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13<sup>th</sup> July 2020

The Manager,  
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Reference – Facilitating trials of RNSS repeater devices in road tunnel networks

The Australian Radio Communications Industry Association (ARCIA) is pleased to respond to the consultation paper on behalf of our members and the users of the land mobile radio (LMR) communications spectrum. Our members support many industry segments and in major population centres are involved in the installation, maintenance and support of communications systems in multiple tunnels and other under-cover areas so we have an interest in this consultation.

When we read the consultation paper and review the contents we have become aware that the potential for use of RNSS repeater devices will become more common and will most likely extend beyond the present discussion based on road tunnels. Obviously the need will also move into other tunnels for monitoring of rolling stock in the rail environment for example, technology is beginning to move into those sectors as well and will continue to do so in the future.

Modern communications technology is developing applications that will see the demand for RNSS coverage into many other areas where the direct reception of satellite signals is not available, and this is particularly so with areas where the public move around freely. The progressive developments starting from the mobile phone industry and then into 'Wearable devices' now means that many devices now actively monitor the health and vital statistics of the individual members of the public. Some of these applications in either a smartphone or a wearable device similar to a wrist-watch are capable of initiating an alert if the wearer has a medical emergency situation.

In addition to raising an alert, in the USA many are now being designed to actually contact a local NG911 centre with a data stream outlining the medical problem and sending the location details as well. This means that there will soon be a need to have systems like GPS signals available in large shopping centres and other under-cover areas where the public have access. If we consider a regional shopping centre like Chadstone in Melbourne, if someone enters the under-cover car park from Warrigal Road at the Northeast end of the centre, then walks to the Myer store on the Southwest end of the centre, the wearable device is going to indicate the person was last seen at the most distant point from where they may actually have the medical episode – better location information is going to be required.



With this background we believe that of the options outlined in the consultation paper, option 3 based on authorising the trials through the scientific licensing system is best suited until better information is available. In arriving at this conclusion we believe that the following items must be considered as part of the trial process –

- It must be stressed that power levels of the re-radiated RNSS signals must be similar to the signals that would normally be available on open ground in the same vicinity.
- Systems must be designed in such a way that there is no impact on the reception of direct satellite signals outside of the re-radiation area, basically the signals from inside the covered area (tunnel) must not interfere with the normal signals outside the covered area. This may mean that there has to be a small non-coverage area just inside the covered area of the re-transmission system. It is important that normal signals of GPS and similar systems are not corrupted adjacent to any area with an RNSS repeater system.

In considering the longer term, if the trials are successful and become an approved spectrum device we would suggest that the approval of such systems be done via Apparatus licencing, perhaps even some adaptation of Area-Wide Licensing (AWL) if that is more suitable. We believe that as there is a possibility of the re-transmission systems perhaps interfering with normal reception of RNSS signals if they develop faults, then it will become important to know where such systems are installed for monitoring of licence conditions. Class licensing of systems such as this would mean that any user could install a device and if it develops faults then they would be impossible to readily locate, with potentially all GPS or similar users in the area suffering degradation of operations.

With further trials and evaluation it should be possible to develop a RALI that applies to these devices and they could then be licenced under those conditions, most likely with only a small administrative fee applying to the issue of the licence. It would also be possible to issue the licence for a longer period as per the outlines in the present review of the Act with a period of something like ten years as the initial period, it may not be wise to go beyond that period as technology may change and it might be considered necessary to discontinue use of the repeater systems. Although not a high probability, the fact that the licence expires in ten years but can be renewed for a further period as per the 'licence renewal statement' will make it flexible enough for all licensees.

There is no doubt that many overseas jurisdictions will be implementing devices such as these and the ACMA should look towards adopting guidelines similar to those already applying in those jurisdictions to help foster a 'standards based' approach that will help to minimise confusion in the local markets. These international experiences should also help to prepare the necessary 'Equipment rules' as per the revision of the Act and give the guidelines for preparing the applicable RALI for licensing. As always, ARCIA appreciates the opportunity to be part of yet another spectrum discussion and we will happily discuss any aspects of this response or the overall discussion.

Yours sincerely,  
Australian Radio Communications Industry Association (ARCIA) Inc.

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