY TV	64E/801 993LHC
ABN	68.8/Pas4 Hz/1365
Sony Enter. TV	68.8/Pas4 Hz/1240
Doordar & Iran TV	68.8/Pas4 Vt/1116
CNNI	68.8/Pas4 Hz/1065
TNT/Cart.	68.8/Pas4 Hz/1040
ATN	68.8/Pas4 Vt/972
BBC World	68.8/Pas4 Hz/1350
MTV Asia	68.8/Pas4 Hz/965
TK Rossija	80/Exprs 1475RHC
VTV4	80/Exprs 1275RHC
AST	80/Exprs 1127/RHC
Russia 3	80/Exprs 1025/RHC

-In Transition-
Thaicom 3 now testing
120E, will go to 78.5E on or
before 1 June, Tc1 will come
back to 120E. Tc3 has 6 Trs
3.4-3.7GHz for Australia, 18
3.7-4.2GHz Asia.

Free-to-Air 80E to 113E

Dub'l II	90/S6 1475RHC
Orbita II	90/S6 1275RHC
Dub'II I	90/S6 1234RHC
Orbita I	90/S6 1208RHC
Doordar.1 National	93.5/In2b 1030/Vt
Doordar.1	1160/Hz
Doordar.9	1080/Hz
Doordar.7 Telugu	1070/Vt
Doordar.9 Kanada	1180/Vt
Doordar.1	1268/Vt
Doordar.	1310/Vt
Doordar.3	1348/Vt
Doordar 4	1388/Vt
Orbita II	96.5/S14 1475RHC
Madagas- car	96.5E/S14 1325RHC
ERTU Egypt	100.4/As2 1508/Hz
TV Shopping	100.4/As2 1490/Vt
TV Mongolia	100.4/As2 1470/Hz
5 China MPEG-2	100.4/As2 1430/Hz
5 China MPEG-2	100.4/As2 1310/Hz
CCTV4	1190/Hz
RTPi	1170/Vt
EBB (DVB)	1150/Hz
Dub'l II	103/S21 1475RHC
ART	103/S21 1275RHC
CFI	113/C2 990/Hz
SCTV	113/C2 970/Vt

Free-to-Air 113E to 145E

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

**/WorldNet 1511
(180) move to As2 is
now scheduled "end of
1997."

Free-to-Air 145E to 180E

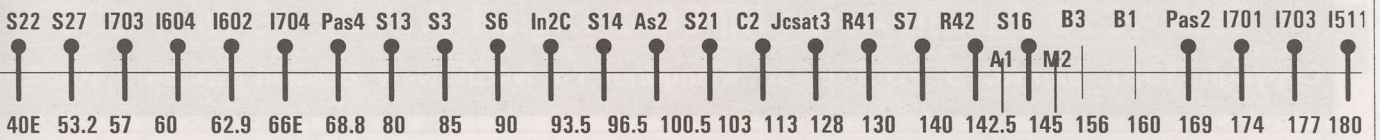
CNNI	168/Pas2 1183/Hz
CNN Feeds	168/Pas2 1155/Hz
NHK	168/Pas2 1114/Hz
TV Shopping	168/Pas2 1400/Hz
Feeds	174/I701 984RHC
Feeds	174/I701 973RHC
Feeds	177/I702 984RHC
Feeds	177/I702 963RHC
Feeds	180/I511 1430RH
WorldNt (**)	180/I511 1175RH
RFO	180/I511 1105RH
Feeds	180/I511 1020LH
Feeds	180/I511 984RHC

ENCRYPT/MPEG SERVICES

Discov. India	68.8 1365/Vt
Sky Racing(a)	100.4 1130/Vt
European Bouquet	100.4 1150/Hz
Star TV (b)	100.4 1250/Vt
APTV (b)	100.4 1351/Hz
WTN (b)	100.4 1363.6/H
Rebar TV (c)	100.4 1410/Vt
Star TV (c)	100.4 1450/Vt
ESPN (d)	113/C2 1030/Hz

HBO Asia (d)	113/C2 1150/Hz
TNT + (d)	113/C2 1390/Hz
Discovery (d)	113/C2 1430/Hz
Star Indovis'n (c)	113/C2 1570/Hz
Star Indovis'n (c)	113/C2 1650/Hz
RPN-9 (c)	142.4/G2 1375LHC
Galaxy (c)	156/B3 12.437Hz
Galaxy (c)	156/B3 12.373Hz
China PowRvu (b)	168/Pas2 1433.5/ Vt
Discovery (c)	168/Pas2 1374/Hz
Disney Aust. (b)	168/PAS2 1346Hz
ESPN (a)	168/Pas2 1288/Vt
Satcom (b)	168/Pas2 1288/Hz
California PowRvu (b) (c)	168/Pas2 1249/Hz
TNT + (a)	168/Pas2 1218/Vt
SCPC3 Ad Hoc (b)	168/PAS2 1208/Hz
Fox/Prime (c)	168/Pas2 1161/Vt
Filipino Ch. (b)(c)	168/Pas2 1060/Hz
NBC HK	168/PAS2 1057/Vt
HK PowRvu (b) (c)	168/PAS2 1002/Vt
TCS Singapore (b)	168/Pas2 967/Hz

**No home DTH
subscriptions**



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

(B-Mac)	1425/Vt
Central ABC HACBSS	1393/Hz B-Mac
Imparja	1351/Vt
GWN	1297/Vt
Net 9, Sky specials	1233/Vt B-Mac
Optus Vis. (analogue)	1230/Hz
ABC NT/Imparja N.T.	1201/Hz (centre) B-MAC
Galaxy	1137/Hz Irdeto Mpeg 2
Galaxy	1073/Hz Irdeto Mpeg 2
ABC SA	1041/Vt

Optus A3/152E

ATN7png	1297/Vt
ATN7png	1430/Vt

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

Test bars	11.148/Vt
-----------	-----------

**MeaSat 2
148E**

Tests	1065Hz*
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* Colour bars 5-03, audio 6.8; C-band covers eastern Australia.

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

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

Net 9, Sky feeds	1425/Vt B-Mac
Data	1402/Hz
QSTV	1377/Hz B-Mac
SE ABC HACBSS	1370/Vt B-Mac
SE SBS HACBSS	1344/Vt B-Mac
NE SBS HACBSS	1339/Hz B-Mac
NE ABC HACBSS	1313/Hz B-Mac
Sky Channel	1296/Vt B-Mac
ABC Radio	1276/Hz (digital)
OmniCast	1270/Vt (FM/FM)
ABC feeds	1247/Hz Pal
Sky Nz (April 15)	1245/Vt VidCrypt
Net 9 feeds	1219/Vt Pal&Ntsc
	1214/Hz
Net 10	1182/Vt E-Pal
Net 9	1180/Hz E-Pal
Net 10 feeds	1155/Vt Pal
QTQ9	1145/Vt
Net 7	1120/Vt E-Pal
Net 9 feeds	1091/Vt Pal
CAA air to ground	1009/Vt Nbfm

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

CCTV3,4, test	1433.5/Vt (Sa9223)
Test/LBC	1405/Hz
Value Ch.	1400/Vt
Discovery PowerVu	1374/Hz (Sa9223)
ESPN	1288/Vt B-Mac
MPEG-2 PowerVu Sylmar	1249/Hz (Sa9223)
TNT+ (1/2Tr)	1218/Vt B-Mac
CNN+ (1/2Tr)	1183/Hz
FoxSports	1161/Vt (Sa9222)
NHK	1115/Hz
Filipino Channel	1060/Hz (GI Mpeg)
NBC Mux MPEG	1057Vt (Pace)
MPEG-2 PowerVu HonKong	1002Vt (Sa9223)
TCS Sing.	967/Hz

PAS-2 Ku

Napa TC	12,415V
H-Life	12,415V
Super Ch Taiwan	12,485H (MPEG)
Bloomb.	12.642V
K-TV	12,735V (MPEG)

Rimsat R41 at 161E, **Palapa C2** at 150.5E and **B2P** at 144E are functional. **JcSat4** testing 141E will move to 150E as replacement for JcSat 1; on board, 12 C, 28 Ku transponders many capable of serving Australia, NZ.

**Intelsat 701
174E**

Feeds	963
Feeds	984

**Intelsat 703
177E**

AFRTS	973
Feeds	984

Note: Space Systems 177E Ku testing; see "Observers"

**Intelsat 513
177W**

Feeds	963
Feeds	984

(513 Ku)

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

Ku Services
Intelsat Ku band services shown here are boresighted to Japan and nearby Asia, have not been reported south of equator. At boresight, signals of <2m levels.

TDRS5 / 174.3W

Fuji TV	1305 Hz
BBC World	1163Hz MPEG

UPCOMING SATELLITE LAUNCHES

China DF3- location unknown
Filipino Agila 2 to 153E
Japan BSAT 1A to 110E
ApStar2A to 77E
Intelsat 802 to 174E (June)

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

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

* RHC & LHC
** LHC only

(511 Ku)

NHK	11.135H
CBS	11.475H
CNN	11.508H

TDRS5 "north" only

2
5.68
3/4

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 May 1997

Copyright 1997: SatFACTS, PO Box 330, Mangonui, Far North, New Zealand (fax 64-9-406-1083)

Bird	Service	RF/IF & polarity	# Programme channels	FEC	Msym
1704/63E	CFI	4055/1095 RHC	2	3/4	27(.500)
PAS-4/68.5E	Walt Disney	3982/1168 Hz	2	3/4	6(.632)
Thaicom 78.5E	UTV	3920/1230 Hz	6TV (#1)	3/4	27(.500)
	MCOT	3880/1270 Hz	6TV (#2)	3/4	27(.500)
Measat 1/91.5	India Bouquet	12284/12346Vt	10+TV?	7/8	30(.000)
As2/100.5E	European Bouquet	4000/1150 Hz	6TV, 12 radio (#3)	3/4	28(.125)
	Hubei TV (HBTVM Main)	3854/1296 Hz	2	3/4	4(.418)
	Hunan TV (SRTC)	3847/1303 Hz	1	3/4	4(.418)
	Guandong TV (GDTV)	3840/1310 Hz	1	3/4	4(.418)
	Inner Mongolia TV Zizhiqu	3828/1322 Hz	2	3/4	8(.397) (1-China) (2-Mongolia)
	APTV London	3800/1350 Hz	1	3/4	5(.631)
	WTN Jerusalem/London	3790/1360 Hz	1	3/4	5(.631)
	WTN London	3786/1364 Hz	1	3/4	5(.631)
	Liaoning TV (Service 2)	3734/1416 Hz	1	3/4	4(.418)
	Jiangxi TV (JX Sat TV)	3727/1423 Hz	1	3/4	4(.418)
	Fujian TV (SETV)	3720/1430 Hz	1	3/4	4(.418)
	Henan TV Zenghou	3713/1437 Hz	1	3/4	4(.418)
	China (intermittent)	3706/1444 Hz	1	3/4	4(.418)
As2/100.5E	STAR TV (Hong Kong)	3900/1250 Vt	3TV, 1 Radio (#4)	1/2	28(.100)
	"QQQ" China (Shaanxi)	3813/1337 Vt	1, 1 Radio	3/4	4(.418)
	Guangxi GXTV	3805/1345 Vt	1, 1 Radio	3/4	4(.418)
	Rebar TV Taiwan	3785/1365 Vt	• 4TV (#5)	3/4	18(.000)

Interoperable Receivers (a)

N163, probably others
PowerVu (FTA test)
HS-100C, Philips, probably others
HS-100C, Philips, probably others
Philips, SK888 (w/CA)
DMV, HS100C, Gng, N163, N17X N2000, P400(b), P500, Pn520/630, Sk888
HS100C, N163, N17X, N2000, Ph3950/11
HS100C, N163, N17X, N2000, Ph3950/11
HS100C, N163, N17X, N2000, Ph3950/11
HS100C, N163, N17X, N2000, Ph3950/11
DMV, HS100C, N163, N17X
DMV, HS100C, N163, N17X
DMV, HS100C, N163, N17X
HS100C, N163, N17X, N2000, Ph3950/11
HS100C, N163, N17X, N2000, Ph3950/11
HS100C, N163, N17X, N2000, Ph3950/11
DMV, HS100C*, N163*, N17X (*)
HS100C, N163, N17X, N2000, Ph3950/11
HS100C, N163, N17X, N2000, Ph3950/11
Pv9223 (CA) [Video inverted?]

* / Nokias have 20 second lock-up on NTSC, (some versions of) HS100C has lip sync problems with NTSC and are therefore marginal.

83 - 12550 - Co 1130W - SYM 20,000 Rec 7/87
 180 - 1051/4546 RFD LHC 34.368 3/4

SatFACTS Digital Watch: 15 May 1997 ♦ continued

Bird	Service	RF/IF & Polarity	# Programme channels	FEC	Msym	Interoperable Receivers (a)
(As2/100.5E)	Myanmar TV	3766/1384 Vt	1TV	7/8	5(.080)	(No verified reports of any receiver working here)
	STAR TV Hong Kong	3700/1450 Vt	5TV, 1 radio (#6)	3/4	28(.100)	Pace DVS-211 (CA)
C2/113E	Star Indovision	3500/1650Hz 3580/1570Hz	20 TV (#7)	7/8	26(.850)	Pace DVS-211 (CA)
	MegaTV	3780/1370Vt	7TV (#8)	3/4	27(.500)	HS100C, N163, N17X, probably others
AP1/138E	Reuters	3732/1418Vt	1TV, data	3/4	5(.632)	N163, N17X
Optus B3 156E	Galaxy	12.438Hz (d) 12.373Hz	20+TV (#9)	3/4	29(.473)	Gng, P400, P500, Pn520, Pn630, Sk888 (c)
Optus B1 160E	Aurora (MPEG test)	12.367Hz	2+ TV (#10)	2/3 <i>3c/s - NSW #2</i>	30(.000)	N163, N17X, HS100C <i>B Pinner</i>
	ABC Exchange	12.539Hz 12.548Hz 12.557Hz	1 each	3/4	6(.980)	Pv9223, HS100C (FTA)
PAS-2 169E	Hong Kong PowerVu	4148/1002 Vt	8TV (#11)	2/3	24(.430)	Pv9223, HS100C(*) <i>INOKSA Sagem</i> (some FTA)
	NBC Hong Kong	4093/1057 Vt	7TV (#12)	3/4	29(.473)	HS100C, Gng, N163, N17X, P400 (b), P500, Pn520, Pn630, Sk888
	JET Singapore	3962/1188 Vt	2TV (1-Ntsc, 2-Pal)	1/2	13(.740)	Pv9223 (CA)
	Ku California PowerVu	12415/1115 Vt	7TV (#13)	3/4	30(.800)	Pv9223, HS100C(*) N17X(*), (some FTA)
	CCTV China PowerVu	3716.5/ 1433.5 Vt	3TV (#14)	3/4	19(.850)	Pv9223, HS100C (all FTA)
	TCS Singapore	4183/967 Hz	2TV (#15)	1/2	6(.620)	Pv9223, HS100C N17X, (usually FTA)
	AAR-ART/RAI Int	4153/997 Hz	3TV (#16)	3/4	5(.632)	Pv9223, HS100C N17X, (continues FTA)
		4114/1036 Hz		5/6	21(.093)	Pv9223 (CA)
		4104/1046 Hz		5/6	21(.093)	Pv9223 (CA)
	SCPC3	3942/1208 Hz	1TV	2/3	6(.620)	Pv9223 (CA)
	California PowerVu	3901/1249 Hz	7TV (#13)	3/4	30(.800)	Pv9223, HS100C (*) N17X (*), (some FTA)
	Satcom 1-6	3862/1288 Hz	6TV	7/8	19(.465)	Pv9223 (CA)
	Walt Disney Australia	3804/1346 Hz	1TV	5/6	21(.093)	Pv9223 (CA)
	Discovery Singapore	3776/1374 Hz	7TV (#17)	3/4	19(.850)	Pv9223, HS100C (occasionally Ch. 2 FTA)
I703/177E	AFRTS LHC	4177/973 LHC	8TV, 12 radio & data (#18)	3/4	28(.000)	Pv9223 (CA)

SatFACTS MPEG-2 Digital Watch: 15 May 1997 ♦ Support Data

Receivers: (a) By our definition, a receiver is deemed "fully interoperable" when it will turn on and routinely receive the service in question with no persistent glitches, no special tricks (such as loading software from an external source). Receivers in abbreviated listings are those that have shown these qualities for the transmission service listed. There is a time lag of 30 to 60 days after introduction of new receivers before sufficient data is accumulated for inclusion here. Nomenclature: DMV is DMV/NTL 3000 (a professional model receiver); HS100C is Hyundai of which there are at least 2 software versions; Gng is Grundig DTR1100 (manufactured by Panasat - see SF#31, p. 15); N163 is Sweden sourced Nokia 9500 S with version 1.63 software; N17X is German/European Nokia "d-box" software modified for C-band use; N2000 is Nokia sourced IRD created for Chinese SCPC market with AsiaSat 2 and Intelsat manual search software; Ph3950/11 is Philips DVB IRD created for China SCPC project; P400 is Pace DGT400; P500 is Pace DVR500; Pn520 is first version Panasat (July 1996); Pn630 is latest version Panasat (February 1997); Pv9223 is PowerVu by Scientific Atlanta; Sk888 is Skandia DigiScan.

Bouquets: 1) Thailand UTV: (1) CNN, (2) TTV, (3) ESPN, (4) HBO, (5) Ch. 5, (6) itv; 2) Thailand MCOT: (1) Ch. 9, (2) Discovery, (3) Ch. 3, (4) TNT, (5) Star Sport, (6) Ch. 7; 1) European Bouquet. (1) Deutsche Welle, (2) MCM, (3) RAI International, (4) RTVE, (5) TV5 Paris, (6) [when operating] Deutsche Welle special programme channel with MediaNet VBI included [lines 10-15, requires DMV M2/Pro/Txt board inserted in 3000 series receiver]; Radio (1) DW#1 (stereo), (2) DW#2 (stereo), (3) DW#3 (stereo), (4) YLE (left) & RCI (right), (5) SRI (l) & WRN (r), (6) REE, (7) DW#1 (stereo), (8) DW#2 (stereo), (9) DW#1 (stereo), (10) NN RA6, (11) NN RA8; 4) STAR TV Hong Kong. (1) STAR + [Japan in NTSC] (2) horse racing feeds very 'occasional' to TCNA Australia, (3) Sky News London, ; 5) Rebar Taiwan. (1) "U1" [movies], (2) "U2" [news], (3) "U3" [sport, cartoons, general entertainment], (4) "Rock TV"; 6) STAR TV Hong Kong. (1) STAR Movies SEA [661], STAR Chinese Channel [660], (3) NBC [658], (4) CNBC [657], (5) SKY News [655], (6) VIVA Cinema [654]; 6) Indovision. (1) HBO Asia, (2) STAR Movies SEA, (3) Film Indonesia, (4) MGM Gold, (5) ESPN Asia, (6) STAR Sport, (8) Channel 'V' International, (9) Channel 'V' Asia, (10) RCTI, (11) STAR +, (12) Discovery, (13) STAR Movies and NBC Asia, (14) Phoenix Chinese, (15) CNN, (16) BBC World, (17) CNBC, (18) Cartoon + TNT, (19) Preview 1, (20) Preview 2; 8) MegaTV. (1) CNNI, (2) Discovery, (3) ESPN Asia, (4) HBO Asia, (5) Cartoon + TNT, (6) MGM Gold, (7) Cinemax; 9) Galaxy. Presently 20+ programme channels. 10) Aurora. (1) ABC SA, (2) Australia Sky News; 11) Hong Kong PowerVu. (1) CTN 1, (2) CTN II, (3) TVBI Hong Kong, other feeds [NTSC], (4) Ad-hoc 1 PA [PAL], (5) Ad-hoc II [NTSC], (6) ABN, (7) CTN II, (8) CTN I; 12) NBC Hong Kong. (1) CNBC, (2) CNBC Mandarin A, (3) NBC Asia, (4) colour bars, occasional feeds, (5) CNBC Taiwan, (6) NBC "2" Asia/Taiwan, (7) Colour bars, "future" use; 13) California PowerVu. [Note: Ku band listing may not be operating except for test periods, programming line-up identical to C-band] (1) CMT [NTSC], (2) CBS feeds, others including Canadian CTV, (3) ESPN, (4) EWTN [NTSC] with Global Catholic Radio channel 2, R, (5) BBC World [NTSC], (6) Bloomberg Financial [NTSC], (7) Golf Channel [NTSC]; 14) CCTV China. (1) CCTV4 [NTSC], (2) CCTV3 [NTSC], (3) CCTV tests [typically NTSC]; 15) TCS Singapore. (1) TCS Test, (2) TCS Default [repeats channel 1]; 16) SCPCs. (1) ad-hoc use, (2) AAR/ART, (3) RAI International; 17) Discovery. (1) Disc. Aust/NZ, (2) Disc. default, (3) Disc. Japan, (4) Disc. SE Asia, (5) Disc. Taiwan, (6) Disc. Philippines, (7) Disc. China; 18) AFRTS. (1) News, Sports [ACII, CW, RR, 9.6 kbps, TV], (2) Spectrum [Urban, 64 kbps], (3) AFN Pacific [TV], (4) Channel 1 - Mirror [TV], (5) AFN Korea [contingency, 1.536, TV], (6) The Jim Lambert Test Channel [!!!], (7) EPG, voiceline, (8) EPG, u/i voiceline, (9) AFN Atlantic [Top 40, HR, NPR, TV], (10) AFN Americas [Top 40, TV], (11) AC1, (12) Country, (13) Adult Rock, (14) NPR [US National Public Radio], (15) Urban, (16) Pure Gold, (17) Top 40, (18) Hard Rock (19) Contingency. NOTE: Listings in **bold face** are PowerVu transmissions that are typically (but not always) FTA (free to air).

MPEG-2 DVB RECEIVERS: [NOTE: This data is collected from SF readers, conversations with suppliers, Web Site postings. We believe it to be accurate but assume no responsibility for errors that may appear. Individual dealers not listed: Only primary importers, sources.]

DMV/NTL 3000. Skandia Electronics Pty Ltd (tel 61-3-9819-2466)

Grundig (Gng) DTR1100. Av-Comm Pty Ltd (tel 61-2-9949-7417)

Hyundai-TV/Com. At least two distinct versions of software. Version 1: Pacific Satellite (tel 61-7-3344-3883). Version 2: AV-COMM Pty Ltd (tel 61-2-9949-7417), & Kristal Electronics (tel 61-77-791-565). Unknown versions from Antares Satellite (tel 61-7-3205-7574) and Skandia Electronics (tel 61-3-9819-2466)

Nokia 9500 S (V1.63). This version should soon be superseded by version 2.X series (2.052 is promised; exactly what it does is not known!). G&G Imports (tel 61-8-8941-8860) and Telsat Communications Ltd (tel 64-6-356-2749)

Nokia "d-box" (V1.7X) suitable for C-band use. Instructions, on-screen prompts may be in German. OPAC Pty Ltd, (tel 61-2-584-1233)

PACE DGT400. Through Galaxy offices, Australia.

PACE DVR-500. Bay Satellite TV Ltd. (tel 64-6-843-5296)

Panasat 520 (Pn520). OPAC Pty Ltd (tel 61-2-584-1233)

Panasat 630 (Pn630). Antares Satellite (61-7-3205-7574)

PowerVu D9223. Telsat Communications Ltd. (tel 64-6-356-2749)

Samsung VS-2000 (ver 1.31). Pacific Satellite (tel 61-7-3344-3883)

SK888. Skandia Electronics Pty Ltd. (tel 61-3-9819-2466)

- Satel, Samsung, Antares
SAGEM ISD 2050 MS
SALIMA ALAOWI
SAGEM SA
Fax ++ 33-1-
53 2323 60

Receiver Swaps: As a trial, SatFACTS is agreeing to act as an intermediary for individuals seeking to swap (trade for another model) receivers. All communication is via FAX only, through SatFACTS (64-9-406-1083). If you don't receive a response in 5 days from sending your fax, consider the desired receiver 'gone' by previous trade. To be listed here (as space permits) you must be a SatFACTS subscriber, must list only one receiver swap per month, must follow format shown below. Next deadline June 1.

#597A: Looking for receiver that is functioning on STAR TV As2 3700Vt service (Pace DVS-211-CA); will swap recently authorised CDE-2000 (Palapa C2)..

#597B: Looking for PowerVu cleared for at least AFN Pacific; will swap Hyundai HS100C.

#597C: Have spare Nokia V1.63, will trade for receiver with authorised MegaTV subscription good for at least 10 months.

#597D: Want D9222 (not 3!) working on Fox feeds PAS2, 1161Vt. What do you want?

WITH THE OBSERVERS

AT PRESS DEADLINE

Sky (Australia) horse racing testing new MPEG transmission equipment (As2, 1130Vt) May 8th; a transition date from B-MAC should be soon. Service will require Pace DVS-211 version receiver, is scheduled to be CA but individual subscriptions are available Contact Bob Pankhurst 61-2-451-0888.

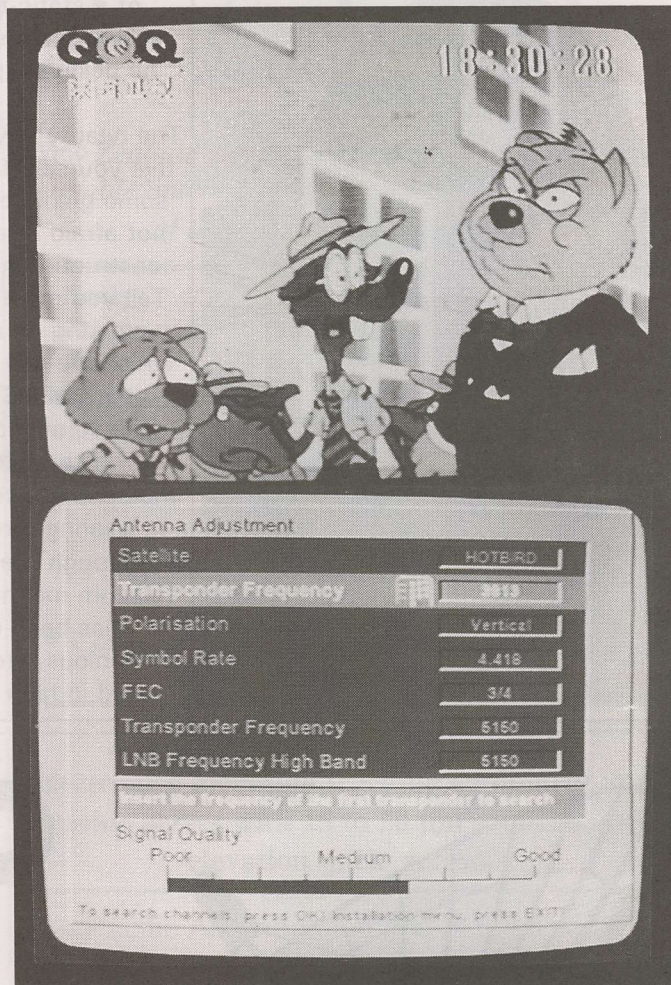
Observer **Alek Zapara** (Waikiki, WA) suggests that many Australians within footprint coverage of Intelsat 703 (57E) "(are missing) the availability of Indian related programming" which he finds of P5 quality on a 2.4m (solid petal) dish. The additional new programming expected (but not verified) from 1801 (64E) should be even more extensive although the footprints intended for India may not prove to be very useful in Australia; reports from observers of the new 801 levels are requested. Zapara also notes that with his dish size, the PAS-4 services (MTV Asia, CNNi, TNT Cartoon, ABN and Sony Entertainment are at best malevolent P2.

A number of observers (including Zapara) report the FTA analogue service from Bloomberg (Financial) on PAS-2, Ku (12.642Vt). Bloomberg is a part of the California (MPEG) bouquet on C-band as well. Bloomberg has been promoting cable and SMATV service carriage of their service and is suggesting "no cable carriage fees for 12 months."

Alain Corroy (Gold Coast City, Qld) brings our attention to the FRO Radio service (Tahiti) which is on I511 (180E) at IF 1,054. The service is in SCPC format and a suitable FM (radio) receiver capable of tuning the IF range around 1050 MHz using a 2-way splitter to send LNB signal to your normal TVRO receiver and separately to a wide band FM receiver, adjusting receiver attenuator to avoid overload. FRO has hourly news bulletins, and switches from 0830 to 1830 UTC to a satellite fed "France Inter" network. Corroy uses an Icom R100 communications receiver.

Francis Kosmalski (Auckland, NZ) reports on his experience while trying out his D9223 on the AFRTS service (177E). We published a 'warning' relative to browsing there (SF#32, p. 2) which Kosmalski took as a challenge:

"After entering the Msym, FEC and IF numbers, my SA D9223 locked onto the signal and I was surprised to see a decent BER considering I am using a linear feed. Channel 1 showed 'inconsistent DVB information' which is not unusual. Next I went to channel 2 and sure enough it said, 'Boot loader, waiting for information' just as SF warned. I went into panic mode and within 5 seconds had motored the dish away from 177E. 'Boot loader' remained locked on the display for a minute or so and then disappeared. Unfortunately, at this point the D9223 is locked into a stranglehold; a blank screen with bright pink line down the left hand side. The installer menu had a totally weird and unintelligible (to me) set of gibberish. Nothing I did to the receiver would unlock the stranglehold;



"QQQ" appears on As2 3813Vt; one of two Chinese SCPC services not on horizontal polarity. Transmitter identification on Nokia usually comes up as "Main" or "backup."

turned it off, disconnected the LNB input line - to no avail. Finally as a last resort I unplugged the receiver, waited and started over. Fortunately it then came back right and I could again operate the receiver. Whew - that was close!"

Steffen Holzt (New Caledonia) wonders if anyone is getting reasonable quality audio from MTV Asia (C2, 1030Hz) with a P3 or 4 level signal. He believes the audio quality has

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for June15th issue: June 3 by mail (use form appearing page 30), or 5PM NZST June 4th if by fax to 64-9-406-1083.

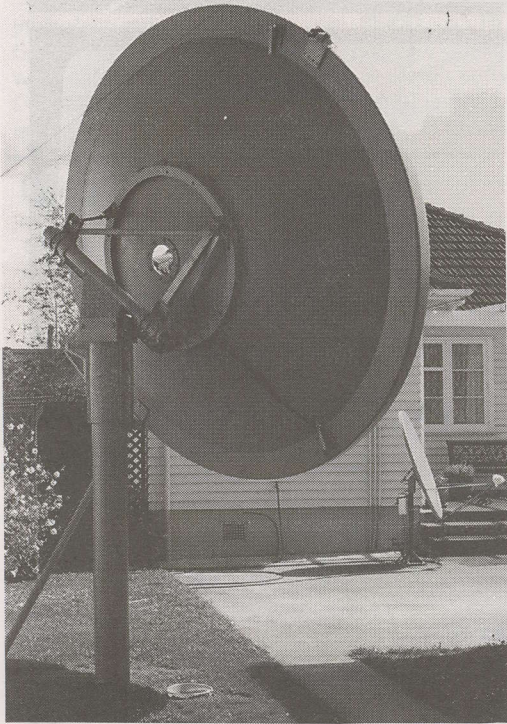
One Man's Creativity

Observer Keith Browning (Browning's Electronic Services, Dannevirke, NZ) located a Telecom "surplus" 3m range Andrews brand dish for his first serious effort at C-band. With his hands-on experience in electronic circuits, Keith obtained one of the Telsat low-cost 'TVRO receiver boards' which provides the basic receive capability. The receiver is "swept" (manually or by a ramp voltage) and the AGC output voltage displayed after being processed in A/D + D/A converters with the PC in the middle. Keith wrote his own software to control the receiver through the printer port. Just to add an extra feature, he designed a variable pitch beep

(tone) which ascends and descends in frequency as the signal level of a static-tuned signal is varied. This, he notes, is "useful in peaking the dish." A 'Second Generation' system under design will, he believes, produce greater display resolution by using 'zero IF' (i.e., detect directly from RF to DC).

The beauty is you can do this yourself if you have some guidance and are not afraid of electronic construction hand tools. Tell you more? Keith is working on a report which we will publish in SatFACTS.

The surplus dish was retrofitted with a polar mount that uses a nylon bearing, greased, although the original Telecom mounting frame has been used. Ingenious, stout, very rigid in high winds.



ORBITRON

Antenna Specifications

Model	Dia M	F/D Ratio	Gain dBi	
			4.2GHz	12.2GHz
SST8	2.5	.36	39.2	46.6
C10	3.0	.30	40.5	48.2
SX12	3.6	.36	42.2	49.5
O16	4.9	.30	44.9	52.1

distributed by



A.C.N. 009 235 090

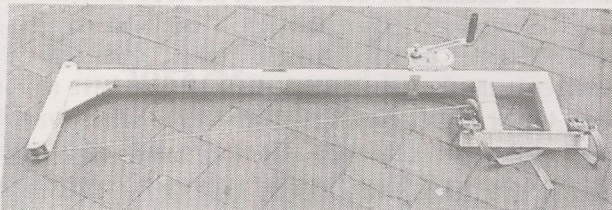
33 Kentia Loop, Wanneroo, W.A. 6065 AUSTRALIA

E-Mail: pmerrett@omen.com.au <http://www.omen.com.au/~pmerrett>

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



Build it yourself - "Dish Crane" allows one man to lift dish onto pole even on sloped roof or ground.



deteriorated significantly - even on the mono subcarrier (6.82MHz). Comments?

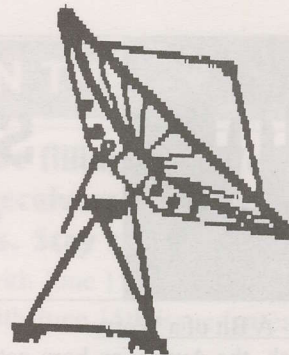
ARR/ART PID numbers for those trying to clean up the audio: Video 512, Audio 650 (IF 998.5, FEC 3/4, Msym 5.632.

Gregorio V. Hermosa, Jr. (Oman) has discovered additional PAS-4 Ku services in operation: 'HTB' (11.525 GHz Vt), NHK Japan (11.605 GHz Hz), Telcom (12.591 - is this last one PAS-4, Gregorio?).

SPACE Systems Testing on 177E Ku

Taiwan based Space TV Systems Inc. is testing their USA uplinked MPEG service on 177E as we go to press. The TV/COM uplink hardware is running FTA at this time (they plan to go CA in June). This is on a (Ku) spot beam that is primarily designed for eastern Australia, any reception in NZ will be quite unexpected. Assistance from James Tzeng at (tel) + + 886-2999-2939. (Downlink frequency, polarity not available presstime- start with 11.45-11.70 or call James Tzeng)

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New Zealand's only stockist of preused transmit capable antennas - our stock presently consists of the following equipment:

- 1 only 2° compliant 13 metre standard 'B' Vertex antenna with 4 port circular feed and Cassegrain sub-reflector
- 1 only 3° compliant 10 metre Scientific-Atlanta antenna with 2 port linear feed and Cassegrain sub-reflector
- 1 only 4.6 metre Andrew Ku Band antenna with 2 port feed and Gregorian sub-reflector
- 3 only 5 metre Sat Com Technologies transmit rated Ku band antennas
- 1 only 3.7 metre Comtech transmit antenna with Seavey transmit feed horn

A selection of receive and transmit electronics including tracking equipment and motor drives with 15 to 50 ton azimuth and elevation jack screws.

Pacific Antennas Limited is the major stockholder in New Zealand Teleport Holdings Limited, a teleport 90% construction completed. This facility has a standard 'B' 13 metre Vertex antenna with auto tracking capabilities. These companies can individually or collectively joint venture, lease, sell, operate or install all of the above equipment. We have the necessary licensing in place and the hardware has been installed for New Zealand's first privately owned independent standard 'B' uplink teleport. To learn more about business opportunities available, contact **Bryon G.G. Evans.**

Pacific Antennas Limited

PO Box 265 • Whangaparaoa (Auckland), NZ
Tel/fax 64-9-424-0841 / Mobile 025-789-160

SatFACTS April 1997 ♦ page 27

AT

SIGN off

Rupert Murdoch - A Bit of a Worry

Rupert Murdoch, the Australian born naturalised American businessman who controls the world's largest television + print media empire, must be a very complex fellow. At the moment he is causing chaos in the North American television industry by doing the unexpected. More recently he has managed to leave a trail of debris in both the Australian and New Zealand pay television worlds. And he has earned a nickname in America - they call him "Death Star Murdoch" (or if one feels close to the man, "Death Star Rupert").

One day last July he notified several of the owners of New Zealand's terrestrial pay TV service (SKY Network) that he wished to buy the company. SKY - owned by a mixed bag of TV broadcasters, cable system operators, cable TV programmers, a couple of telephone companies and a handful of lucky Kiwis who happened to be standing in the right place at the right time - was most assuredly for sale. And for as any different reasons as there were (and still are) distinct owners. SKY has lost heaps of money over the years - one published report claims NZ\$128,000,000 since 1991. In the most recent financial report available (1995) Sky had sales of NZ\$104,660,000 but managed to spend \$9,808,000 more than they took in. If you or I ran our households that way, we'd be declared bankrupt - especially if we did this 5 years running.

Murdoch's NZ controlled corporation INL toyed with the purchase of Sky until the last day in February and then announced it was calling off the purchase. Murdoch apparently lost interest, or found a new place to play.

America. On February 25th the Murdoch people announced they would invest US\$1,000,000,000 (that's a billion dollars) to acquire a 50% interest in DBS operator Echostar. Murdoch's News Corp already owns a new (not yet operating) North American DBS service they will call ASkyB (American Sky Broadcasting). By combining with Echostar, Murdoch could merge the Echostar satellites (and orbit locations) with those he already holds. The merger set off alarms throughout the entire American cable TV and over the air broadcasting worlds. Why? Because Echostar + Murdoch = one company controlling 70% of all DBS channels in North America. When Echostar let slip the plan was to offer 500 TV channels to dishes as small as 45cm and to sell consumers the complete home receiving systems for US\$200 or less, a creative worrywart in the cable world nicknamed the merger "Death Star."

Death Star has an interesting premise; one that is difficult to grasp if you live in Australia or New Zealand or Japan. In America, every major city has its own TV stations. These stations may or may not be affiliated with one of the major five networks (ABC, CBS, Fox, NBC, PBS) but first, last and foremost, they are "local stations" that provide significant local news and coverage for their market areas. Chicago is a market area, just as Christchurch or Melbourne are market areas. But in America, Chicago has more than a dozen Chicago-only TV channels. It would be as if in Australia, in addition to 7, 9 and 10 networks you also had five Melbourne only TV channels.

Murdoch and Echostar promised to place all of the Chicago channels on satellite. As well as all of the local channels in 74 other "US markets." Then through a combination of spot beams and smart card technology, every "Death Star" dish subscriber in the greater Chicago market would have not only 300 or 400 or 500 "national" TV services to select from, but also all of their local channels as well. If you lived in Miami, you'd have the local Miami market stations plus the national group of up to 500.

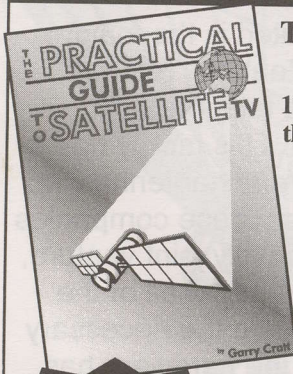
The "beauty" of this is that all of your TV, local plus regional plus national plus world, would come via one smallish 45cm dish. You would not need a rooftop terrestrial aerial, nor a cable connection. Ever again.

Panic time. "All TV in the management hands of one company?" A pretty frightening thought to broadcasters. A death wish for cable operators (since ostensibly this is what cable does - it is cable TV programming [plus more] but without any cable!).

Then just as April closed out Echostar told the business world, "News Corp has revealed that it does not intend to proceed with its investment in Echostar." Several reasons were given, none seem significant enough to kill the deal. Echostar and News Corp confirmed one area of disagreement was the selection of a conditional access system for ASkyB. Echostar is already using the European bred Nagra technology. News Corp always uses its own system (the same one used in NZ by Sky, in Australia by Galaxy).

The decision to buy into Echostar had to originate with Murdoch, the man. The decision to kill the SKY (NZ) purchase, to back out of Echostar would also be his. That is a worry and at risk is everything Murdoch claims he will do but has not yet done. This man does change his mind!

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

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

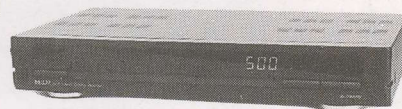
Your Name _____ Is this contest entry? _____
Town/City _____
Make/size dish _____ LNB _____ Receiver _____
Bonus Word Entry: _____ on page _____

April BONUS WORD - NO word!

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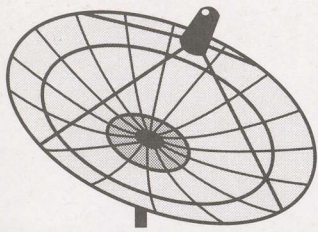
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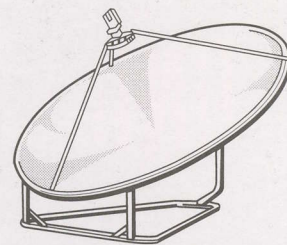
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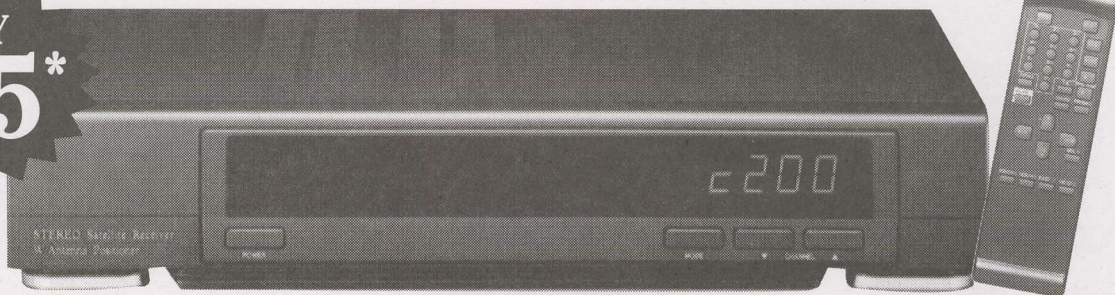
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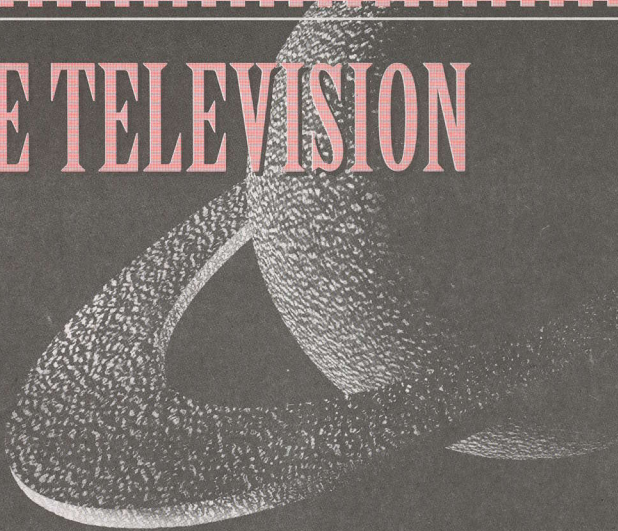
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