

## **Abstract**

This research aims to demonstrate the applicability of the dynamic spectrum sharing mechanism that suits our national conditions, and to verify the service operation and management system of the shared frequency database service. It is hoped that the experience and suggestions obtained can be used by the competent authority to introduce new supervisors for more flexible use of spectrum in the future. The reference of the model further ensures that our country's spectrum resources can be fully supplied and effectively used, and can be closely aligned with international spectrum regulation and application trends.

It is mainly refers to the development experience of the US 3.5GHz band operating hierarchical spectrum sharing mechanism. We invited domestic mobile operators, mobile communication equipment manufacturers, and shared frequency database management agencies certified by the US federal government to participate the implementation of the spectrum allocation experimental platform. The system and equipment solutions with commercial operational maturity was introduced. To conduct research and develop tests for the direct and indirect connection status of shared frequency equipment to the shared frequency database, and related factors such as communication efficiency, reliability, spectrum efficiency and information security cases, evaluation indicators and test standards are verified in the actual field of the laboratory and indoor and outdoor environments.

The prerequisite for the development of spectrum sharing services is to first determine the shared frequency band, develop a propagation model suitable for Taiwan based on the characteristics of the frequency band, and then define the appropriate type of Taiwan's geographic map and land division based on the parameters of the propagation model to establish the basis for the sharing platform. The function of the shared platform is recommended to be designed with a three-tier architecture, and modularized development and local deployment should be carried out according to the three-stage requirements. In addition, you can refer to the

US CBRS certification mechanism and gradually improve the relevant certification mechanism of the Taiwan shared service platform according to the needs of each stage.

This research proposes to introduce dynamic management mechanism as the focus of the second stage of planning, which involves automatic frequency allocation mechanism, hierarchical management services, and addition of functions such as interference and restricted area management, and video segment management requirements to further improve shared frequency equipment, interoperability and operability certification, environmental sensing capability system certification, project installation certification, and PKI certificate management center certification. Continuing the third phase of continuous rolling refinement and improvement of the platform to implement the policy goals of spectrum sharing management and improving spectrum utilization efficiency, while at the same time in line with international technology, continue to improve spectrum sharing services.