The New Zealand Association of Radio Transmitters

Incorporated

Founder Member of the International Amateur Radio Union Region 3

Phone: (04) 475 9989 or (027) 444 5123
Fax: (04) 528 2173 (NZART HQ)
E-mail: nzart@wallace.gen.nz

P.O. Box 40 525
Upper Hutt
NEW ZEALAND

1 May 2014

Robin Campbell
Policy Advisor,
Radio Spectrum Management – Policy & Planning
Resources, Energy & Communications Branch
Ministry of Business, Innovation & Employment
P.O. Box 1473
Wellington 6140

Dear Robin,

Short Range Devices at 49 MHz Technical Consultation – NZART Comments

Thank you for the opportunity to comment on your Technical Consultation on Short Range Devices at 49 MHz and our apologies for the lateness of our submission.

Synopsis

Our interest in this area relates primarily to the potential for interference (in both directions) between radio controlled toys at 49 MHz and Amateur transmissions around 50 MHz.

While we believe the "best" solution to this is to allocate these frequencies to a professional user or (your option 4) allocate them to Amateurs, we recognise that this will not solve the issue of 49 MHz radio-controlled model toys being illegally imported into New Zealand.

For the reasons below, we are therefore supporting, subject to conditions, option 1 in your paper; the allocation of a band from 49.82 to 49.9 MHz with a maximum power of -10.0 dBW e.i.r.p and subject to Special Condition 3. We do not support either option 2 or 3.

Background

As you may be aware, the bottom end of the 6 metre (50 to 54 MHz) Amateur band is used internationally for weak signal work. As an example, the IARU band-plans for Regions I, II and III recommend that 50 to 50.1 MHz be reserved for beacons and low bandwidth modes such as CW (Morse code) and long distance weak signal mode operation normally occurs from 50.1 to 50.5 MHz.

This means that:

- Amateurs are particularly sensitive to low level interference at the bottom end of the 6 metre band; and

- Transmissions by Amateurs operating near the bottom end of the band are likely to be at power levels approaching the permitted limit.

While Amateurs generally coexist well with other **professional** users of the radio spectrum, we can see issues arising in relation to radio controlled toys at 49 MHz. Our experience with radio controlled toys is that the quality of the products varies markedly with the result that:

- Some radio control transmitters have very poor frequency stability, causing them to drift into frequencies assigned to other users ; and

- Some radio control receivers have very poor frequency stability and are very susceptible to overloading by signals well outside the frequency range for which they were designed[1]. Also, the design[2] of some of these receivers means that they radiate as well as receive signals.

The practical effect of this is that, unless appropriate mechanisms are put in place to police the quality of the radio frequency equipment used in imported toys, there is likely to be:

- increased interference to Amateurs; and

- a large number of unhappy radio controlled toy users who cannot understand why their recent purchases do not perform in the manner expected.

For these reasons, our preferred solution would be to either allocate these frequencies to a professional user (who is likely to use equipment of a reasonable quality) or allocate them to Amateurs (your option 4) to provide an (unused) guard band below 50 MHz.

We do, however, recognise the ongoing issue described in your paper - radio-controlled model toys that use 49 MHz (e.g. remote-controlled cars) are being imported into New Zealand despite the fact that there is no licence in place for these devices at this frequency.

Recommendation

For the reasons outlined above, we believe that an appropriate solution is to allocate a section of 49 MHz spectrum as far as possible from 50 MHz for radio controlled toys and that Radio Spectrum Management rigorously police importers to ensure that the toys they are importing:

- will not radiate signals above 50MHz; and

- are adequately designed to reject high power adjacent frequency signals.

We are therefore supporting, subject to the conditions above, Option 1 in your paper; the allocation of a band from 49.82 to 49.9 MHz with a maximum power of -10.0 dBW e.i.r.p and subject to Special Condition 3. This option, we believe, has the following advantages:

1. With a top frequency 49.9 MHz, there is a low probability of a ***properly designed*** radio control transmitter drifting into the bottom end of the 6 metre Amateur band;

2. Similarly, with a 100 kHz gap between the bottom of the 6 metre Amateur band and the top of the proposed radio control band, there is a low probability of Amateur transmissions causing issues with ***properly designed*** radio control receivers.

3. By making an allocation at 49 MHz, RSM will be in a position to influence responsible importers to only bring in radio controlled toys that meet the frequency and other standards for the band.

---

[1] A similar problem occurs at 430 MHz where Amateur signals well outside the frequency range allocated to car remote locking systems can, due to the poor selectivity of the receivers in some vehicles, prevent drivers from unlocking their doors remotely.

[2] It is understood some radio controlled toys use super-regenerative receivers which tend to be unstable and to radiate strong signals.

We **do not** support either of options 2 or 3 as both of these are likely (because of the closeness of the proposed frequencies to 50 MHz) to cause interference (in both directions) between Amateurs and radio controlled toy users.

We trust this will assist you in deciding upon the most appropriate way of dealing with the issue of remote controlled toys at 49MHz.

Once again, we would like to thank you for the opportunity to provide feedback and are happy to clarify or discuss any of the matters discussed in this paper.

Regards

Don Wallace
NZART Administration Liaison Officer.