CONSULTATION PAPER ISSUED BY THE INFO-COMMUNICATIONS DEVELOPMENT AUTHORITY OF SINGAPORE

PROPOSED REGULATORY FRAMEWORK FOR TV WHITE SPACE OPERATIONS IN THE VHF/UHF BANDS

1. General

MediaCorp welcomes the opportunity to respond to IDA's consultation on proposed regulatory framework for TV white space operations in the VHF/UHF bands.

MediaCorp, a free-to-air TV broadcaster and existing user of the VHF/UHF bands, will be happy to work with IDA and other stakeholders to explore the shared use of the VHF/UHF bands to enhance the spectrum efficiency. However, it is important that any proposals to introduce new licence-exempt uses in UHF spectrum do not lead to an increase in the risk of harmful interference to existing services, including but not limiting to TV services, wireless microphones etc.

The approach to open up unused white space spectrum using a database could be equally appropriate for other licensed bands which are not fully utilized. MediaCorp urges IDA to explore these possibilities to promote optimal use of radio spectrum.

2. Responses to specific questions

Question 1:
IDA invites views on adopting a licence-exempt approach for WSDs in Singapore, subject to the devices meeting the conditions set by IDA.

The conditions set by IDA should ensure that the importers of these licence-exempt WSDs will be able to demonstrate that the WSDs meet the technical performance specifications (including but not limiting to OOB emission limits, maximum transmission level etc.), before these WSDs could be sold and used in Singapore.

Question 12:
IDA invites views on the proposed OOB emission limit of -56.8dBm, which will be imposed on WSDs operating in channels that are directly adjacent to a local broadcast service.

The Media Development Authority has announced that Singapore's free-to-air (FTA) TV channels will go fully digital by the end of 2013 using the DVB-T2 (Digital Video Broadcasting – Second Generation Terrestrial) broadcasting standard.

MediaCorp is committed to building a transmission network that will permit good indoor reception. DVB-T2 receiver is able to decode DVB-T2 signal at a signal level very much lower than the suggested OOB emission limit of WSD (-57dBm). For example:

- From Singapore T2 trial carried out in 2011, the Pmin (64QAM, code rate 3/5) is -82dBm. Thus, the use of adjacent channel for whitespace services would cause serious reception problem to TV viewers, as the OOB emission of WSD is 25dB higher than the DVB-T2 signal.
- For a more robust transmission mode (QPSK, code rate of ½), the Pmin is about -95dBm.

In our view:

- The use of TV channel adjacent (N ± 1 channel) to a local broadcast service should not be permitted.
- Further studies will be required to determine if it is possible to operate WSD in N ± 2 or higher channels. In the absence of any published results (protection ratio that will ensure that WSDs do not interfere with local TV broadcast services), the WSDs (operating in N ± 2 or higher channels) should not produce OOB emission that will lead to increase in the noise floor of the local TV broadcast channels.

Question 16:
IDA invites views on its proposal for the protection of licence-exempt and licensed wireless microphones. IDA also invites views and comments on the optimal number of safe harbour channels required to ensure that licence-exempt wireless microphones can continue to be used once WSDs are deployed.

The proposed 2 safe harbor channels will not be adequate:

- For mega OB productions, we need about 50 wireless channels for wireless microphones and wireless in-ear monitors (IEM), i.e. red carpet show, main show, post show.
- In our new campus, at Mediapolis, we won't be able to share the wireless channels in different studios since all the studios are located close together. We estimate to need about 120 wireless channels for microphones and wireless IEM.

Question 17:
IDA invites views on the need to develop a registration process for users of licence-exempt wireless microphones that require additional channels beyond the safe harbour channels.

Wireless microphones operating in UHF band are used extensively in news coverage and radio and TV productions. There should be certainty of spectrum access for broadcasters to cover breaking news, special events (unplanned) and large scale events. In any production uninterrupted audio is absolutely critical. Any interference experienced that causes a wireless audio failure has severe consequences for both the production and the audience alike. Without the certainty of access to spectrum, broadcasters' ability to produce content is severely hindered. We propose IDA to designate a few TV channels in UHF band for the exclusive use by broadcasters for news gathering and TV production purpose. This should be in addition to safe harboring channels.

Question 25:
IDA invites views on both approaches in managing the database (i.e. industry-managed or government-managed database).

MediaCorp believes that it is more practical for IDA to manage the database given that:

- IDA has information of all existing users of the TV spectrum as well as TV broadcasts in neighbouring countries and is in a position to determine the optimum operating parameters to protect the existing users of the VHF and UHF TV bands and
- Companies/organizations may wish to keep some of the information confidential (from releasing to other competitors or interested parties to protect the interest of the companies/organizations) and may not be willing to release such information to non-government organization.

Question 26:
To better gauge the level of interest from the industry, IDA invites companies that are interested in developing and managing the database for Singapore to register its interest with us and share the following details:

i) Funding for database development and management (i.e. self-funded, cost recovery, etc)
ii) Business models considered when providing database services
iii) Possible fees involved for TVWS users

Existing users of the VHF and UHF bands should have full access to the database.

The fees, if any, should be levied on TVWS users and not existing users of the TV spectrum.