

## TVWS Database System Requirements and Tests

### I. Establish and Maintain a Database

#### A. FCC Data Records

1. The database system must acquire information from the Commission's databases and synchronize with the Commission's databases at least once a week as required under Section 15.715(b).

Test requirement: Check the database to verify that it contains records for the prescribed records from the Commission's CDBS and ULS databases. Records will be verified from a random list of call signs that appear in the FCC databases. Verify that updated records and new records are present in the database after an update extraction of records.

#### B. Registration Capabilities

2. A database must have the capability to register venues at which wireless microphones are used (Sec. 15.715(d)). For licensed wireless microphones, the registration is to be based on the call sign of the license; for unlicensed wireless microphones the registration is to be based on the ULS registration number for the venue. Protection can be requested based on one or more geographic coordinates or on an area enclosed within a set of geographic coordinates. Protection will be for specified times and days as set forth in the rules.

Test requirement: Check that this registration function is provided and contains records for licensed and unlicensed wireless microphones with data on operation schedules as above (can be dummy records).

3. A database is required to register and protect the receive sites of MVPDs (Sec. 15.713(h)(6)). Registrations are limited to channels received over-the-air and used as part of the MVPD's service.

Test requirement: Check that this facility is present and operational.

4. A database is required to register and protect the receive sites of temporary Broadcast Auxiliary Service (BAS) links (Sec. 15.712(c)). Note that Sec. 15.713(b)(2) inadvertently omits listing temporary BAS links from the list of facilities not recorded in Commission databases that a TVWS database is required to include. Also note that permanent BAS links are included in the ULS and are required to be included in the database under Sec. 15.713(b)(1)) (records from these links are to be extracted from the ULS rather than obtained through registration).

Test requirement: Check that the database has this registration capability and that it functions properly.

Note: Database systems should provide a return message to all registration requests confirming or denying the request (TVWS Workshop II at slide 21).

5. Database systems are required to synchronize records obtained through registration procedures with other databases (Sec. 15.715(l) and TVWS Workshop II at slide 54)

Test procedure: Examine 1) the time it takes to transfer records from another database, 2) the time it takes to transfer records to another database and 3) a selection of synchronized records; synchronization must include all records for registered facilities plus registered fixed TVBDs.

## II. Service to TVWS Devices

1. A database must receive requests for lists of available channels from TVWS devices, identify the type of device that is making the request (fixed or Mode II), and provide a correct and accurate list of available channels to the device.

Test requirement: Make test inquiries to the database and examine the responses against independently determined lists of available channels.

## III. FCC Administration

6. A database administrator must be able to provide to the Commission, upon request, any information contained in the database (Sec. 15.713(i)(1)). The requested information could range from a full copy of all the records in the database to specific information contained in a single record. A database administrator must also be able to make available audit trail information (which devices requested access at specific times and locations) (TVWS Workshop I at slide 32). A database administrator must retain TVBD and channel information for 30 days for possible audits (TVWS Workshop II at slide 42).

Test requirement: Verify a selection of each type of record in a database:

- Records from protected facilities extracted from FCC databases
- FCC certified TVWS devices (FCC IDs and serial numbers)
- Records for protected facilities registered in the database

Also, check the database's ability to provide audit trail information – a list of database contacts and detailed information by device serial number and geographic area specified by a set of coordinates.

## 7. Implementation of enforcement actions

- A database administrator is required to remove any information from the database upon direction of the Commission (Sec. 15.713(i)(2)).
- A database must be capable of indicating, upon request of the Commission, that no channels are available when queried by a specific TVBD or model of TVBDs

(Sec. 15.715(k)). This capability is to be implemented such that a model of TVBD or all TVBDs can be denied channels on the basis of a geographic area defined by a point and radius or the area within a set of vertices.

Test requirement: Request that the database administrator demonstrate the above capabilities.

#### IV. Security

8. A database must have the ability to verify that a TVBD serial number and geographic location are unique to detect “spoofing” of devices and to deny service when spoofing is detected (TVWS Workshop I at slide 55).

Test requirement: Subject the database to duplicate devices at different locations within a short period of time to check that devices other than the original are not served (this test may not be practical if a second device is not available).

9. Each database administrator must inform us of the target levels for reliability in its system design (TVWS Workshop II at slide 41); a database may have different target levels for different types of devices. Depending on the system design goals, examine (TVWS Workshop II at slide 57):

- Plan for maintaining service and database integrity in cases of equipment/systems failure
- Plan for maintaining service in cases of power loss
- Back-up of records, including both the database and transactions with TVBD in case of disruptions of operations

Test procedure: Conduct a paper examination of the information on system reliability provided by the database administrator to determine that it provides adequate reliability consistent with its stated target levels and that those target levels are reasonable.

10. A database must only provide channel availability service to certified TVWS devices and must have procedures and features to ensure that the database, its contents and its operations cannot be compromised by outside parties.

Test requirement: FCC staff will conduct a paper examination of the database system’s security features. Final approval of the security features will be made by OET, working in consultation with the FCC Chief Technologist and Chief of the Public Safety and Homeland Security Bureau (*Order* designating TVWS database administrators at para. 16). OET may draw on other expertise as may be necessary to fully evaluate proposed security methods (*Id.*).

#### V. Publicly Available Services

11. A database administrator must make all information that is required by the Commission's rules to be in a TV bands device database publicly available, including fixed TV bands device registration and voluntarily submitted protected entity (*e.g.*, licensed and unlicensed wireless microphone registrations and TV translator and MVPD receive site registrations) information (*Second MO&O* at para. 119).

Test requirement: Examine the database's facilities for making information in the database publicly available.

12. A database must provide a facility for the public to identify the two reserved channels and other channels not available for TVWS use at a given location and for accessing the information in records extracted and collected by the database administrator, including fixed TVBDs (*Second MO&O* at para. 119 and TVWS Workshop II at slide 58).

Test procedure: Examine the database system's facility for identification of reserved channels and verify that the proper channels are indicated as reserved at a selection of geographic coordinates. Also examine the database system's facility for providing public access to the information in the database; this facility must provide reasonably simple access to any record(s) in the database.

## VI. 45-Day Public Trial of the Database

13. Each database will be subject to a trial period of not less than 45 days before it is allowed to be made available for actual use by TV bands devices to allow interested parties an opportunity to check that the database is providing accurate results (*Order* designating TVWS database administrators at para. 17). A longer trial period may be required if the Commission determines that a database is not in compliance with the Commission's rules. OET will determine the details of each trial, balancing the need to ensure that the database is working properly with the need to avoid an unnecessarily cumbersome and burdensome process. Database systems must provide an interface for testing by interested parties.

Test procedure: The database system's channel calculation and registration facilities are to be available for examination and test for a 45 day period to be announced by public notice. Interested parties will be allowed to provide comments and information on their examinations during the 45 day period and for a period of 15 days thereafter. We will expect the database administrator to correct any obvious problems that may be found and to respond to other issues raised by the interested parties.