Appendix A Requirement and Verification Table (R&V)

Table 2: Table R&V for Infrared Sensors

Requirement	Verification	Verification status (Y or N)
1. The sensor must be able to measure distances between the sensor and player's hand from 10 to 80 cm. with 8% of acceptable deviation 2. Update period is approximately 38 ms with 10% of acceptable deviation	1. A ruler will be used to measure distances from the sensor while changes in output voltage will be tested with a voltmeter. Voltage fluctuations must detect at desired maximum and minimum distances. 2. 2. The update period confirm by datasheet	1. Y 2. Y

Table 3: Table R&V for Microcontroller: LPC1114FN28/128

Requirement	Verification	Verification status (Y or N)

1. The chip must have at least 6 general digital input/output pins. 2. The chip must have an internal Analog/Digital converter with at least 2 input channels 3. The Analog/Digital converter must not have its delay more than 3 ms 4. The chip must be able to output square waves up to 600 Hz	1. The chip has 22 general input/output pins [2] 2. It has an internal Analog/Digital converter (up to 6 input channels) 3. The Analog/Digital converter takes about 2.44 μs per conversion 4. The system clock is 50 MHz (which is more than enough for processing 600 Hz square waves)	1. Y 2. Y 3. Y 4. Y

Table 4: Table R&V for Waveform modifier

Requirement	Verification	Verification status (Y or N)
1. The waveform circuit must be able to produce clean sine wave and sawtooth wave.	1. Run a square waveform through the circuits and examine the waveform converted is clean using an oscilloscope.	1. Y

Table 5: Table R&V for Decoder/Demultiplexer

Requirement	Verification	Verification status (Y or N)

1. It has to be able to decode to select at least 12 different output. 2. The outputs have to have at least 3 +/- 5% volts in order to supply each LED.	1. The outputs and the selector can be tested by constructing a simple LED circuit. Make sure that LED lit up corresponds to the selector. 2. The maximum supply voltage is 7 volts, so 3 +/- 5% volts should work perfectly. It can be tested by using voltmeter to see if the supply voltage is 3 +/- 5% volts, do outputs also have 3 +/- 5% volts.	1. Y 2. Y

Table 6: Table R&V for LEDs

Requirement	Verification	Verification status (Y or N)
1. They have to light up and be at least visible 3 +/- 5% meters away	1. This can be tested by lighting up the LED and observe its intensity from that distance for visibility.	1. Y