



CableCARD Mechanical DVT Procedure

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Table 1-1:[illegible]

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CableCARD Mechanical DVT Procedure 1

The following tests ensure that the socket being tested is compatible with all CableCARDS and meets all durability requirements.

1.0 Simple Insertion Tests

This series of tests (“Incorrect Insertion Test” on page 1 through “Angled Force Upon Partial Insertion Test” on page 3) must be repeated for all available CableCARD types and models.



Note: The ideal is to have one Unit Under Test per CableCARD. When this is not possible, the UUT may be reused **once**, but only if the pins in the CableCARD socket are not damaged by the previous test run.

1.1 Equipment Needed

- 1 force gauge, capable of measuring both push and pull, 0-20lbs range
- CableCARD under test
- Unit Under Test
- Adjustable c-clamp with soft pads to simulate fingertips and protect the cards.



Warning! DO NOT use a metal c-clamp. This is likely to damage the CableCARD.

1.2 Incorrect Insertion Test

1. Attempt to insert CableCARD at a 45-degree angle up. Use force gauge to apply 8 lbs of pressure.
2. Check that the CableCARD does not engage the socket pins.
3. Attempt to insert CableCARD at a 45-degree angle down. Use force gauge to apply 8 lbs of pressure.
4. Check that the CableCARD does not engage the socket pins.
5. Attempt to insert CableCARD at a 45-degree angle left. Use force gauge to apply 8 lbs of pressure.
6. Check that the CableCARD does not engage the socket pins.
7. Attempt to insert CableCARD at a 45-degree angle right. Use force gauge to apply 8 lbs of pressure.

8. Check that the CableCARD does not engage the socket pins.
9. Attempt to insert CableCARD upside down. Use force gauge to apply 8 lbs of pressure.
10. Check that the CableCARD does not engage the socket pins.
CableCARD must not engage socket pins during any step.

1.3 Measuring Insertion Force Test

1. Insert the CableCARD halfway.
2. Using the force gauge, push against the end of the CableCARD until it is inserted completely.
3. Record the amount of force required.
Four pounds of pressure is nominal. Greater than eight pounds of pressure is unacceptable.

1.4 Measuring Extraction Force Test

1. Fully insert the CableCARD.
2. Engage the CableCARD in an adjustable C-clamp so that the clamp is pinching the corners of the CableCARD. If necessary, apply double-sided tape to the C-clamp.
3. Use the pull side of the force gauge to pull the clamp until the CableCARD is removed completely.
4. Record necessary force.
5. Check for damage to CableCARD socket pins.
6. Engage the CableCARD in an adjustable C-clamp so that the clamp is pinching the center of the CableCARD.
7. Use the pull side of the force gauge to pull the clamp until the CableCARD is removed completely.
8. Record necessary force.
9. Check for damage to CableCARD socket pins.
Four pounds of pressure is nominal. Greater than eight pounds of pressure is unacceptable.

1.5 Angled Force Upon Insertion Test

1. Insert CableCARD completely.
2. Use the force gauge to apply 10 lbs. of upward pressure to the end of the CableCARD.
3. Remove the CableCARD and check for damage.
There must be no damage at all to the CableCARD in order to pass.

4. Repeat Step 1 through Step 3 at each of the following angles:
 - a.Upward
 - b.Downward
 - c.90 degrees left
 - d.45 degrees left
 - e.90 degrees right
 - f.45 degrees right

1.6 Angled Force Upon Partial Insertion Test

1. Insert CableCARD until the pins begin to engage, but do not seat the CableCARD completely.
2. Use the force gauge to apply 10 lbs. of upward pressure to the end of the CableCARD.
3. Remove the CableCARD and check for damage.
There must be no damage at all to the CableCARD in order to pass.
4. Repeat Step 1 through Step 3 at each of the following angles:
 - a.Upward
 - b.Downward
 - c.90 degrees left
 - d.45 degrees left
 - e.90 degrees right
 - f.45 degrees right

2.0 Testing Multiple Human Insertion

This test emulates a user attempting to insert the CableCARD while the TiVo is in an entertainment center.



Note: Be sure to have testers stand in front of the box and reach around to do a “blind insertion” rather than turn the box around so that the CableCARD slot is visible.

2.1 Equipment

- Three testers with small, medium, and large hands
- Unit under test, with cover in place.

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- All available CableCARD types and models

2.2 Procedure

1. Position the unit so that the tester stands in front of it, viewing the front.
2. The tester inserts and removes the CableCARD three times.
3. After the third insertion and removal, remove the cover of the unit and check for pin damage.
4. Repeat Step 1 through Step 3 for all cards with all testers.

2.3 Pass/Fail Parameters

No pin damage must be in evidence in order to pass.