

## 1. SYSTEM TEST PLAN

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As outlined in the Functional Specification, the System Test Plan consists of Stage 1 Testing and Stage 2 Testing. In Stage 1 Testing we will be testing individual systems and their components. Each system will be tested separately and simultaneously. As we will be presenting a prototype of our product, Stage 1 Testing will have been verified. In Stage 2 Testing we will be testing the integrated system by combining all the systems together. By the end of Stage 2 Testing, product should be able to adhere to a typical usage as outlined below. A failure in any of the tests would require a redesign of the system or components.

### 1.1 TYPICAL USAGE

By looking at the typical usage of the Haptic Gaming Feedback System (HFGS) in the both game modes, we can outline the appropriate tests needed to be done. How the user plays with the HFGS will not be considered.

1. The user will put on the 360 Nexus Series Haptic System (360-NS-HS).
2. The user will power on the 360-NS-HS.
3. The user will maneuver with the vest on.
  - 3.1. The vest and the components it encloses will be faced with various stresses and impactful force.
4. The user will select the game mode.
  - 4.1. The user will be shot by a projectile in Game Mode 1.
    - 4.1.1. A user will be shot by a projectile while having four green LEDs on.
      - 4.1.1.1. The vibrating motors will provide haptic feedback to whichever body part the user was shot at.
      - 4.1.1.2. LEDs will turn from four green to four red LEDs to signal the user was eliminated.
    - 4.2. The user will be shot by a projectile in Game Mode 2.
      - 4.2.1. A user will be shot by a projectile while having four green LEDs on.
        - 4.2.1.1. The vibrating motors will provide haptic feedback to whichever body part the user was shot at.
        - 4.2.1.2. LEDs will turn from four green to four yellow LEDs to signal the user was shot.
      - 4.2.2. A user will be shot by a projectile while having all yellow LEDs on.
        - 4.2.2.1. The vibrating motors will provide haptic feedback to whichever body part the user was shot at.

- 4.2.2.2. LEDs will turn from four to two yellow LEDs to signal the user was shot.
- 4.2.3. A user will be shot by a projectile while having two yellow LEDs on.
  - 4.2.3.1. The vibrating motors will provide haptic feedback to all body parts.
  - 4.2.3.2. LEDs will turn from two yellow to four red LEDs to signal the user was eliminated.
  - 4.2.3.3. The CPU module will cease to accept any more reader module reads.
- 5. The user can change game mode, reset or power off the 360-NS-HS.
  - 5.1. Choosing game mode via a toggle switch
    - 5.1.1. The LEDs will reset to the initial state.
    - 5.1.2. The CPU module will restart and accept reads from the reader module.
    - 5.1.3. The label on the toggle switch will indicate which game mode is chosen.
  - 5.2. Choosing Reset
    - 5.2.1. The LEDs will reset to the initial state.
    - 5.2.2. The CPU module will restart and accept reads from the reader module.
  - 5.3. Choosing Power Off
    - 5.3.1. The 360-NS-HS will be powered down.
- 6. The user will take off the 360-NS-HS.

## 1.2 STAGE 2 TESTING

The CPU Module and the feedback system, at this stage, are battery powered to simulate the integration of the final system. The verification procedure of testing at this stage is outlined in Table 1.

TABLE 1: STAGE 2 TESTING PLAN AND PROCEDURE

Test	Verification Procedure	Pass/Fail	Comment
The vest is comfortable to wear and maneuver with	Have a test subject wear the vest with full components embedded. Take feedback on the comfort and maneuverability with the vest.		
	Components are held together snugly and do not move as the wearer moves.		
Game Mode 1 Work Flow	Change the game modes via a toggle switch.		
	The game mode is reset via a push button.		
	Change in LED colour will reflect the end of the game (1 health).		
	Motor vibration sequence reflects which direction the user was shot from.		
	Additional tag reader will not result in any feedback after game has ended.		

Test	Verification Procedure	Pass/Fail	Comment
Game Mode 2 Work Flow	Change the game modes via a toggle switch.		
	The game mode is reset via a push button.		
	Change in LED color will reflect health loss in health system game mode (3 health).		
	Motor vibration sequence reflects which direction the user was shot from.		
	Darts may not be reused consecutively after it hits the target.		
	Additional tag reader will not result in any feedback after game has ended.		