**Project Risk Assessment**

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| --- | --- | --- | --- | --- |
| **Project title:** | Frequency Downconverter | | | |
| **Student experimenter:** | Weizhou Wen, Yimian Liu, Boyao Yang, Yidi Song | | | |
| **Project supervisor:** | Dr. Christos Zachariacles | | | |
| **Location:** | University of Liverpool | | | |
| **Duration:** | **Start date:** | 29/11/2019 | **End date:** | 06/03/2019 |

|  |  |
| --- | --- |
| **Safety key no. (if applicable):** |  |
| **Main point of isolation:** |  |
| **Special precautions/instructions:** |  |

**LEVEL OF SUPERVISION**

(to be completed by the Academic Supervisor/Laboratory Manager)

|  |  |
| --- | --- |
| Work to be carried out only with other Authorised Experimenters/Authorised Student Experimenters present in the laboratory: |  |
| Work to be carried out in the presence of the student’s Academic Supervisor: |  |
| Work to be carried out in the presence of a Senior Authorised Experimenter (SAE): |  |
| Work to be carried out with a SAE present in the building: |  |

**ACKNOWLEDGEMENT**

The Risk Assessment is valid only for the work described in this document and for the indicated dates. Any change in the work beyond what is identified in this document means that work must stop and the Risk Assessment reviewed. This Risk Assessment should be clearly displayed at the location where the work is taking place at all times.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Student name:** |  | **Signature:** |  | **Date:** |  |
| **Supervisor name:** |  | **Signature:** |  | **Date:** |  |

**METHOD STATEMENT**

<Description of the experiment/work undertaken including relevant diagrams and list of equipment>

List of equipment:

Power supply, digital multimeter, signal generator, oscilloscope, HVPD Kronos monitor.

Method:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Hazard(s)**  **&**  **Possible Consequences** | **Persons or Equipment**  **at Risk** | **Control measures applied to eliminate / minimise risk** | **Residual risk with control measures applied** | | | |
| Severity | Likelihood | Risk rating | Risk Acceptable? |
| Electric shock from low voltage(below 1kV) | Test Operator | Standard UK 230V is used. Turn on the electric power only after that experimenters confirm the correctness of circuit and equipment. Don’t operate the instruments with wet hands. | 2 | 2 | 4 | yes |
| Fire | Anyone in the Building | Always turn off the power before leaving. Check the circuit before charging it. Keep inflammable stuffs away from soldering irons and circuit. | 5 | 1 | 5 | yes |
| Manual handling | Test Operator | Follow the experimental instruction. | 1 | 5 | 5 | yes |
| High temperatures | Test Operator | Use the soldering iron correctly. After using the soldering iron, cut off the power and place the soldering iron in the specified position. | 2 | 2 | 4 | yes |
| Chemical spillage | Test Operator | Toxic Solder. The operator should hold his/her breath when he/she is soldering | 2 | 2 | 4 | yes |
| Chemical contact (ingestion, eye & skin contact) | Test Operator | Toxic Solder. The operator should wash hands after the experiment and keep proper distance from solder material. | 2 | 2 | 4 | yes |
| Production of dust & fumes | Anyone in the laboratory | Control the time to test in order to control the suction volume. | 1 | 5 | 5 | yes |

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| --- | --- |
| **Risk Assessment Matrix**  Likelihood (1-5) x Severity (1-5) = Risk  (See attached matrix for guidance) | **1 – 5**: **Low**: Tolerable  monitor and manage |
| **6 – 8: Medium:** Review  introduce further controls to reduce to as low as reasonably practicable |
| **9 – 25: High:** Intolerable  do not commence work, further control measures required |

**RECORD OF CHEMICAL USAGE WITHIN EXPERIMENT**

| **Chemical** | **Reason for use** | **Data sheet /COSHH attached?** | **Are hazards resulting from use described in the**  **Risk Assessment Table?** | **Method of disposal** |
| --- | --- | --- | --- | --- |
| soldering tin | Solder components | NO | YES | Keep Caution and careful operation |
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|  |  |  |  |  |

**HAZARD CHECKLIST**

You should indicate the hazards present in the experiment in the table below. If a hazard is present, control measures should be stated on the risk assessment. Note that this list is not exhaustive.

|  |  |  |
| --- | --- | --- |
| **Hazard Type** | **Present** | **Not Present** |
| Electric shock from high voltage (1 kV & Over) |  |  |
| Electric shock from low voltage (Under 1 kV) |  |  |
| Tripping hazards |  |  |
| Slipping hazards |  |  |
| Fire |  |  |
| High temperatures |  |  |
| Low temperatures |  |  |
| High pressure |  |  |
| Low pressure |  |  |
| Chemical spillage |  |  |
| Chemical contact (ingestion, eye & skin contact) |  |  |
| High noise levels |  |  |
| Working at height |  |  |
| Head height hazards |  |  |
| Production of dust & fumes |  |  |
| Manual handling |  |  |
| Production or use of radiation |  |  |
| Use of asphyxiating gases |  |  |
| Any other hazards (specify) |  |  |

**RISK ASSESSMENT SEVERITY MATRIX**

**SEVERITY VALUE** **= Potential consequence of an incident/injury given current level of controls.**

5 Very High: Death / Permanent incapacity / Widespread loss

4 High: Major Injury (Reportable Category) / Severe Incapacity / Serious Loss

3 Moderate: Injury / Illness of 3 days or more absence (reportable category) / Moderate loss

2 Slight: Minor injury / Illness – Immediate 1st Aid only / slight loss

1 Negligible: No injury or trivial injury / illness / loss

**LIKELIHOOD = what is the potential of an incident or injury occurring given the current level of controls.**

5 Almost certain to occur

4 Likely to occur

3 Quite possible to occur

2 Not likely to occur

1 Almost certain not to occur

**Risk Classification Value = Likelihood ⨯ Severity**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Severity | | | | |
|  |  | 1 | 2 | 3 | 4 | 5 |
| Likelihood | 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |

**Risk Classification Value**

|  |  |
| --- | --- |
|  | **1–5**: **Low**: Tolerable  monitor and manage |

|  |  |
| --- | --- |
|  | **6–8: Medium:** Review  introduce further controls to reduce to as low as reasonably practicable |

|  |  |
| --- | --- |
|  | **9–25: High:** Intolerable  do not commence work, further control measures required |