Analysis of Design Specifications

	Wishes	Requirements	Standards	Company	Subcontractor	Distributors	End Users	Production	Distrib.	Use	Disposal
Performance											
Sensing and displaying the temperature with an accuracy around +/- 2 C and humidity with an accuracy +/- 3% inside the propagator at the corresponding locations of the propagator											
Storing the temperature and humidity data hourly during the day on a SD card that can be removed											
Alarming the farmer when the temperature exceeds its threshold or humidity goes below the threshold to take necessary actions											
Battery powered with the ability to operate a minimum of 1 day duration by one battery											
Three Sensor units being enough to accurately represent the temperature and humidity distribution of the propagator											
Impact from the environment											
The sensor units should be water proofed											
Anti-rusting											
Should not interact with any chemicals used for the plants in the propagator as fertilizer											
Should be able to operate at a moderate range of temperature from 10 C to 60 C											
Damages from the farmers due to the negligence when using the sensors and Display Unit											
RF communication between the Display Unit and the sensors should not be susceptible to the interference											
Impact on the environment											
Device is made of non-toxic materials											
Micro particles occur from the wearing and tearing will not alter the controlled environmental factors inside the propagator											
No poisonous by-products											
Minimum wastage during the production											
Lifetime											
The Display Unit and the alarming unit should last a minimum of 2 years while the sensors are to last a minimum of 1 years.											
The product should ideally last the duration of three cultivations of plants											

Maintenance											
The battery's should be replaced when the indicators displays a charge of 5%											
Modular components. Burned out or broken parts are easily replaceable											
Zero Day to Day maintenance											
It should not require a maintenance for more than 2 weeks											
One technical person who is aware about the product will be needed to maintain the product											
Production Cost											
Maximum cost per sensing unit = LKR 530 ; Max cost of sensing units per product = LKR 1650											
Maximum cost per Display Unit = LKR 750											
Maximum cost per alarming unit = LKR 100											
Package, Size and Weight											
One package will include 3 sensor units, a Display Unit and an alarming unit - Sensor Units: 3 x 1.5 x 2 inches 200g - Display Unit: 5 x 6 x 3 inches 500g											
No packaging needed post installation											
Appearance and Finish											
Able to input the temperature and humidity thresholds manually using the key pad											
The temperature and humidity values for each 3 points in a propagator should be displayed separately on the LCD screen											
The battery level is indicated using few levels with three different colors of LEDs (i.e. Red – 2% to 20%, Orange – 21% to 80% and Green – 80% to 100%)											
Types of material											
Plastic											
Acrylic											
Wood											
Reliability/ Accuracy											
6 sigma Standard failure rate 1 in a million											

Safety											
Surge Protection											
Water proofed sensor and Display Units											
Accurate Battery Level indicator											
Installation											
Can be installed during or after the construction of the propagator											
Can be scaled down to smaller propagators that read values using one sensor unit only											
Extendable even to the mass scale Green House production											
Do not require expertise knowledge for installation											
Installation is free of charge											
Less than 1 man hours to set up the product per propagator											
Operations											
Autonomous in sensing and displaying the temperature and humidity values inside the propagator											
Saving the logs in the main frame is manual i.e. the SD card needs to be removed and read manually in the computer to save the data in the main frame											
The LCD screen will be switched off automatically after 5 min and can be switched on using a button											
Reuse											
Modular design that makes it easily removable for use elsewhere											
Disposal											
E waste centers											
None of the components are classified as hazardous waste											
Recycling											
80% recyclable											