



# Rovi ENERGY STAR TV DAM Test Proposal

For TVs Incorporating a ROVI EPG

# Rovi DAM Test Proposal

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# Applicability

1. The Rovi DAM Test Procedure and the accompanying test feed are only designed to be used for testing Televisions that:
  - a) Incorporate a Rovi EPG, and
  - b) Do not contain other features/functions that use DAM and that depend on other data which may not be present in the test transport stream.
  
2. If the Television incorporates other features/functions that use DAM and that require other non-Rovi data to be present which could increase DAM power usage, then the tester must combine the provided Rovi transport stream with any other data required for DAM testing of the device.
  
3. Rovi can provide technical information about the Rovi transport stream to assist creation of a suitable test feed.

# Test Feed Description

1. Rovi Test Feed consists of 51 hours of recorded programming and Rovi EPG data.
  - a) The data provided is representative of Rovi's proprietary data stream throughout North America for a 51-hour period, including two full days of data.
  - b) The test feed is a single 446GB file, typically copied onto a 750GB or larger USB drive using an NTFS filesystem.
2. Rovi proprietary data encoded as 3 separate data pids.
  - a) SCTE 127 data, used to recreate VBI data for legacy analog televisions with Rovi EPGs, data rate 45Kbps
  - b) Datapipe 1, variable data rate, maximum data rate 28.8Kbps
  - c) Datapipe 2, variable data rate, maximum data rate 45Kbps
3. Rovi data consists of setup data and daily download data.
  - a) Setup data is sent throughout the day in small bursts
  - b) Daily download data is sent in scheduled 30-60 minute blocks, repeated several times throughout the day
  - c) Rovi EPGs will receive at least three scheduled downloads per day

# Rovi EPG States

## 1. EPG Uninitialized

- a) This state is the factory default state of the unit and is also entered when the unit is factory reset.
- b) The Rovi EPG will not use DAM in EPG Uninitialized state.

## 2. EPG Setup State

- a) EPG Setup State is entered after the user has configured the Rovi EPG with ZIP Code and TV Service (Cable or OTA) information from the TV menu system.
- b) In EPG Setup State, the Rovi EPG will scan all available channels for Rovi proprietary data. Once a channel is found with Rovi proprietary data, the Rovi EPG will scan the data on this channel until all setup configuration data is received, including time zone, channel lineup related to the user's TV video service, current time, data download schedule, and other Rovi proprietary configuration data.

## 3. EPG Steady State

- a) EPG Steady State is entered after the Rovi EPG has received all Rovi configuration data.
- b) In EPG Steady State, the Rovi EPG will enter DAM to receive Rovi data downloads according to the times in the data download schedule, and then transition back to Sleep Mode when each data download has been received. Data downloads are repeated several times per day, but each specific data download needs to be received successfully only once per day.



# Test Preparation

1. The Rovi test transport stream must be played using a stream player and modulated onto an ATSC-compliant 8VSB carrier.
  - a) Recommended stream player is a Sencore DMS3503B.
  - b) Any North America broadcast physical channel can be used, as the Rovi EPG will use the virtual channel encoded in the transport stream to tune.
2. The RF output from the player should be within the normal range for a consumer product antenna input, typically 0 dBmV.
3. There should not be any other RF sources on the antenna input to the TV.
  - a) Other RF sources can be used if there are other features/functions which use DAM and which require other RF sources to be present.
4. The TV under test must be plugged into an approved power meter.
5. The power source and environment must meet the various voltage, frequency, distortion, temperature, and humidity specifications as defined in the ENERGY STAR Program Requirements for Televisions.

# Test Procedure

1. Start the playback of the test feed.
2. Configure the TV using its documented setup procedure, including entering the ZIP code matching the Rovi test data. The Rovi EPG should now be in EPG Setup State.
3. Perform a channel scan.
4. Turn off the TV. The Rovi EPG will now scan for Rovi data.
5. Monitor the power usage of the TV and note when the TV enters Sleep State, or wait for 24 hours. The Rovi EPG should now be in EPG Steady State.
6. Start the 24-hour clock, and begin power measurements.
7. After 24 hours, record the total power used in watt-hours.
8. If you need to re-run the test, the TV must be reset to factory default before restarting playback of the test feed.
  - a) The Rovi EPG will ignore what looks like old data.

# Test Success

1. Overall measured power usage in watt-hours must be less than:  
$$\text{DAMPowerMaxWattHours} + ((24 \text{ hours} - \text{EstimatedDAMDDurationHours}) * \text{SleepModePowerMaxWatts})$$
2. DAMPowerMaxWattHours is 80 watt-hours in Version 4.0 ENERGY STAR requirements, and 20 watt-hours in Version 5.0 ENERGY STAR requirements.
3. EstimatedDAMDDurationHours is 2.5 hours for Rovi DAM time.
4. SleepModePowerMaxWatts is 1 watt.

# Questions?

