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Schedule 2 of the Broadcasting Services Act - General conditions

(Note: subject to moratorium on advertising and sponsorship in s.101.)

- A pre-election electoral blackout condition (cl.3).
- A requirement to announce particulars and keep a record of the person or company authorising the broadcast of political matter (cl.4).
- A requirement to keep recordings of political or current affairs broadcasts for a statutory period (cl. 5).
- Special rules relating to broadcast of advertisements regarding medicines (cl.6).

Schedule 2 of the Broadcasting Services Act - Special conditions relating to subscription television broadcasting in Part 6

- Prohibition on advertising tobacco products.
- Requirement to comply with applica-

ble program standards (note: there are at present no program standards applying to pay TV. The ABA may determine program standards where industry codes of practice fail or where no code of practice is developed).

- Requirement that articles of association contain certain provisions relating to ownership and control compliance.
- Requirement to allow access to airwaves by Minister in public interest.
- Anti-siphoning condition.
- Prohibition on 'X' rated or unclassified programs.
- Moratorium on 'R' rated programming till completion of ABA research on community standards and Parliamentary approval of broadcast of such programs.
- Prohibition on use of service in the commission of an offence.
- Requirement to remain a suitable licensee.
- Requirement that subscription fees will continue to be the predominant source of income.

HOW MANY

BY: BOB GREENEY,

Have you ever wondered why there aren't more television services? On my television set and VCR tuner there are channels 0 to 69 - that's 70 channels - so why does the current plan only allow for six metropolitan-wide services? This short article attempts to explain why, without getting lost in all of the technical mystery.

CHANNELS 0 TO 69

Look at your television guide. If you're in Sydney, Melbourne, Brisbane, Adelaide or Perth, it will show channels 2, 7, 9, 10 and 28. If you're in Newcastle it will show 3, 5A, 45, 48, 54 and 57 (ABC-TV broadcasts on both VHF-5A and UHF-48). In Nowra, the channels are 53, 56, 59, 62 and 65, while in Canberra the channels are 3, 7, 28, 31 and 34, (37). Ballarat has channels 6, 11, 30, 33, (36) and 39. I'll come back to channels 36 and 37 later.

In all cases, a sixth channel is planned for your area - it is generally the next UHF channel three channels above your highest existing UHF television channel, i.e. 31 in the capital cities, 60 or 68. So there seems to be lots of channels potentially available. Each channel occupies the standard Australian television channel width, 7 MHz.

The Very High Frequency (VHF) broadcasting bands run from 45 MHz to 230 MHz and contain channels 0 through to 12. (MHz stands for megahertz, and is a measure of the frequency in millions of cycles per second).

In the Ultra High Frequency (UHF) range, broadcasting bands run from 526 MHz to 820 MHz and contain 42 channels (channels 28 through 69 inclusive). That's a total of 55 channels, since channels 13 through to 27 do not exist, nor are there television broadcasting frequencies available between the VHF and UHF television bands. (This part of the spectrum is generally used for mobile radiocommunications such as two-way radio, garage door openers, radio remote control systems, etc.)

SECOND DRAFT OF FREQUENCY ALLOTMENT PLANS

The ABA will release a second draft of its frequency allotment plans (FAPs) in September as part of its continuing consultation on planning.

This follows consideration of more than 150 submissions received in response to an initial exposure draft and feedback from technical workshops conducted in most capital cities.

The FAPs set out the number of radio and television channels to be made available in each geographic area and will be determined after the completion of public consultation.

ABA Chairman Mr Brian Johns said: 'We want to ensure that everyone has proper access to information so there is an informed public debate. The second draft is designed to achieve this aim'.

The first exposure draft identified radio and television channels already in

use or planned throughout Australia and sought comment on fundamental planning assumptions on which they were based.

There will be 30 days for public comment on the second draft after it is released. Following consideration of any further submissions, the FAPs will be finalised and published later this year.

The second exposure draft FAP will be sent to everyone who received the earlier draft or submitted comments.

In accordance with the planning provisions of the *Broadcasting Services Act 1992*, frequency allotment plans are being developed progressively to cover all parts of Australia and all portions of the broadcasting services bands for which the ABA is responsible (AM and FM radio and television bands).

TELEVISION CHANNELS?

DIRECTOR ENGINEERING, PLANNING DIVISION, ABA

CHANNELS 0, 1 & 2

The channels 0, 1 and 2 are very close in their frequency. Channel 0 is 45-52 MHz, channel 1 is 56-63 MHz and channel 2 is 63-70 MHz. The small gap between channels 0 and 1 is used for amateur radio services worldwide.

CHANNELS 3, 4 & 5

Channels 3 (85-92 MHz), 4 (94-101 MHz) and 5 (101-108 MHz) share the

underway for planning broadcasting services around Australia.

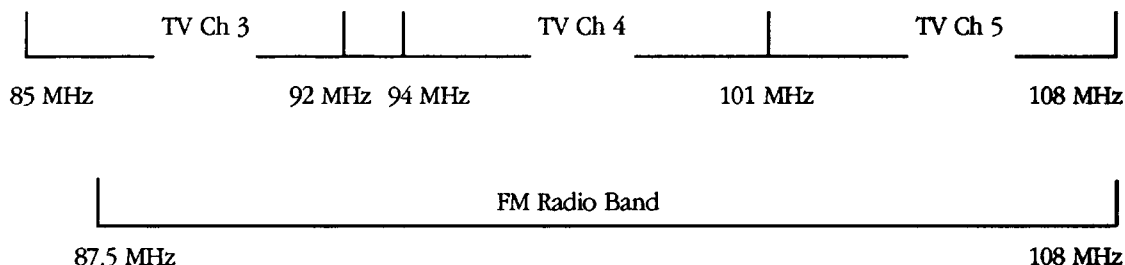
CHANNEL 5A

Television channel 5A (137-144 MHz) is used in some regional areas. At the time of its introduction there were no alternative VHF channels and UHF was not yet available. Australia is the only country where this channel was used for television broadcasting.

Internationally, the frequencies used

ment (DME), from the television bands is possible because the aeronautical community plans to introduce a DME system similar to that used internationally. This new system operates at higher frequencies dedicated to such purposes. There are also plans to adopt a satellite-based navigation system for aircraft, called the Global Positioning Satellite System (GPSS). The Australian DME system will move from the VHF television bands at the end of 1995.

OVERLAP BETWEEN TELEVISION CHANNELS 3, 4 & 5 AND FM RADIO BAND



same frequency bands used internationally by FM radio broadcasting (87.5-108 MHz) and were, prior to the commencement of the *Broadcasting Services Act 1992*, being progressively cleared of television broadcasting channels to make way for growth in FM radio broadcasting. Hence these three VHF channels are not available for allocation to new television services.

This clearance program is commonly known as 'Band II Clearance' and started in 1987. The program has completed its first two phases, covering most television services which used to operate on television channels 3, 4 and 5. However, there are still some major television services remaining on these channels. A clear factor in determining whether or not Band II needs to be cleared will be whether there are sufficient FM radio channels available for immediate and foreseeable needs. These issues will be examined during the public consultation processes currently

by channel 5A are assigned for use by meteorological satellite services and by Low Earth Orbit mobile radio services.

If Australia follows this practice, new services will have the potential to interfere with television. To avoid this, the ABA would have to find new channels for television services that now occupy channel 5A. This will be considered during the ABA's public consultation on licence area planning.

CHANNELS 9A AND 12

At the same time as the moves to clear channels 3, 4, 5 and 5A were being planned, the government decided to change the frequencies assigned for aeronautical radionavigation services. In Australia these operated within the VHF-TV broadcasting services bands, between channels 9 and 10, and above channel 11. (See the chart of Australian television frequencies below.) The removal of the aeronautical radionavigation service, called VHF Distance Measuring Equip-

ment (DME) (209-216 MHz) is to be created in the gap between channels 9 and 10. Channel 10 will need to realign slightly, to 209-216 MHz and channel 11 to 216-223 MHz. A new channel 12 will be created between 223 and 230 MHz. These two new VHF channels are planned to be available from 1996 as partial replacement for the four channels lost through Band II Clearance.

CHANNELS 28 TO 69

There are 42 UHF television channels, of which four had restrictions on them resulting from spectrum planning decisions of the past. These decisions were made at a time when UHF technology was not advanced enough to be used in mass produced television receivers, or in television broadcasting transmitters. Use of the UHF bands then was mainly restricted to use by radionavigation systems.

Technological developments meant that most of the UHF channels were

the mid sixties in the US and subsequently in the rest of the world, including Australia. However, channels 36, 37 and 38 could not be used in most countries because radionavigation systems occupied that spectrum. Channel 35 was also initially unavailable because it was used by amateur television enthusiasts for experimental work. Now, channel 35 is used in many places for television broadcasting and amateurs have to use alternative spectrum for their purposes.

Our present thinking is that channels 36, 37 and 38 will be available for television broadcasting in Australia from 1996 onwards.

If Band II clearance proceeds and clearance of aeronautical and radionavigation systems takes place, there will be 11 VHF and 42 UHF television channels, a total of 53 channels.

WHY ONLY SIX CHANNELS EVERYWHERE?

During the eighties, the Department of Communications undertook a thorough study of how many channels could be made available for communities throughout the populated areas of Australia.

A fundamental policy assumption was made; that Australians within terrestrial licence areas should, as far as technically and economically feasible, have access to the full range of available services (universal access). This meant that everyone should receive the national service of the Australian Broadcasting Corporation and at least one commercial television service; even if this were to be by satellite in some remote areas.

At about the same time the government introduced its equalisation policy which said viewers in aggregated regional commercial television markets throughout eastern Australia should have the choice of three commercial television services, the same as capital city viewers. As well, the Special Broadcasting Service was extended to all capital cities. SBS is being extended progressively to parts of regional Australia, subject to Federal Government decisions on location and funding.

As most Australians living in cities and regional centres would have access to

five television services, it was essential to plan for at least five channels everywhere. Detailed planning showed that under the 'universal access' policy, a maximum of six services could be planned for each community, after allowing for low power television re-transmitters, called translators, to provide in-fill for pockets of poor television reception.

The planning studies used planning criteria developed through the International Telecommunication Union and its Consultative Committees, the European Broadcasting Union, the British Broadcasting Corporation and other internationally adopted criteria.

RE-USING THE SAME CHANNEL

Because television signals have the potential to cause interference at quite large distances from their transmitter, the same channel cannot be used again until there is virtually no signal available from another transmitter. Typically 600 kilometres is an adequate distance between wide coverage services using the same channel, although interference has occurred between two services on the same channel (called co-channel interference) where the transmitters are more than a thousand kilometres apart. This can happen when atmospheric conditions allow radio waves to travel distances much greater than normal; these conditions occur mostly in the summer months.

RECEIVER PERFORMANCE

The performance of domestic television receivers has an important bearing on how many channels might be used in any area. Generally, television receivers made in the seventies and eighties are only capable of discriminating one channel from another if there is no service on an adjacent channel. This means that potentially, only each alternative channel can be used, as is the case with VHF television services in capital cities (note that there is a 6 MHz gap between channels 9 and 10, therefore they are not adjacent).

Receiver technology has not significantly improved in recent years and it is still not practical to use adjacent television channels. (Better receivers could be made but at a prohibitive cost to consum-

ers.) However, since translators use many of the apparent gaps, better receivers would not result in very many more channels becoming available using present analog technology.

Digital technology will open up opportunities to provide more services within the existing number of television channels. But these benefits will not be achieved until digital technology takes over from the present system.

Taking all factors into consideration, the best utilisation of all of the UHF television broadcasting bands for existing systems is best achieved if every third channel is used for any particular area (e.g. 28, 31, 34, ...).

SIX CHANNELS WITH TRANSLATORS

The spectrum planning studies found up to six television services could be provided in each location. On this basis, viewers who received adequate television signals by international standards would not suffer significant interference to their reception from other planned services (this included viewers watching their services through planned translators).

The basic plan provided for up to two sets of translators, however, in practice, as many as seven sets of translators for each service has been achieved. For instance, with five services operating from the Gore Hill - Artarmon area in Sydney, there are translators at North Head, Kings Cross, and in the Gosford and Wyong areas, with provision for Bouddi and Picton; as well as the services from adjacent Knights Hill for Wollongong and at Mt Sugarloaf for Newcastle.

In Melbourne, in addition to Mt Dandenong, there are translators at Selby, Ferntree Gully, Upwey, Marysville, Como (South Yarra), Safety Beach, and Warburton, with provision for Geelong and Gisborne and adjacent services in Ballarat, Bendigo and Gippsland.

To provide universal access to six channels requires many transmitters. To provide a service to about 98 per cent of the population in Victoria requires 69 sites, each with six transmitters. To reach the remaining 2 per cent of the population, more than 36 additional sites would be required. In Tas-

mania, 42 transmission sites are planned. Australia's television plans provide cover for as much, if not more, of the country's population than is the case in most other countries.

OTHER METHODS OF DELIVERING TELEVISION SERVICES

There are not many ways of delivering television to the home using the radiofrequency spectrum. One is by using the existing television broadcasting services bands, outlined here. What about other parts of the spectrum? Unfortunately, most of the spectrum is already earmarked for other purposes. A large amount is set aside for mobile communications - cellular telephones, two-way radio systems, CB radio, garage door openers, radionavigation systems for aircraft and ships, yachting, satellite communications, etc. There is even spectrum allocated for such things as microwave ovens and

medical equipment, so that they do not interfere with radiocommunications and broadcasting services.

One option might be to use Microwave Distribution System (MDS) spectrum, which is planned on the basis of 7 MHz channels, the same as television spectrum. MDS has 19 channels which are expected to be used for various forms of subscription television.

Coaxial or fibre optic cable could provide television services to many close settled communities. This will, initially, be more expensive than television over the air, but its capacity is limited only by the demand for, and readiness of, the service provider to install an adequate cable system.

PROVIDING EXTRA TELEVISION CHANNEL CAPACITY

The present six channel television plan is under review as part of the

development of frequency allotment plans (FAPs) under the ABA's public consultation process on planning. However, realistically, there is not much chance of a review providing significantly more capacity using current broadcasting delivery technology while maintaining the universal access principle. No submissions on the draft television FAP have suggested trading quality for quantity. It would mean more for some people and less, or no, service for others.

Most viewers seem to want to improve their services in areas of poor reception, using translators, rather than wanting to have additional services. The detailed planning review might provide for further translators in some areas.

And that's why, with apparently 70 television channels, only six television services can be provided in each location.

AUSTRALIAN TELEVISION CHANNEL NUMBERS AND FREQUENCY LIMITS

VHF BAND I		UHF BAND IV		UHF BAND V	
0	45-52 MHz	28	526-533 MHz	48	666-673 MHz
1	56-63 MHz	29	533-540 MHz	49	673-680 MHz
2	63-70 MHz	30	540-547 MHz	50	680-687 MHz
BAND II		31	547-554 MHz	51	687-694 MHz
3	85-92 MHz	32	554-561 MHz	52	694-701 MHz
4	94-101 MHz	33	561-568 MHz	53	701-708 MHz
5	101-108 MHz	34	568-575 MHz	54	708-715 MHz
BAND III		35	575-582 MHz	55	715-722 MHz
5A	137-144 MHz	BAND V		56	722-729 MHz
6	174-181 MHz	36	582-589 MHz	57	729-736 MHz
7	181-188 MHz	37	589-596 MHz	58	736-743 MHz
8	188-195 MHz	38	596-603 MHz	59	743-750 MHz
9	195-202 MHz	39	603-610 MHz	60	750-757 MHz
10	208-215 MHz	40	610-617 MHz	61	757-764 MHz
11	215-222 MHz	41	617-624 MHz	62	764-771 MHz
New VHF Channels		42	624-631 MHz	63	771-778 MHz
9A	202-209 MHz	43	631-638 MHz	64	778-785 MHz
10	209-216 MHz	44	638-645 MHz	65	785-792 MHz
11	216-223 MHz	45	645-652 MHz	66	792-799 MHz
12	223-230 MHz	46	652-659 MHz	67	799-806 MHz
		47	659-666 MHz	68	806-813 MHz
				69	813-820 MHz

Note: 1. The dial markings on some older UHF tuners show only approximate channel numbers.
2. The new VHF channels 9A & 12 and UHF channels 36, 37 & 38 will not be available before 1996.

