AP 210 Test Cases

February 14, 2007

History

Updated from Original by
Mike Keenan..thanks Mike!

Why have Test Cases?

- **Required by ISO TC184/SC4**
- Provide “Qualified” files to use in testing implementations.
- Provide concrete examples of concepts covered in recommended practices.
- Provide Incremental Implementation Examples
- Provide achievable challenges for implementers

Public/Private

- Publicly Available Test Cases are not up to date
- Private Test Cases are up to date but
  - They are real designs;
  - They are are proprietary;
  - They will not be released into the public domain.

Test Case validation criteria

- Identifies the Scope & Specific Purpose
  - Identify Modules that are Addressed
  - Identify Subset that is Addressed
  - Describe Use Cases Supported

Test Case validation criteria

- Conforms to AP 210
  - **Within the scope**
  - **Identifies ARM AOs of Principal Interest**

    (Test case may include other AOs for validity/ease of construction.)
  - Identifies non-conformance
    - Violated Rules
    - Violated Attributes/Relationships
    - Violated Ips
    - Arm
    - Aim

Test Case validation criteria

- Pedigree of the files provided.
  - CAD Source identification if applicable
  - History
  - Change History
  - Issues against the file
  - Issues against AP 210 the file illustrates
  - Version of the AIM it is tested against.
  - Version of the AIM it was built against.

Types of Test Cases

- Simple with a limited implementation scope.
  - Examples:
    - Simple Rectangle
    - Multi product
    - Component Orientation

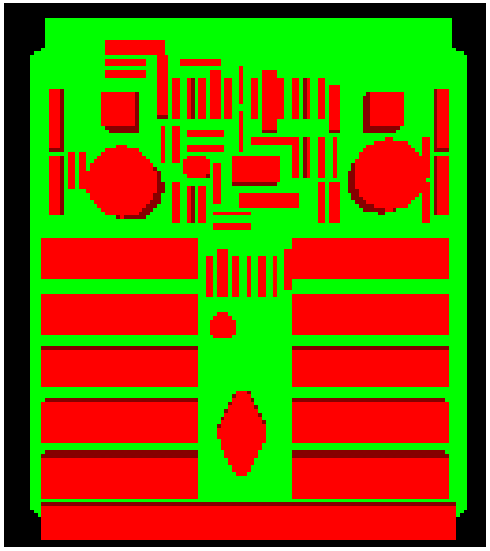
Types of Test Cases (cont.)

- Complex with a scope that covers a particular usage scenerio.
  - Examples:
    - Thru Hole PCB design
    - Surface mount PCA design
    - Double Sided Surface Mount PCA design
    - Requirement Specification
    - Design Change Sequence

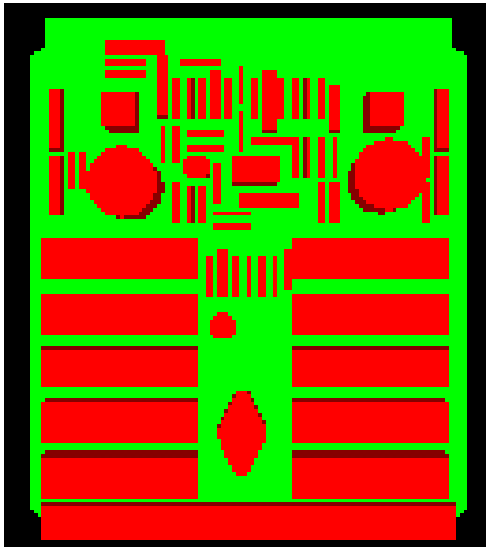
Legacy Test Cases

- Cabledb
- Thru Hole Flasher
- Surface Mount Flasher
- HO8 Package

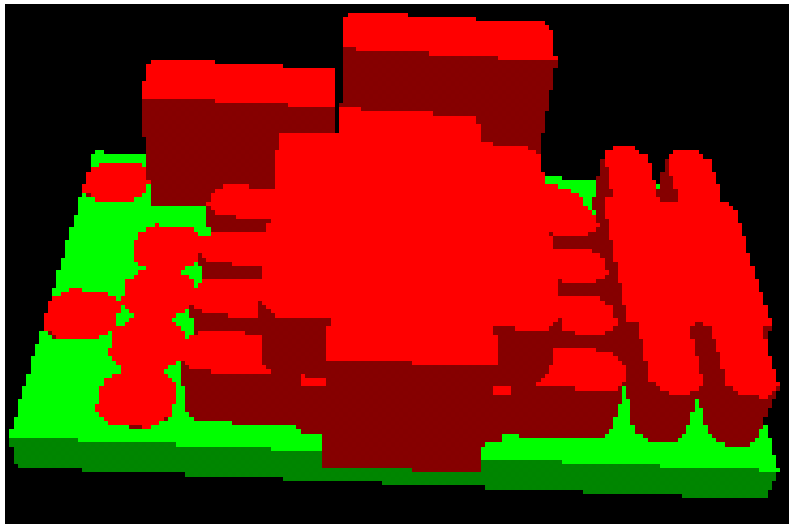
Cabledb ECAD View

Test Case Purpose A real design available to share.	
Test History:	**Filename:** cable_db.stp **Author:** Paul Monson **Design Source:** Mentor Graphics **Translator:** ITI Version 1.2 **Post Processing:** None

Cabledb MCAD View

Test Case Purpose A real design available to share.	
Test History: 3D model created in UGS to support MCAD View. UG Part and AP203 Models available for assembly and Piece parts and maybe the PWB.	**Filename:** **Author:** Tom Thurman **Design Source:** UGS **Translator:** Unknown **Post Processing:** None

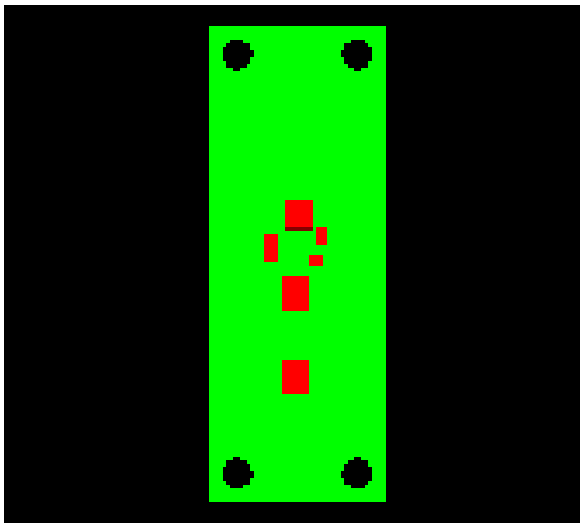
Thru Hole Flasher

Test Case Purpose A real design available to share.	
Test History:	**Filename:** flasherthruhole.stp **Author:** Paul Monson **Design Source:** Mentor Graphics **Translator:** ITI Version 1.2 **Post Processing:** None

Surface Mount Flasher

Test Case Purpose

A real design available to share.

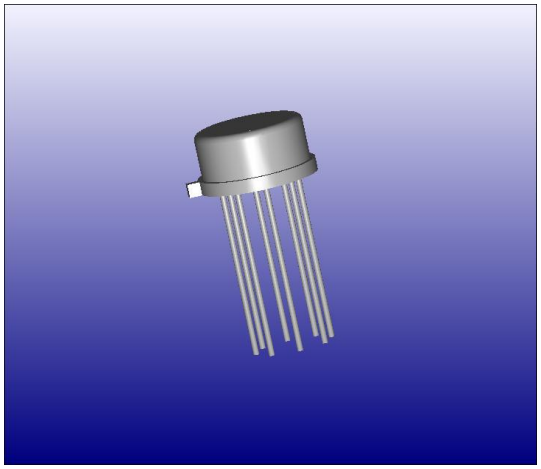


Test History:
Needs more work. There are Mentor Board station source as well as CADIF Source as well as (maybe) UG source

Filename: flasher.210
Author: Kevin Cline
Design Source: IDF Version 2.0
Translator: IDF to AP210
Post Processing: None

H08 Package

Test Case Purpose
Provide a 3D model of an electronic package in both AP203 and in AP210 for comparison purposes for implementors.



Test History:
The current file is against the DIS Version and therefore needs updating.

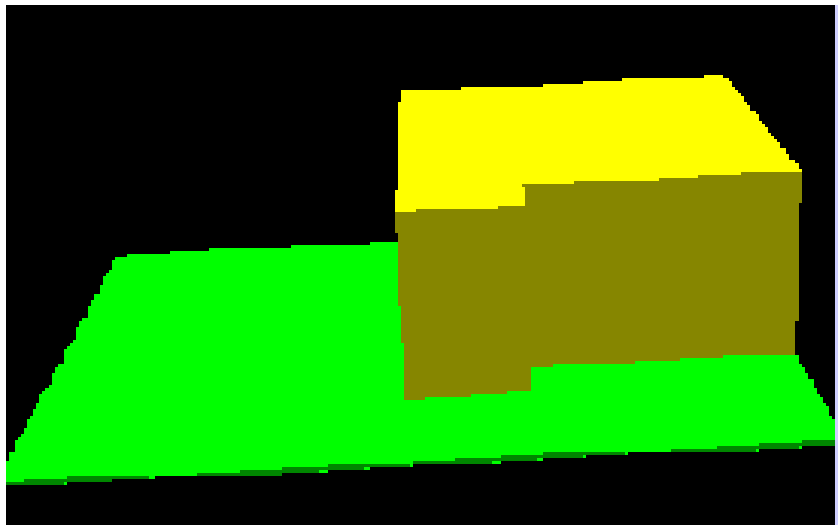
Filename: H08.2xx
Author: Craig Lanning
Design Source: AP203
Translator: None
Post Processing: Hand built

Existing AP 210 Test Cases

- Component_placement_restriction_ assignment Requirements
- Drilled Hole
- Modified MRA Boundary
- Multi Product
- Component Orientation
- PCB
- Simple Rectangle
- Circular Arcs
- Annex K examples

Component Placement Restriction

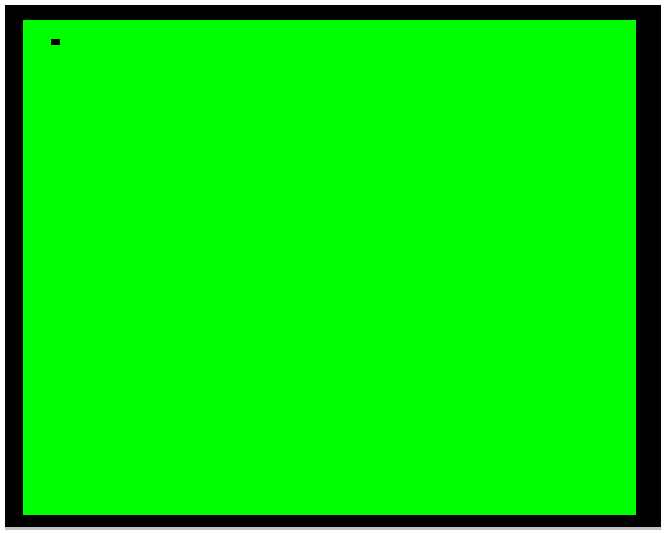
Test Case Purpose:
To test the function of the ARM concept of component_ placement_restriction_ assignment requirements



Test History:
The file MGC_CGA.brd includes the ROUTE_OUTLINE and PLACE_OUTLINE outlines that where required in order to create a board geometry in Mentor Graphics tools.

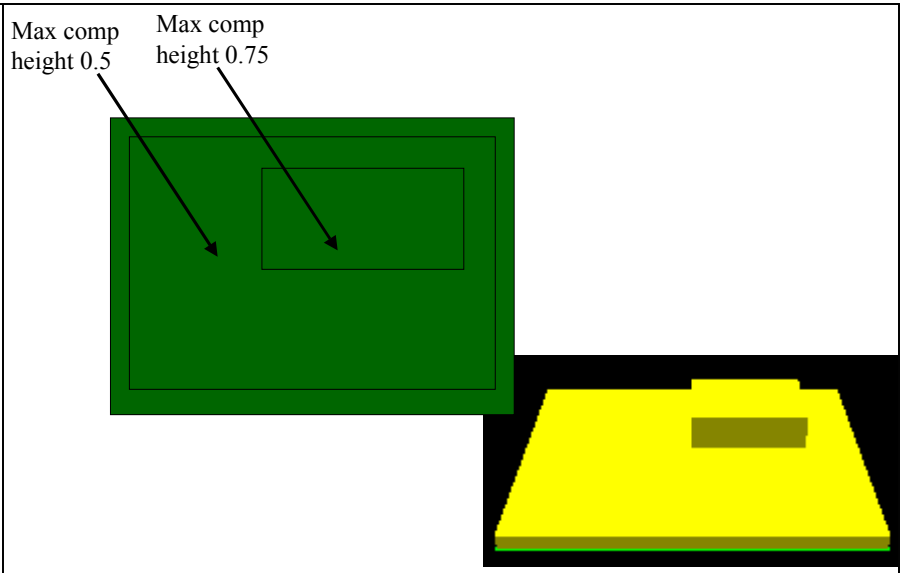
Filename: CRA.210
Author: Mike Keenan
Design Source: ATX subset
Translator: IDF to AP210 11/13/00
Post Processing: None

Drilled Hole

Test Case Purpose Provide simple drilled hole example.	
Test History:	**Filename:** DrilledHole.210 **Author:** Mike Keenan **Design Source:** ATX Version 2.01 **Translator:**IDF to AP210 11/13/00 **Post Processing:** None

Mounting Restriction Area Boundaries

Test Case Purpose
Test a mounting_restriction_area with both an external and internal boundary.

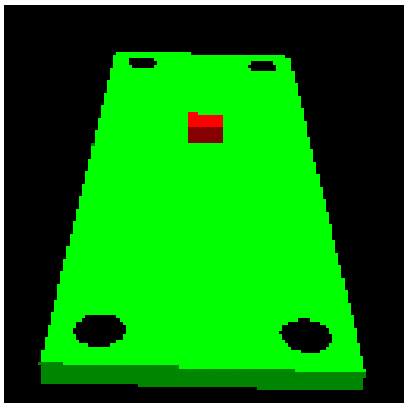


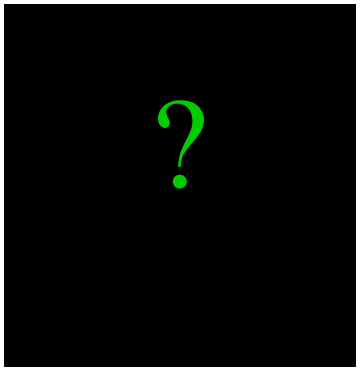
Test History:

Filename: ModifiedMRABoundary.210
Author: Mike Keenan
Design Source: MRABoundary.brd
Translator: IDF to AP210 11/13/00
Post Processing: Manual to add the cutout to the outer mounting_restriction_area.

Multi Assembly

Test Case Purpose
Test the results of giving a system a part21 file with two PWA assemblies in it.

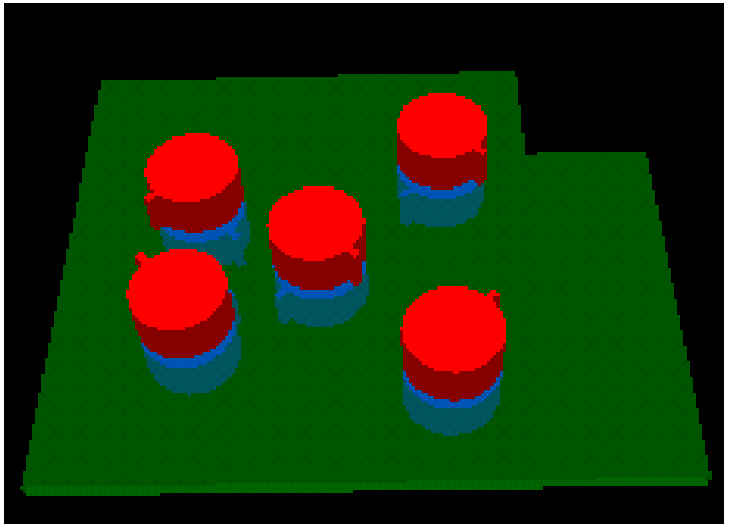




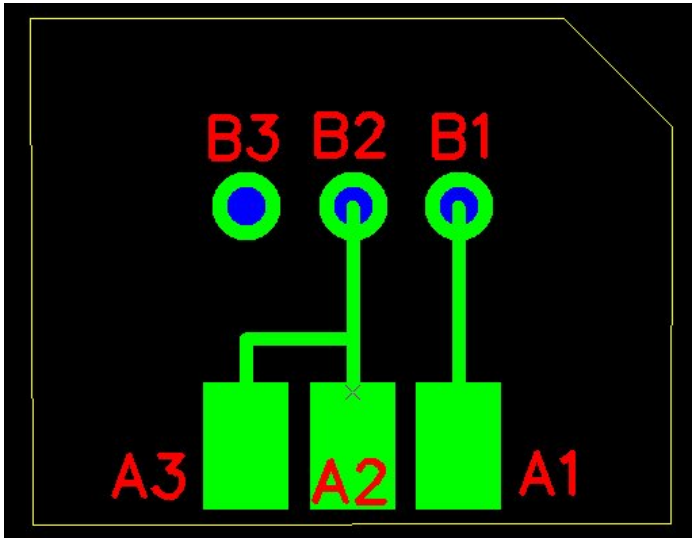
Test History:
9/20/00 - AP210Viewer Version 1.2f Beta 1.0, displayed the single component annexk example. No indication of another design in the file.

Filename: MultiProduct.stp
Author: Mike Keenan
Design Source: Annex K examples for AP210 IS
Translator: N/A
Post Processing: Used StepMerge program to create a single part21 file for the two examples.

Component Orientation

Test Case Purpose Test component placement and rotation on both sides of the board.	
Test History: Extensive testing during development of AP210 Viewer and IDF to AP210 translator.	**Filename:** Test_05.210 **Author:** Mike Keenan **Design Source:** Test_05.brd **Translator:** IDF to AP210 **Post Processing:** None

PCB

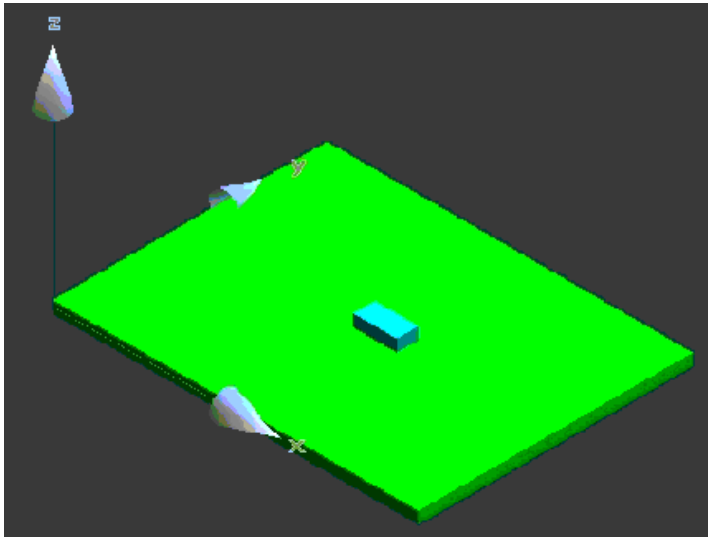
Test Case Purpose	
Test History: Tested using Expresso. Extensive, ask Tom and Lothar	**Filename: ap210_pcb1.stp** **Author:** Giedrius Liutkus **Design Source:** Circuit Cam **Translator:** Circuit Cam **Post Processing:** Manual, being incorporated into tool

McKee/Evans Test Suite

- Describes a set of Test Cases that increase in complexity

Simple Rectangle

Test Case Purpose
Simple rectangular board with one component

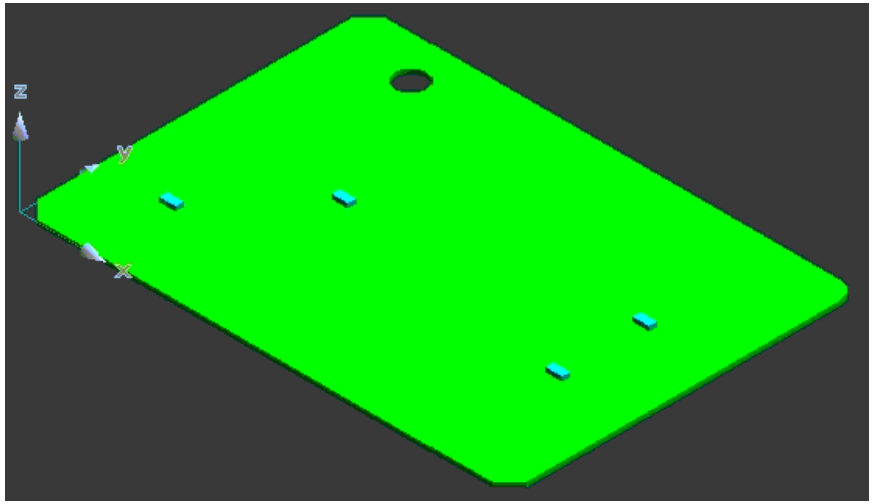


Test History:
A direct translation using TLDi Software PCBto3D from IDF to Solid Edge.
Translate IDF files to STEP AP203 file format. Rename resulting STEP file from tidf.step to tidf.stp. Inport STEP file into Solid Edge

Filename: tidf-A.brd
Author: Jim Evans
Design Source:IDF Data
Translator: Many
Post Processing: None

Circular Arcs

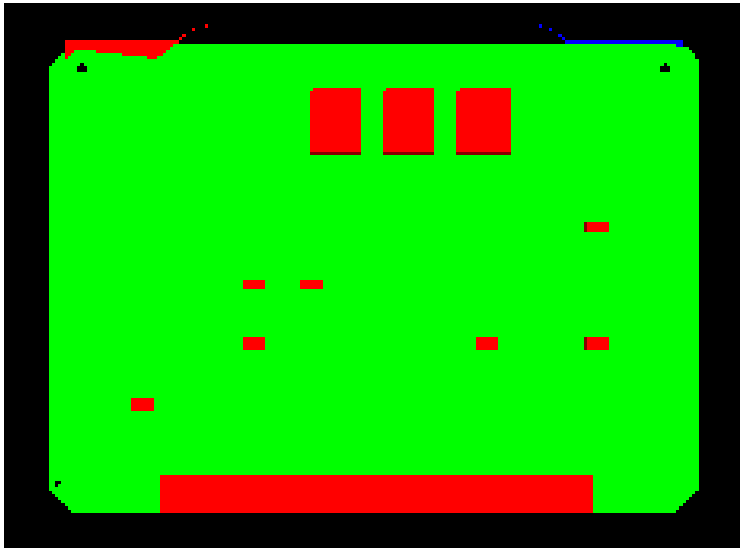
Test Case Purpose
Test circular arcs in outlines and multiple placement of single part.



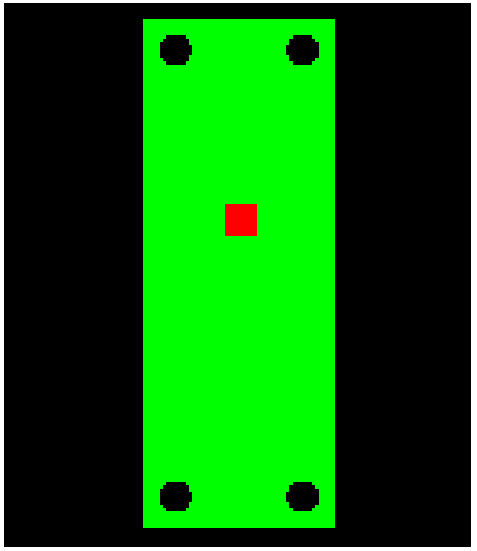
Test History:
A direct translation using TLDi Software PCBto3D from IDF to Solid Edge.
Translate IDF files to STEP AP203 file format. Rename resulting STEP file from tidf.step to tidf.stp. Inport STEP file into Solid Edge

Filename: tidf-B.brd
Author: Jim Evans
Design Source: IDF Data
Translator: Many
Post Processing: None

AnnexK Assembly

Test Case Purpose	
Test History:	**Filename:** annexk_assembly.stp **Author:** Kevin Cline **Design Source:** IDF Version 2.0 **Translator:** IDF to AP210 **Post Processing:** None

AnnexK Component

Test Case Purpose	
Test History:	**Filename:** annexk_component.stp **Author:** Kevin Cline **Design Source:** IDF Version 2.0 **Translator:** IDF to AP210 **Post Processing:** None

Proposed AP210 Test Cases

- Complete 2D Geometry

Interface Drawing

Test Case Purpose Provide an example of the "interface drawing" for a PWA.	
Test History:	**Filename:** Atx.210 **Author:** Mike Keenan **Design Source:** ATX Spec. 2.01 **Translator:** IDF to AP210 **Post Processing:** Expected

Complete 2D Geometry

Test Case Purpose Validate that all 2-D geometry types are handled.	**Description:** Contains a board outline and only a board outline with all allowed 2-D geometry types.
Test History:	**Filename:** **Author:** TBD **Design Source:** **Translator:** **Post Processing:**

Recommended Practice AP210 Test Cases

- AP203 models of figures from recommended practices
- Created in UGS
- All included in database
- Need to add footprint definitions to at least a couple of them.

Where we are today

- Have an incomplete list of the Test Cases we need.
- Have a very informal Test Case process.
- Have not integrated the ap203 files from the recommended practices

Where we need to go

- Identify the types of Test Cases we need
- Establish a Test Case process.
- Update the Test Cases to E2

Proposed Test Case Process