TV Band (White Space) Rules

TV band devices (TVBD) designed for operation on unoccupied channels within the television broadcast bands are authorized under Subpart H of the Part 15 rules.

The rules require implementation of an interference avoidance methodology to determine channels available for operation:

- Geo-location and database access
- Spectrum Sensing
First generation of TVBDs expected to implement geo-location and database access methods
Requires a geo-location capability (e.g., GPS)
Requires access via Internet connection to a database of records depicting location and other technical information relative to licensed stations operating within proximity of the TVBD’s reported geographic coordinates
  – See §15.711 for complete description of geo-location and database requirements
The database will cull the list of TV channels authorized for use by TVBDs (see §15.707) by applying the interference protection requirements defined in §15.712, culminating in a list of channels available for TVBD operation at the reported location which is then returned to the TVBD via Internet connection.

FCC currently holding workshops with prospective database administrators in an attempt to ensure accuracy and consistency across the various databases as they are being developed.
§15.709 General Technical Requirements

Power Limits:

- Fixed TVBDs:
  
  • Maximum conducted output power $\leq 1$ watt (30 dBm) in a 6-MHz TV channel and $\leq 12.2$ dBm in any 100 kHz bandwidth during any time interval of continuous transmission
  
  • If directional gain of transmitting antenna exceeds 6 dBi, the maximum conducted output power must be reduced by the amount in dB that the directional antenna gain exceeds 6 dBi
§15.709 General Technical Requirements (continued)

– Personal/Portable TVBDs
  • When separation distances from occupied adjacent channels specified in §15.712(a) are realized:
    – Maximum EIRP $\leq$ 100 milliwatts (20 dBm) in a 6-MHz TV channel and $\leq$ 2.2 dBm in any 100 kHz bandwidth
  • When specified separation distances are not realized:
    – Maximum EIRP $\leq$ 40 milliwatts (16 dBm)
  • Power is to be measured during a time interval of continuous transmission
§15.709 General Technical Requirements (continued)

Antenna Requirements

- Personal/portable TVBD antenna(s) shall be permanently attached
- Fixed TVBD antenna may not be more than 30 meters above the ground
- Fixed TVBDs may not be located at sites where the height above average terrain (HAAT) at ground level is more than 76 meters
§15.709 General Technical Requirements (continued)

Emission Limits

- Undesired emissions into the TV channels immediately adjacent to the channel in which a TVBD is operating shall be at least 72.8 dB below the highest average power in the TV channel in which the device is operating
  - Emission measurements in the channel of operation shall be performed over a reference bandwidth of 6 MHz
  - Emission measurements in the adjacent channel shall be performed using a minimum resolution bandwidth of 100 kHz
- Beyond the immediately adjacent TV channels, the undesired emissions from a TVBD shall meet the requirements of §15.209
Compliance Measurements

- FCC Lab currently developing measurement procedures for TV band devices
- This effort is being undertaken in two parts
  - Part 1 will provide measurement procedures for demonstrating compliance to the relevant RF limits specified in §15.709, independent of the database
  - Part 2 will provide measurement procedures for demonstrating compliance to the interference avoidance and interference protection requirements specified in §§15.711 and 15.712, respectively
- A draft of the Part 1 effort will be published as a draft KDB in the very near future
- The Part 2 effort will be undertaken when the features and functions of the eventual databases are more fully developed and understood
- TVBD testing is currently on the Exclusion list, so initially, compliance testing will be performed by the FCC
Questions and Answers

Thanks!