**USB CHIP VERIFICATION (DIG PART)**

1. **Test-plan descriptions**
2. **Read OTP memory (in boot phase)**
   1. **Descriptions:**

In order to verify the load OTP data operation in the boot phase on USB chip.

* 1. **Implementations:**
* Setup a coverage goal:
* Data value: {ZERO\_DATA, REAL\_DATA}
  + ZERO\_DATA = 8’h00,
  + REAL\_DATA = {8’h01 – 8’hFF}
* Run the test:
* Wait for the power up state finished
* Monitor the data output
* Compare this data with the expected data
* Repeat the test for multiple times to achieve the coverage goal.

1. **Read OTP memory (in test mode)**
   1. **Descriptions:**

In order to verify the load OTP data operation in the test mode on USB chip.

* 1. **Implementations:**
* Setup a coverage goal:
* Data value: {8’h00 – 8’hFF}
* Access test mode
  + Valid access: {P 🡪 H 🡪 S 🡪 G 🡪 N 🡪 X}
  + Invalid access: {wrong order, wrong passcode, etc.}
* Run the test:
* Wait for the power up state finished
* Wait the OTP data load into reg file in the boot phase
* Write data value into register file and monitor the register data after finish i2c transaction
* Access test mode (valid or invalid access)
* Monitor test mode enable signal
* Enable read mode by using i2c interface
* Monitor the data output
* Compare this data with the expected data.
* Repeat the test for multiple times to achieve the coverage goal.

1. **Program OTP memory (in test mode)**  
   **a. Descriptions:**

In order to verify the load OTP data operation in the test mode on USB chip.

1. **Implementations:**

* Setup a coverage goal: Data value: {8’h00 – 8’hFF}
* Access test mode
  + Valid access: {P 🡪 H 🡪 S 🡪 G 🡪 N 🡪 X}
  + Invalid access: {wrong order, wrong passcode, etc.}
* Run the test:
* Wait for the power up state finished
* Wait the OTP data load into reg file in the boot phase
* Write data value into register file and monitor the register data after finish i2c transaction
* Access test mode (valid or invalid access)
* Monitor test mode enable signal
* Enable program mode by using i2c interface
* Monitor the data output
* Compare this data with the expected data.
* Repeat the test for multiple times to achieve the coverage goal.

1. **Read register file (i2c interface)**
   1. **Descriptions:**

In order to verify the read data operation via i2c interface on USB chip.

* 1. **Implementations:**
* Setup a coverage goal:
* Data value: {8’h00 – 8’hFF}
* Register address: {7’h00 – 7’h7F}
* Run the test:
* Wait for the power up state finished
* Wait the OTP data load into reg file in the boot phase
* Write data value into register file and monitor the register data after finish i2c transaction
* Monitor the data output and monitor SDA signal
* Compare this data with the expected data
* Repeat the test for multiple times to achieve the coverage goal.

1. **Write register file (i2c interface)**
   1. **Descriptions:**

In order to verify the write data operation via i2c interface on USB chip.

* 1. **Implementations:**
* Setup a coverage goal:
* Data value: {8’h00 – 8’hFF}
* Register address: {7’h00 – 7’h7F}
* Run the test:
* Wait for the power up state finished
* Wait the OTP data load into reg file in the boot phase
* Write data value into register file and monitor the register data after finish i2c transaction
* Monitor the data stored in register files
* Compare this data with the expected data
* Repeat the test for multiple times to achieve the coverage goal.