# Hydra Testing

### Overview

Testing for the Razer Hydra was conducted on a level by level basis, each with a range of sensitivity and speed settings. Each level presented a particular task in which the Razer Hydra, irrespective of its sensitivity or speed settings should be functional to a certain quality standard to accomplish the individual tasks.

### Method

The first aim is to check that each level can be completed with default settings and no difficulties. This mostly entails full arm extensions to interact with objects, greater application of force to push down the trigger button and move the joysticks (not taking into account the spring trigger mechanism) to achieve a certain coverage of motion.

When the above requirement is satisfied, the sensitivity settings are raised to analyse its impact upon performing the same tasks as above, with the ultimate aim of reducing the amount of effort required to achieve the same coverage of motion under normal circumstances.

With the current built in functionalities mapped to the Razer Hydra device, sensitivity affects the joysticks, trigger buttons and linear movement of the hands within the world. Below are the tests results carried out per level, in order of sensitivity slider settings that are locked at zero and raised one slider at a time. Other buttons such as bumper buttons work on binary values and hence sensitivity has no application here.

### Result

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test #** | **Test Description** | **Sensitivity** | **Expected Output** | **Actual Output** | **Pass/Fail** |
| 1 | Push left controller joystick left and right | 0 | Strafe left and right | Strafe left and right | Pass |
| 2 | Push left controller joystick left and right | 2.5 | Strafe left and right requires less joystick push | As expected | Pass |
| 3 | Push left controller joystick left and right | 5 | Strafe left and right requires less joystick push | As expected | Pass |
| 4 | Push left controller joystick left and right | 7.5 | Strafe left and right requires less joystick push | As expected | Pass |
| 5 | Push left controller joystick left and right | 10 | Strafe left and right requires less joystick push | As expected | Pass |
| 6 | Push left controller joystick up and down | 0 | No effect – forward momentum is kept constant by game mechanics | As expected | Pass |
| 7 | Push left controller joystick up and down | 2.5 | No effect – forward momentum is kept constant by game mechanics | As expected | Pass |
| 8 | Push left controller joystick up and down | 5 | No effect – forward momentum is kept constant by game mechanics | As expected | Pass |
| 9 | Push left controller joystick up and down | 7.5 | No effect – forward momentum is kept constant by game mechanics | As expected | Pass |
| 10 | Push left controller joystick up and down | 10 | No effect – forward momentum is kept constant by game mechanics | As expected | Pass |
| 11 | Push right bumper | N/A | Crouch | As expected | Pass |
| 12 | Push left bumper | N/A | Jump | As expected | Pass |
| 13 | Push right controller joystick left and right | 0 | Look left and right – should be capped to 45 degrees | As expected | Pass |
| 14 | Push right controller joystick left and right | 2.5 | Look left and right requires less push of the joystick – should be capped to 45 degrees | As expected | Pass |
| 15 | Push right controller joystick left and right | 5 | Look left and right requires less push of the joystick – should be capped to 45 degrees | As expected | Pass |
| 16 | Push right controller joystick left and right | 7.5 | Look left and right requires less push of the joystick – should be capped to 45 degrees | As expected | Pass |
| 17 | Push right controller joystick left and right | 10 | Look left and right requires less push of the joystick – should be capped to 45 degrees | As expected | Pass |
| 18 | Push right controller joystick up and down | 0 | Camera pans up and down – capped at 90 degrees | As expected | Pass |
| 19 | Push right controller joystick up and down | 2.5 | Camera pans up and down with less joystick push required – capped at 90 degrees | As expected | Pass |
| 20 | Push right controller joystick up and down | 5.0 | Camera pans up and down with less joystick push required – capped at 90 degrees. | As expected | Pass |
| 21 | Push right controller joystick up and down | 7.5 | Camera pans up and down with less joystick push required – capped at 90 degrees | As expected | Pass |
| 22 | Push right controller joystick up and down | 10 | Camera pans up and down with less joystick push required – capped at 90 degrees. | As expected | Pass |

Table 1.1 - Obstacle Avoidance Level

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test #** | **Test Description** | **Sensitivity** | **Expected Output** | **Actual Output** | **Pass/Fail** |
| 1 | Push left controller joystick left and right | 0 | Strafe left and right | Strafe left and right | Pass |
| 2 | Push left controller joystick left and right | 2.5 | Strafe left and right requires less joystick push | As expected | Pass |
| 3 | Push left controller joystick left and right | 5 | Strafe left and right requires less joystick push | As expected | Pass |
| 4 | Push left controller joystick left and right | 7.5 | Strafe left and right requires less joystick push | As expected | Pass |
| 5 | Push left controller joystick left and right | 10 | Strafe left and right requires less joystick push | As expected | Pass |
| 6 | Push left controller joystick up and down | 0 | Move forward and backward less joystick push | As expected | Pass |
| 7 | Push left controller joystick up and down | 2.5 | Move forward and backward requires less joystick push | As expected | Pass |
| 8 | Push left controller joystick up and down | 5 | Move forward and backward less joystick push | As expected | Pass |
| 9 | Push left controller joystick up and down | 7.5 | Move forward and backward less joystick push | As expected | Pass |
| 10 | Push left controller joystick up and down | 10 | Move forward and backward less joystick push | As expected | Pass |
| 11 | Push right bumper | N/A | Crouch | As expected | Pass |
| 12 | Push left bumper | N/A | Jump | As expected | Pass |
| 13 | Push right controller joystick left and right | 0 | Rotate character left and right – yaw rotation should not be capped to 45 degrees like the other levels | As expected | Pass |
| 14 | Push right controller joystick left and right | 2.5 | Rotate character left and right requires less push of the joystick | As expected | Pass |
| 15 | Push right controller joystick left and right | 5 | Rotate character left and right requires less push of the joystick | As expected | Pass |
| 16 | Push right controller joystick left and right | 7.5 | Rotate character left and right requires less push of the joystick | As expected | Pass – unlike the other levels, this one influences the heading of the character |
| 17 | Push right controller joystick left and right | 10 | Rotate character left and right requires less push of the joystick | As expected | Pass – unlike the other levels, this one influences the heading of the character |
| 18 | Push right controller joystick up and down | 0 | Camera pans up and down – capped at 90 degrees | As expected | Pass – unlike the other levels, this one influences the heading of the character |
| 19 | Push right controller joystick up and down | 2.5 | Camera pans up and down with less joystick push required – capped at 90 degrees | As expected | Pass – unlike the other levels, this one influences the heading of the character |
| 20 | Push right controller joystick up and down | 5.0 | Camera pans up and down with less joystick push required – capped at 90 degrees. | As expected | Pass |
| 21 | Push right controller joystick up and down | 7.5 | Camera pans up and down with less joystick push required – capped at 90 degrees | As expected | Pass – unlike the other levels, this one influences the heading of the character |
| 22 | Push right controller joystick up and down | 10 | Camera pans up and down with less joystick push required – capped at 90 degrees. | As expected | Pass |
| 23 | Jump pad can be activated by performing a jump action | N/A | Pressing jump(right bumper) while standing on hover pad causes the player to elevate | Success – however, if the user jumps into the hover pad as opposed to jumping from the centre, then they do not get as much elevation | Pass |
| 24 | Player can clear the jump over the grounded barrier at minimum speed | N/A | Player clears barrier without landing on top of it when jump is timed correctly | Success | Pass |
| 25 | Player can crouch below the raised barrier | N/A | Player crouches below raised barrier sufficient enough to pass underneath | Success | Pass |

Table 1.2 - Way Finding Level

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test #** | **Test Description** | **Sensitivity** | **Expected Output** | **Actual Output** | **Pass/Fail** |
| 1 | Push left controller joystick left and right | 0 | Strafe left and right | Strafe left and right | Pass |
| 2 | Push left controller joystick left and right | 2.5 | Strafe left and right requires less joystick push | As expected | Pass |
| 3 | Push left controller joystick left and right | 5 | Strafe left and right requires less joystick push | As expected | Pass |
| 4 | Push left controller joystick left and right | 7.5 | Strafe left and right requires less joystick push | As expected | Pass |
| 5 | Push left controller joystick left and right | 10 | Strafe left and right requires less joystick push | As expected | Pass |
| 6 | Push left controller joystick up and down | 0 | No effect – player should have absolutely no walking or strafing movement in this level | As expected | Pass |
| 7 | Push left controller joystick up and down | 2.5 | No effect – player should have absolutely no walking or strafing movement in this level | As expected | Pass |
| 8 | Push left controller joystick up and down | 5 | No effect – player should have absolutely no walking or strafing movement in this level | As expected | Pass |
| 9 | Push left controller joystick up and down | 7.5 | No effect – player should have absolutely no walking or strafing movement in this level | As expected | Pass |
| 10 | Push left controller joystick up and down | 10 | No effect – player should have absolutely no walking or strafing movement in this level | As expected | Pass |
| 11 | Push right bumper | N/A | No effect – player should not be able to jump in this level | As expected | Pass |
| 12 | Push left bumper | N/A | No effect – player should not be able to crouch in this level | As expected | Pass |
| 13 | Push right controller joystick left and right | 0 | Rotate character left and right – should be capped to 45 degrees | As expected | Pass |
| 14 | Push right controller joystick left and right | 2.5 | Rotate character left and right requires less push of the joystick – should be capped to 45 degrees | As expected | Pass |
| 15 | Push right controller joystick left and right | 5 | Rotate character left and right requires less push of the joystick – should be capped to 45 degrees | As expected | Pass |
| 16 | Push right controller joystick left and right | 7.5 | Rotate character left and right requires less push of the joystick – should be capped to 45 degrees | As expected | Pass |
| 17 | Push right controller joystick left and right | 10 | Rotate character left and right requires less push of the joystick – should be capped to 45 degrees | As expected | Pass |
| 18 | Push right controller joystick up and down | 0 | Camera pans up and down – capped at 90 degrees | As expected | Pass |
| 19 | Push right controller joystick up and down | 2.5 | Camera pans up and down with less joystick push required – capped at 90 degrees | As expected | Pass |
| 20 | Push right controller joystick up and down | 5 | Camera pans up and down with less joystick push required – capped at 90 degrees | As expected | Pass |
| 21 | Push right controller joystick up and down | 7.5 | Camera pans up and down with less joystick push required – capped at 90 degrees | As expected | Pass |
| 22 | Push right controller joystick up and down | 10 | Camera pans up and down with less joystick push required – capped at 90 degrees | As expected | Pass |
| 23 | Buttons can be pressed on touch panel when hand makes contact | N/A | Button turns green or red depending on sequence. | Button turns green or red depending on sequence. | Pass |
| 24 | Shapes can be picked and held | 0.0 | Shape is bounded by joint constraint to hand | Shape is bounded to hand, position depends on where it is picked up from | Pass |
| 25 | Shapes can be picked and held with less effort on trigger press | 2.5 | Shape is bounded by joint constraint to hand | Shape is bounded to hand, position depends on where it is picked up from | Pass |
| 26 | Shapes can be picked and held with less effort on trigger press | 5.0 | Shape is bounded by joint constraint to hand | Shape is bounded to hand, position depends on where it is picked up from | Pass |
| 27 | Shapes can be picked and held with less effort on trigger press | 7.5 | Shape is bounded by joint constraint to hand | Shape is bounded to hand, position depends on where it is picked up from | Pass |
| 27 | Shapes can be picked and held with less effort on trigger press | 10 | Shape is bounded by joint constraint to hand | Shape is bounded to hand, position depends on where it is picked up from | Pass |
| 28 | Shapes can be dropped by moving them to shape window. | N/A | Shape releases from hand and falls through window. | Shape releases from hand and falls through window. | Pass |

Table 1.3 – Object Interaction Level