Wireless Audio Device (WAD) Interference Mitigation Plan – Optus 700 MHz PTS licence applications

Introduction

Optus is submitting applications to the Australian Communications and Media Authority (ACMA) for 700 MHz PMTS Class B licences (early access licences - “PTS 700 MHz”) in order to launch commercial services of LTE 700 MHz in various locations around Australia.

This general WAD interference mitigation plan will apply to every “early access” area sought. As and when Optus plans to commence services in any given area, Optus will supply ACMA a Schedule which will contain specific information relevant to that location:

- The HCIS areas covered by the Schedule; and
- The list of sites to be switched on within those HCIS areas; and
- The detail of how this WAD mitigation plan was executed for that area.

In each Schedule, Section 1 will lists the sites and the HCIS areas covered by the Schedule (which will be a subset of HCIS areas granted in an existing PTS 700 licence), Section 2 will provides a map of the PTS licence area, Section 3 will provide the detail of how Optus executed its Government and Community Liaison plan and Section 4 will detail the Venues and Organisations contacted by Optus.

Each Schedule submitted to ACMA will be Optus’ formal application for ACMA approval of Special Condition “C5” as detailed in the 700 MHz band Early Access – Radiocommunications Assignment and Licensing Instruction for Public Telecommunications Services. Once C5 approval is granted by ACMA, Optus will turn on 4G 700 MHz services at the sites listed in the relevant Schedule.

WAD Interference Mitigation Plan

Optus designed its community and stakeholder engagement process to minimise and mitigate risks of interference of LTE 700MHz services with WAD via two communication streams.

The first stream consists of a dedicated page on the Optus website www.optus.com.au/700techtrial provides an overview of Optus’ use of 700MHz LTE, and provides relevant contact information and contact details for feedback including an email address trial@optus.com.au and 24/7 phone number 1300 720 086.

The second stream involves directly contacting key stakeholders within the local community and organisations that may have an interest in the launch of Optus LTE 700 MHz services in their area, as well as key peak industry associations. These stakeholder groups were identified in consultation with AWAG and will receive written correspondence from Optus.

Upon being advised by the ACMA that an Optus application for a 700 MHz PTS licences has been approved, Optus will execute its communications plan for that area as per the relevant Schedule:

- Optus will write to all local councils, state and federal members of parliament (where those jurisdictions overlap some or all of the HCIS areas sought in the PTS licence application) as per Section
3 of each Schedule, advising them of the intention to launch of Optus LTE 700 MHz services in their area;

- Write to the peak stakeholder groups (namely “Broadcast operations/film/TV”, “Auctioneers”, “Wedding Celebrants”, “Musical instrument suppliers/retailers”, “Wireless audio device wholesalers” and “ACETA / Event companies” advising them of the intention to launch of Optus LTE 700 MHz services in their area;

- Contact all known educational institutions and major entertainment venues identified within the relevant licence area;

- Update the Optus website to add each new location where commercial 700MHz LTE services have been launched;

- Retain the existing communication channels via email [trial@optus.com.au] and 24/7 phone contact [1300 720 086]; and

- Ensure Optus retail outlets have details of how to escalate any queries on potential WAD interference with 700MHz LTE services.

Provided below is Optus’ response to the six risk mitigation criteria.

1. State how venues with high likelihood of WAD will be identified

AWAG previously assisted Optus in identifying the types of venues and organisations that have a high likelihood of using WAD as follows:

- **Broadcast operations/film /TV** – Optus will provide via written letter information and contact details regarding the launch of Optus 700MHz LTE services to any major broadcast companies or facilities known to operate within the immediate licence area. In particular, the Australian Broadcasting Corporation will be contacted.

- **Auctioneers** – Optus will provide via written letter information and contact details regarding the launch of Optus 700MHz LTE services to the key industry associations representing auctioneers and valuers – the Auctioneers and Valuers Association of Australia [http://www.avaa.com.au/](http://www.avaa.com.au/) and the relevant real estate institute in each state or territory of the site(s).


- **Musical instrument and electronics retailers** – Optus will use its GIS systems to identify musical equipment and electronics retailers in each proposed licence area and will provide via written letter information and contact details regarding the launch of Optus 700MHz LTE services in that area.

- **Wireless audio device wholesalers** – AWAG provided a national list of wireless audio device wholesalers to which Optus will provide via written letter information and contact details regarding the launch of Optus 700MHz LTE services.
• **ACETA / Event companies** – As event and production companies could come from a variety of locations, a statement regarding the launch of Optus 700MHz LTE services will be sent to the Australian Commercial and Entertainment Technology Association (ACETA) for posting on their website and Facebook page and Optus will request ACETA to send an email to all ACETA members regarding Optus’ launch of commercial LTE 700 MHz services.

• **Entertainment venues** – Optus will seek to identify any major public entertainment venues within each licence area, and if any such venues are identified, provide by written letter information and contact details regarding the launch of Optus 700MHz LTE services. If any entertainment venue identifies a risk to their services by virtue of Optus operating 700MHz LTE services, Optus will either conduct on-site testing to assess and, if necessary, modify its base station operation to mitigate the risk, or choose to not activate a particular base station to mitigate the risk.

• **Educational Institutions** – Optus will write to all educational institutions (primary, secondary and tertiary) identified to be located within the relevant licence area, providing information and contact details regarding the launch of Optus 700MHz LTE services.

2. **State how the licensee will configure base station equipment to minimise the interference to locations of identified risk.**

The Optus 700 MHz launch sites will operate at full power (40W per 10 MHz) unless there are known interference mitigation requirements. If there are known locations of identified interference risk, Optus will conduct any relevant testing prior to commercial launch and reconfigure the base station to the extent necessary to mitigate the interference risk. For example, Optus operates some sites at reduced power in order to not cause interference to the WA Public Transport Authority’s “DAVS” system in Perth.

Under commercial operation Optus is not in control of LTE 700 capable user devices, and there is a risk of interference to WADs from these devices. However, the current penetration of LTE 700 handsets is currently relatively low and therefore it is Optus’ view that the risk of interference by Optus customer LTE 700 MHz devices with WADs is also very low.

Further, although Optus does not control the location of LTE 700 MHz handheld devices in a commercial operating environment, the risk of interference to WADs is further moderated because:

- Voice is not currently carried over LTE on the Optus network. All voice calls (originating or terminating) are carried on 2G or 3G via the “circuit switched fallback” (CSFB) mechanism. Hence voice calls do not pose any risk to WADs; and
- LTE devices only transmit when they are actually in the process of sending data packets to the network. The sending of data packets to the network is bursty activity and usually brief (downlink data transmission volumes are significantly higher than uplink data transmission volumes). Hence to the extent that any interference risk exists at all from LTE 700 MHz devices to WADs, that interference will be periodic and bursty in nature, and not continuous.
3. Describe how the licensee will avoid the deployment of LTE base stations near venues of high potential WAD usage

Optus will not knowingly deploy an LTE base station near a venue of high potential WAD usage where a material interference risk is known to exist and where that risk cannot be mitigated by any of the steps identified above in Section 1.

Optus’ community engagement plan as detailed in each Schedule ensures that the local community which may be impacted by LTE 700 MHz base stations are aware of Optus’ plans and have the means by which to report any interference issues back to Optus. Optus will respond to any reports of interference in accordance with mitigation criteria 5 and 6 below.

4. Outline the steps the licensee will take to inform WAD users of the LTE deployment so that WAD users can report to the licensee any interference that occurs.

Optus provides a manned email dropbox trial@optus.com.au plus a dedicated phone number 1300 720 086 that is manned 24/7 to enable local community members to report any feedback to Optus. Optus will also continue to encourage AWAG to use its communications channels including its website [http://www.aceta.org.au/awag] and AWAG social media channels to distribute relevant information about Optus’ 700MHz LTE activity.

5. Identify the specific steps the licensee will take to mitigate interference to WADs in the event that this occurs in practice.

In the event that feedback is received regarding possible interference to WADs either via the email dropbox or the dedicated 1300 telephone number, Optus will implement the following process:

Capturing the Complaint

1. If the complaint is received via telephone, the Optus care team will complete an online form to capture details of the complaint, including the location of the interference episode, nature of the interference, and other relevant details. The complainant will be invited to “self-assess” whether they consider the situation to be an emergency or not. [An emergency situation could be, for example, where interference to a WAD is affecting a commercial operation, such as a theatrical performance].

If the complaint is received via email, Optus will contact the complainant as soon as possible by telephone (if a phone number is provided) or by email (if no telephone number is provided). If contacted by telephone, the complainant will be handled via the care process as above to capture the relevant details of the interference episode. If contacted by email, the complainant will be invited to contact the dedicated telephone number in order to lodge a complaint, but also be sent the interference complaint form as an alternative, if they wish to complete it themselves and return it to Optus by email.

Optus’ response process
2. Once the details of the interference episode are captured, Optus will immediately conduct basic “triage” of the complaint to establish whether it is possible that Optus 700 MHz network operation is the cause of the interference. This involves two simple steps:

   a. Verifying that the location of the interference episode is within the coverage footprint of the Optus 700 MHz network; and

   b. The frequency of operation of the WAD (if known by the customer) is within the frequency range (uplink or downlink) of the Optus 700 MHz network.

Optus will err on the side of concluding that Optus is the likely cause of the interference unless the evidence is conclusive that Optus cannot be the source of the interference as follows:

   a. If the location of the interference episode is within the coverage footprint of the Optus 700 MHz network, but the customer verifies that frequency of operation of the WAD is not within the Optus spectrum range but the frequency range of another spectrum owner, Optus will direct the complainant to the relevant licensee and close the complaint.

   b. If the location of the interference episode is well outside the coverage footprint of the Optus 700 MHz network, Optus will revert to the complainant indicating that Optus is not the source of the interference and close the complaint.

   c. If the location of the interference episode is within or near the coverage footprint of the Optus 700 MHz network, and the customer confirms that the frequency of operation of the WAD is within the Optus spectrum range, or the customer does not know the frequency of operation of the WAD, Optus will conclude Optus is the source of the interference and initiate network remediation as follows.

Network Remediation Steps

3. If the situation was self-assessed by the complainant as an emergency, Optus will switch off the transmitter(s) (base station(s)) identified as causing the interference as soon as possible. Once the complainant confirms the interference episode has been solved, Optus will initiate a more detailed investigation to determine whether Optus base station(s) were the cause of the interference and if so what network changes would solve the interference. This may involve on-site testing with the complainant. If Optus base station(s) were the cause of the interference, Optus will determine how to resolve the problem by, for example, adjusting the antenna tilts, reducing the transmit power, switching off the base station for agreed periods of time (e.g. during known theatrical performances and rehearsals), or making other changes which are sufficient to solve the interference to the WAD. If Optus base station(s) are proved to not be the cause of the interference, either because turning off the base station(s) did not solve the interference, or the Optus investigation conclusively proved that Optus was not the source of the interference, Optus will inform the complainant, close the complaint, and recommence normal network operation.

4. If the situation was self-assessed by the complainant as not an emergency, Optus will leave its transmitter(s) (base station(s)) on but conduct and conclude its investigation within 2 business days of when the complaint was received. If Optus’ base station(s) were the cause of the interference, Optus will determine how to resolve the problem by, for example, adjusting the antenna tilts, reducing the transmit power, switching off the base station for specific periods of
time (e.g. during known theatrical performances and rehearsals), or making other changes which are sufficient to solve the interference to the WAD. If Optus base station(s) are proved to not be the cause of the interference, Optus will inform the complainant and close the complaint.

Optus will keep the ACMA informed of any interference issues and the status of Optus’ investigations and resolutions.

6. **Acknowledge that in the event that interference cannot be resolved through a mutually acceptable solution, the transmitter(s) authorised by the licence may need to be switched off.**

Optus acknowledges that in the event that interference cannot be resolved through a ‘mutually acceptable solution’ as per the processes detailed at 5 that the transmitter(s) authorised by the licence may need to be switched off until the interference problem is solved.

Brendan Jones  
Associate Director  
Radio Access Strategy  
SingTel Optus  
29 September 2014