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To: SLPSConsultations
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Subject: Review of scientific licensing arrangements – consultation 39/2022 | ACMA

To: The Proper Officer, ACMA

Thank you for the opportunity to comment on the ACMA's review of licensing arrangements for non-assigned scientific apparatus licences, consultation 39/2022, which opened on 5 December last year.

Our issue in brief

- As the body representing Australia's free-to-air commercial TV networks, Free TV does not believe ACMA should create a class licence for ultra-wideband (UWB) applications using TV spectrum, as there would be a risk of interference to TV reception at the levels of maximum power ACMA is contemplating.
- In the event any interference problems arose affecting TV reception, converting this type of non-assigned scientific apparatus licence into a class licence would leave ACMA with little or no ability to track down interfering UWB devices.

Discussion

Free TV supports consideration of whether any of the current categories of non-assigned scientific apparatus licences are suitable for class licensing. Scientific licences play an important role in ACMA's licensing scheme, as they are a convenient way for the ACMA to allow spectrum users to do things that are not otherwise able to be authorised using current licence types. While in principle radiocommunications activities should be subject to the lowest necessary level of regulation, a material consideration in the present case is that unassigned scientific licences are already very lightly regulated. Realistically, current total taxes and charges of \$36 + \$41.37 are unlikely to be deterring potential users of the licence type. This is supported by the majority view of current licensees surveyed by the ACMA, namely, that the non-assigned scientific licence offers value relative to its cost.

Turning to the 3 kinds of non-assigned scientific licence canvassed in the ACMA IFC, Free TV's only concern relates to Ultra-Wideband (UWB) applications, which may use any frequencies up to 10.6 GHz, subject to emission limits in the relevant licence condition determination (LCD). While we note no one is at present using this type of scientific licence, this is not an argument for reducing the regulatory burden, noting that the current, very low taxes and charges are unlikely to be discouraging potential users.

The limits applicable to non-assigned scientific licences for UWB are found at Table 2 of the LCD:

Table 2 Emission limits applicable to UWB stations from 9 kHz to 960 MHz

Column 1 Item	Column 2 Frequency (MHz)	Column 3 Field Strength (µV/m)	Column 4 Distance (m)
1	0.009–0.490	2400/f (kHz)	300
2	0.490–1.705	2400/f (kHz)	30
3	1.705–30.000	30	30
4	30.000–88.000	100	3
5	88.000–216.000	150	3
6	216.000–960.000	200	3

Note In Table 2, field strengths are based on the use of a CISPR quasi-peak detector.

These limits potentially allow UWB scientific licences to operate at high enough power to cause interference to TV reception.

Using back-of-the-envelope figures, the 200 $\mu\text{V/m}$ field strength limit converts to $\sim 46\text{dBuV/m}$. With the frequency range starting at 216MHz, services potentially authorised by the class licence would affect VHF TV channels 11 & 12. (UHF TV channels are also potentially affected, but the maximum permitted power levels would be less problematic for TV reception.) The TV industry's coverage planning target in VHF is to provide a minimum median field strength of 44dBuV/m at 10m above ground level, theoretically unobstructed by buildings and trees etc. Most real-world reception environments aren't like that. While the planning targets have margins added for suburban and urban environments to compensate for those realities, many viewer receive arrangements will in practice be working with signal levels closer to the threshold. Receivers need $\sim 20\text{dB}$ signal level above the noise floor (or other interference) to decode reliably. That means the noise floor or interference level at the antenna can be no higher than $\sim 24\text{dBuV/m}$, so it is apparent that UWB devices authorised by the current rules could potentially degrade the ability for receivers to decode reliably if they're close enough. Those limits are for a single UWB device 3m away, and signal levels should drop roughly in line with the inverse square law. At 6m the limit would be $\sim 40\text{dBuV/m}$, at 12m $\sim 34\text{dBuV/m}$, at 24m $\sim 28\text{dBuV/m}$, at 48m $\sim 22\text{dBuV/m}$ and so on. Two radiating devices operating at the power limit and 48m from the TV antenna could theoretically produce $\sim 25\text{dBuV/m}$, four devices @ 48m $\sim 28\text{dBuV/m}$ etc.

An obvious practical concern would be medium/high population density reception environments, especially in and around multi-dwelling units where everything is relatively close together. If TV receive arrangements are properly installed and in good condition (external antenna, appropriate cable, properly installed distribution etc.) the risk of problems would be very low. Antenna directivity would normally help (unless the interfering unit/s were within the capture angle of the TV antenna). But the reality is that viewer receive arrangements are often far from optimal, with degraded cables and an unknown number of viewers relying on indoor reception. At those field strengths, UWB devices authorised by the proposed class licence could easily be a problem and affected viewers would have no idea where the interference was coming from. TV viewers in some locations have no choice but to point external antennas directly at obstructing buildings, with the potential for class-licensed UWB devices to operate in those buildings.

If the ACMA moved to a class licensing model, there would be no easy way for either broadcasters or the ACMA to locate UWB devices if they were causing interference – at least, short of a well-timed 'truck-roll' by ACMA's field inspectors while the device was in use. In these circumstances, we do not believe class licensing of UWB applications subject to the current limits would be an acceptable substitute for the current non-assigned licensing process.

Free TV has no other objections to the ACMA's proposals. The arguments for class licensing of 'controlled emissions' applications would appear to be quite strong. We have no view on class licensing of land and mobile stations permitted to operate in one of 4 pre-determined sets of frequencies in HF, VHF and UHF, noting that these do not include spectrum used by TV.

Whom we represent

Free TV Australia is the peak body for free-to-air commercial TV broadcasting in Australia. We advance the interests of our members in national policy debates, position the industry for the future in technology and innovation and highlight the important contribution commercial free-to-air television makes to Australia's culture and economy. Free TV proudly represents all of Australia's commercial free-to-air television broadcasters in metropolitan, regional and remote licence areas.

Our members are dedicated to supporting and advancing the important contribution commercial free-to-air television makes to Australia's culture and economy. Australia's commercial free-to-air broadcasters create jobs, provide trusted local news, tell Australian stories, give Australians a voice and nurture Australian talent.

Thank you, once again, for the opportunity to be heard on this issue. We would be happy to discuss any of the matters raised in this response.

Kind regards

Giles Tanner
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