

IDA's Consultation Paper on

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

**Comments of
Institute for Infocomm Research & SP PowerGrid Ltd
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Dear Ms. Chia,

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

Institute for Infocomm Research (“**I²R**”) and SP PowerGrid (“**SPPG**”) welcome the opportunity to respond to this consultation by IDA on the proposed regulatory framework with regard to the operations of secondary White Space Devices (“**WSD**”) that leverages on TV White Space (“**TVWS**”) technologies in the underutilized TV Very High Frequency (“**VHF**”) and Ultra High Frequency (“**UHF**”) spectrum bands.

SPPG is a leading energy utility company in Asia Pacific, being the transmission licensee appointed by Energy Market Authority of Singapore (“**EMA**”), we own and operate the transmission and distribution networks for electricity and gas in Singapore, serving over a million commercial, industrial and residential customers. Upholding steadfast to our mission in delivering high reliability of the electricity networks and power quality, SPPG consciously pursues new and advanced technologies. As a result, Singapore has one of the fewest and shortest power outages among cities worldwide, with the lowest System Average Interruption Duration Index (“**SAIDI**”) at 0.42min and System Average Interruption Frequency Index (“**SAIFI**”) at 0.087 interruptions per customer per year.

As communications technology is an important element in supporting efficiency in monitoring and operation of the grid, SPPG has strong interests in the technological and regulatory developments of TV White Space (“**TVWS**”). As such, SPPG has jointly embarked on TVWS R&D with I²R. I²R and SPPG appreciate this opportunity to share some of our thoughts and extend our support to IDA in the formulation of the regulatory framework.

If you have any clarifications please do not hesitate to contact the undersigned.

Thank you.

Yours respectfully,



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B) Responses to Consultation Questions

Question 4:

IDA invites views on allowing operation of WSDs in the 694 MHz – 806 MHz band until IDA allocates these frequencies for IMT deployment.

The number of available channels will be significantly reduced from 24 to 10 subsequently from 2020 due to International Mobile Telecommunications (“IMT”) services utilizing the 694MHz to 806MHz band. It is necessary to ensure that it will not be a case of diminishing returns for any investment to develop WSD solution for wide area deployment. Channels that are not originally demarcated for TVWS usage, like those in now use for analogue TV broadcasting that will be subsequently switched off by 2020, should also be opened up for TVWS usage during non-broadcasting hours where possible.

Question 6:

IDA invites views on the proposed general requirements for the database query and registration.

We are supportive of the proposed general requirements, however fair mechanism must be implemented to ensure that the rights to spectrum access will not be dominated by more technologically advanced WSDs of a single vendor or user. For isolated locations where only one user exists, database query may not be essential in the absence of any primary user.

Question 10:

IDA invites views on the requirement of a Unique WSD Identifier and for this identifier to be based on standards developed by recognized standards organizations.

We are supportive of WSD having UID to better locate and identify errant WSD.

Question 11:

IDA invites views on the proposed maximum transmission level of 100mW EIRP for WSDs operating in channels adjacent to a local broadcast channel.

We would prefer that such restriction be based on whether the local broadcasting channel is being utilized or not.

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.

Unable to comment, however we are unsure of the rationale behind the setting of out-of-band (“OOB”) emission limit at -56.8dBm, which is lower than the -49.2dBm limit in FCC Part 15. We urge IDA to review the limit to facilitate better optimal use of TVWS.

Question 13:

IDA invites views on defining the OOB emission limits for WSD to WSD operations.

Please see our response to Question 12 above.

Question 16:

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

We suggest that since only 10 channels remained for TVWS usage after 2020, and safe harbour channel is solely reserved for license-exempt wireless microphones where WSDs are barred, the number of safe harbour channel should be limited to no more than one channel.

Question 19:

IDA invites views on the aggregate interference effect of WSD and whether any adjustment in terms of technical requirement is needed.

We view that it should be left to WSDs to manage the aggregate interference effect with more effective use of technologies. Rather than imposing limitations, giving room to the industry can help to spur advancement of technologies to counter such technical problems.

Question 24:

IDA invites views on the payment of fees for the use of database services.

Charging a fee to provide geo-location database for spectrum access look-up service is reasonable. However, the fee charge should be nominal and competitive, and also regulated by IDA.

Question 25:

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

No specific preference, as long as the fee is minimal and not prohibitive, and matches with the expected service level. Service provided by industry-managed database operators should maintain neutrality for all users.

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

No comment, however the fee chargeable for TVWS user should be based on user account, not based on the number of WSDs.

Question 27:

IDA invites views on the proposed preliminary conditions for the operation and administration of the databases.

Users of the geo-location database's spectrum access look-up service should not be locked in with long-term contract with unfavourable terms.

Question 28:

IDA invites views on the proposed approach and communications protocols between the following:

- i) WSD and IDA website containing the list of authorized database administrators
- ii) WSD and the database

The need to look-up for the list of approved databases in IDA website should be on a regularly basis and should not too frequent, as this unnecessarily increases the lead time. The turnaround time of the geo-location database should be preferably not more than 1s.

Question 29:

IDA invites views on the proposed frequency of update for Time A validity and Time B validity.

The proposed frequency of update should be subjected to future reviews and not fixed.

Question 30:

IDA invites views on requiring the adjustment of the value for Time A validity and Time B validity, and for this to be within the range of 6 to 24 hours.

No comment.

Question 32:

IDA invites views on the benefits of including within the TVWS regulations a requirement for WSD to register its contact parameters to the database.

We support this requirement if the contact parameters are kept to an essential minimal and the confidentiality is protected.