Federal -TVED BUREAU

Basic Electronics Communication and Multimedia Equipment Servicing

Level - II

Learning Guide #25

Unit of Competence: Service and Repair mobile phones

Module Title: Servicing and repairing mobile phones

MO Code: EEL BEC2 M07 1019

TTLM Code: EEL BEC2 TTLM 1019 V1

LO4: Test Repaired Unit

Instruction Sheet	Test Repaired Unit

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Visual inspection of the unit with power off
- Operate the appliance according to manual to confirm defects
- Check the functionalities of mobile units.

This guide will also assist you to attain the learning outcome stated in the above. Specifically, upon completion of this Learning Guide, you will be able to –

- Operating the appliance according to manual to confirm defects.
- Checking the functionalities of mobile units.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” in each information sheets.
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets and LAP Tests if any”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity.
7. After you accomplish Operation sheets and LAP Tests, ensure you have a formative assessment and get a satisfactory result;
8. Then proceed to the next Learning guide.

Information Sheet #1	Reassembling repaired unit according to procedures

1.1How to Open and Disassemble a Mobile Cell Phone

Here we will learn How to open and disassemble any mobile cell phone (Feature Phone and Android Smartphone and iPhone) including Samsung, iPhone, Huawei, Xiaomi, Oppo, LG, Motorola, Mobicel, Lenovo, Nokia, China Mobile Phones or any other brand of cell phone from any mobile cell phone manufacturer. The process and steps are basically same with slight change in the process. To open and disassemble a feature phone is rather easy than to open and disassemble an Android Smartphone or iPhone.

Fig1.1

Tools to Open and Disassemble Mobile Phone

Before proceeding to open and disassemble a mobile cell phone, make sure you have all the required tools for mobile phone repairing. The tools you will need are:

1. T4, T5 and T6 Precision Screwdriver. A screwdriver set or kit can be very useful. These screwdrivers must have magnetic tip to hold the screws so that you don't lose them.
2. Mobil Phone Opener
3. Tweezers

4. Antistatic Wrist Strap
5. Antistatic Hand Gloves
6. Antistatic or ESD-Safe Mat
7. ESD-Safe Apron
8. ESD-Safe Footwear

NOTE: It is very important to use only Antistatic or ESD-Safe tools to open and disassemble a mobile cell phone because small parts inside a mobile phone and SMD Components are very sensitive to ESD or static electricity and can get damaged if precaution is not taken to prevent static electricity.

1. Take OFF, remove the battery cover, and back facial of the mobile phone. You should use a mobile opener tool to remove the back Facia.
2. Remove the battery, SIM card and memory card.
3. You will find several small screws at the back. Using suitable precision screwdriver, unscrew and remove all the screws and keep them in a safe box. These screws must be kept very carefully so that they do not get lost.
4. Once all the screws are open, remove the front cover or the front Facia of the mobile phone.
5. Now you have the internal Facia or skeleton of the mobile phone. It is attached to the mobile phone PCB with screws. Unscrew and open all the screws.
6. Remove connectors for display and camera and pull the display and the camera out.

Video: How to Disassemble a Feature Mobile Phone

Fig 1.2

How to Open and Disassemble Android Smartphone: Step by Step Instructions

https://youtu.be/cxcgJ_9Hj2c

How to Open and Disassemble Android Smartphone

1. Remove the back cover carefully. Most people use their nails for this but you should always use a mobile phone opening tool. Modern smartphones have Fingerprint sensor and Antenna Connector attached to the back cover. So, be careful or you will damage these connectors.
2. Remove the Battery. Removable batteries are easy to remove. But if your Android Smartphone has a Non-Removable Battery then it is connected to the Board with a Connector. Remove this connector first. The non-removable batteries are glued at the bottom with a double-sided tape. Carefully remove this tape and the battery will easily come out.
3. Remove the SIM card and memory card.
4. You will find several small screws at the back. Using suitable precision screwdriver, unscrew and remove all the screws and keep them in a safe box. These screws must be kept very carefully so that they do not get lost.
5. Once all the screws are open, remove the front cover or the front Facia of the smartphone.
6. Now you have the internal Facia or skeleton of the mobile phone. It is attached to the mobile phone PCB with screws. Modern Android Smartphone and iPhone have 2 to 3 PCBs connected to each other using connectors. These PCBs are from Different Sections of Mobile Phone – Network Section, Power Section and Audio Section. Unscrew and open all the screws.
7. Remove connectors for display and camera and pull the display and the camera out.

NOTE: Modern smartphones have too many connectors that can break or get damaged very easily. So, be very careful when opening and disassembling them.

1.2Assembling a Mobile Phone

the following are the steps that you should take when assembling a mobile phone:

1. Fix the vibrator strips of speaker and volume button
2. Fix the motherboard
3. Connect the antenna with wire
4. Place the camera and connect it
5. Place the buzzer
6. Put the camera cover
7. Make sure that the LCD is working before you place the screen
8. Put battery and battery cover

So far you have learnt about the hazards of mobile phone repair, the parts of a mobile phone, the tools to use and how to assemble and disassemble a mobile
phone. Now let us look at how to diagnose and repair a mobile phone

Self-check 1	Written test

Name: _____Date: _____

Time Start: _____Time Finish: _____

Instruction: Answer all the questions provided correctly, if you have some clarification regarding the test just raise your hand and ask the assistance of the teacher.

1, list the tool and material for assemble and disassemble mobile phone

Operation sheet 1	Assembling/disassemble a Mobile Phone

Purpose: Assembling a Mobile Phone

Procedure:

. **Step 1.**Fix the vibrator strips of speaker and volume button

step 2. Fix the motherboard

step 3. Connect the antenna with wire

step 4. Place the camera and connect it

step 5. Place the buzzer

step 6. Put the camera cover

step 7. Make sure that the LCD is working before you place the screen

step 8. Put battery and battery cover

Information sheet 2	Subjecting to final testing reassembled units and cleaning in conformity with manufacturer's specifications

2.1Test repaired unit

First step in handling troubleshooting procedure:

2.1.1.Visualization Checkup-

Before proceeding to anything always considers the fact that a mobile phones handset is fragile object. Check and have take a look around every inch of the handsets package and layout, In this manner you can identify if the handset is in repairable condition, something like checking the whole printed circuit board components and parts, if it is free from dust, corrosion, bended, breakage etc.

1. **Know the Phones Status** - Ask the user or the costumer about the phones history before the problem occurs. Letting know the phones history like accidentally soaked into a liquids or water, dropped, and thrown etc.

In this manner you can get an idea where to start or begin with.

2. **Doing Software check up** - Use a certain flashing device for that particular handset product to be able to read logs, logs is a reading of mobile phones firmware programmed and installed unto it. This is a big help for most advance mobile technician this days, A logs reading can help you where the faulty line or parts occurs. If you are not familiar about how to read logs you can ask to that certain flashing device product supporters and creator.

   You can do flash, reformat at first hand if found something wrong with the mobile phones firmware. If all methods of software already done and nothing happen, proceed to hardware troubleshooting.

3. **Analyze The Circuit** - After dismantling and do visualization check up,be patient and take your time to analyze the whole circuits layout, and think of a step by step plan procedure in your mind where or how to begin with. A Special Operation Procedure is good way and a reliable source of idea within

yourself, not only by enhancing your skills but you are also practicing a self discipline method.

Now let's take one example of basic hardware troubleshooting methods in one particular mobile phone handsets. In this simple way you can then manage how to troubleshoot or been able on finding faulty parts or components within a mobile phone circuitry.

Troubleshooting Mobile Phone Guides:

FAULT	**REMEDY**
No Audio	Speaker 1. Clean up speaker terminals. 2. Check speaker. If bad, replace. 3. Circuit trace for open circuit connection. 4. Check coupling resistors/capacitors connected to speaker. COBBA 1. Reheat COBBA IC 2. If problem still remains, rework COBBA IC. 3. If problem still remains, replace COBBA IC. CPU 1. Reheat CPU IC if it is not sealed. 2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.
No Ringtone	Buzzer 1. Clean up buzzer terminals. 2. Check buzzer. If bad, replace. 3. Circuit trace for open circuit connection. 4. Check coupling resistors/capacitors connected to speaker.

	UI Control IC 1. Reheat UI Control IC 2. If problem still remains, replace UI Control IC. CPU 1. Reheat CPU IC if it is not sealed. 2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.
No Backlights	LED 1. Check LEDs. If bad, replace. 2. Circuit trace for open circuit connection. 3. Check coupling resistors/capacitors connected to LEDs. UI Control IC 1. Reheat UI Control IC 2. If problem still remains, replace COBBA IC. CPU 1. Reheat CPU IC if it is not sealed. 2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.
Keypad Malfunction	Membrane 1. Check and clean up membrane. 2. Replace membrane Keypad 1. Check keypad and clean terminals. 2. Circuit traces connections. CPU 1. Reheat CPU IC if it is not sealed. 2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.
	SIM Card

Insert Sim Card	1. Check SIM card and clean up terminals 2. Replace with working SIM Card. SIM Card Holder 1. Clean up terminals. CCONT 1. Reheat CCONT IC. 2. If problem still remains, rework CCONT IC. 3. If problem still remains, replace CCONT IC. CPU 1. Reheat CPU IC if it is not sealed. 2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.
Not Charging	Charger 1. Check charger. Measure voltage output. Battery 1. Check battery voltage Battery terminals 1. Clean up battery terminals. Charger holder 1. Clean up terminals Fuse 1. Check fuse. 2. Circuit trace for possible open circuit. CHAPS 1. Reheat CHAPS IC. 2. If problem still remains, rework CHAPS. 9. If problem still remains, replace CHAPS. CCONT 1. Reheat CCONT IC. 2. If problem still remains, rework CCONT IC.

	3. If problem still remains, replace CCONT IC. CPU 1. Reheat CPU IC if it is not sealed. 2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.
No Power	Battery 1. Check and measure battery voltage. Battery terminals 1. Clean up battery terminals. Power switch 1. Check switch. 2. Circuit trace switch connections RF power amplifier 1. Check B+ and ground terminals for shortage and leakage 2. Remove power amplifier CCONT 1. Reheat CCONT IC 2. If problem still remains, rework CCONT IC. 3. If problem still remains, replace CCONT IC. RAM 1. Reheat RAM IC. 2. If problem still remains, rework RAM IC. 3. If problem still remians, replace RAM IC. FLASH IC 1. Reheat FLASH IC. 2. If problem still remains, rework FLASH IC. 3. If problem still remains, replace FLASH IC. CPU 1. Reheat CPU IC if it is not sealed.

	2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.
Vibrator Problem	Vibrator 1. Clean up vibrator terminal 2. Check vibrator, if bad replace 3. Circuit trace for open connection 4. Check coupling resistors/capacitor connected to vibrator UI control IC 1. Reheat UI control IC 2. If problem still remain, replace UI control IC CPU 1. Reheat CPU IC , if it is not sealed 2. If problem still remain, replace CPU 3. If problem still remain, replace the board
No Signal Problem **GSM Frequencies** Single band – 900 MHz Dual band – 900 MHz/1800 MHz Tri band – 900 MHz/1800 MHz/1900 MHz Quad band – 850 MHz/900 MHz/1800 MHz/1900 MHz	
No Network	Antenna 1. Clean antenna terminals. Antenna switch 1. Reheat antenna switch 2. Check if bad, replace. RX(receiver) filter 1. Reheat RX filter. 2. Check if bad, replace. GSM/DCS HF Amplifier

	1. Reheat IC 2. Check If bad , replace. RX Coupler 1. Reheat mutual coupler. 2. Check if bad, replace. HAGAR 1. Reheat HAGAR 2. If problem still remains, rework HAGAR. 3. If problem still remains, replace HAGAR. COBBA 1. Reheat COBBA 2. If problem still remains, rework COBBA. 3. If problem still remains, replace COBBA. CCONT 1. Reheat CCONT 2. If problem still remains, rework CCONT. 3. If problem still remains, replace CCONT. VCO 1. Reheat VCO 2. Check if bad, replace CPU 1. Reheat CPU if it is not sealed. 2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.
No Access	Antenna switch 1. Reheat antenna switch. 2. Check if bad, replace. TX(Transmit) coupler 1. Reheat TX coupler 2. Check if bad, replace.

	TX filter 1. Reheat TX filter 2. Check if bad, replace. Pre amplifier transistor 1. Reheat transistor. 2. Check if bad, replace. 3. Circuit trace for open circuit connections to transistor. RF power amplifier 1. Reheat power amplifier 2. Check if bad, replace/ 3. Circuit trace for open circuit connections to power amplifier. HAGAR 1. Reheat HAGAR 2. If problem still remains, rework HAGAR. 3. If problem still remains, replace HAGAR. COBBA 1. Reheat COBBA 2. If problem still remains, rework COBBA. 3. If problem still remains, replace COBBA. CCONT 1. Reheat CCONT 2. If problem still remains, rework CCONT. 3. If problem still remains, replace CCONT. CPU 1. Reheat CPU if it is not sealed 2. If problem still remains, replace CPU. 3. If problem still remains, replace entire board.

Wet Unit	Clean stained board with solvent(lacquer thinner) for 1 to 2 minutes. Test circuit board for open connection. Troubleshoot same with no power.
Contact Service	Most BGA IC contribute to this problem 1. CCONT 2. COBBA 3. RAM (Random Access Memory) 4. FLASH IC 5. EEPROM IC (Electronically Erasable Programmable Read Only Memory) 6. CPU (Central Processing Unit)
Hang	COBBA 1. Reheat COBBA. 2. If problem still remains, rework COBBA. 3. If problem still remains, replace COBBA. EEPROM 1. Reheat EEPROM IC 2. If problem still remains, replace EEPROM IC CPU 1. Reheat CPU it is not sealed 2. If problem still remains, replace CPU 3. If problem still remains, replace entire board.

Self-check 2	Written test

Name: _____Date: _____

Time Start: _____Time Finish: _____

Instruction: Answer all the questions provided correctly, if you have some clarification regarding the test just raise your hand and ask the assistance of the teacher

Part I. Give the best answer for the following questions (3 points each)

1. If the fault is No Audio in cell phone what is its Remedy?

Answer Sheet

Scored Point

Part I

1. _____
   _____
   _____
2. _____
   _____
   _____
3. _____
   _____
   _____
4. _____
   _____
   _____
5. _____
   _____
   _____

Information sheet 3	Complying service completion procedures and documentation based on manual

3.1Complying service completion procedures and documentation based on manual

Templates for policy and procedure documents.

Components of Policy Documents.

Campus policy documents should use a paragraph numbering system that permits them to be cited easily and they should include each of the following components:

a.Best Practices for Documenting Your Project

1. Include A README file that contains. ...
2. Allow issue tracker for others.
3. Write an API documentation. ...
4. Document your code.
5. Apply coding conventions, such as file organization, comments, naming conventions, programming practices, etc.
6. Include information for contributors.

b.What are maintenance documents?

Maintenance planning documents. ... Aircraft maintenance includes the tasks that are required to restore or maintain the systems, components, and structures of an aircraft in a safe and airworthy condition.

c.What are examples of documentation?

Documentation is a set of documents provided on paper, or online, or on digital or analog media, such as audio tape or CDs. Examples are user guides, white papers, on-line help, quick-reference guides. It is becoming less common to see paper (hard copy) documentation

d.What is the difference between Document and documentation?

The word 'Documentation' is non-countable noun and is a collection of or body of material of any subject/topic. "This is just one report, where is the documentation for the whole project?" Document is a form of information that means record,or a capture of things and events so information will not be lost.

Templet

1.	**Headline banner**	***UC Santa Cruz Policy***, the policy title, issuing date, and an identification block which includes: Policy number, Page Number, Effective Date, "Supersedes" notification, Office of Origin, and Policy Approval Authority. The Policy Number and Page Number would appear on all subsequent pages; the footer of each page should repeat the Issuing Date and the Policy Title. *Note*: The policy title should be carefully selected so that it is simple and clearly conveys the policy's content.
2.	**Purpose of the policy/ Policy statement**	A *concise* statement of the rationale for the policy, including if appropriate, reference to external regulations, further policy discussion, etc. Summary (one paragraph) clearly stating the important policy content.
3.	**Detailed policy statement**	Complete policy statement. If the effective date is different from the issuing date in the headline banner, and then an appropriate discussion of when the policy applies should be included with the policy statement.
4.	**Applicability**	Exactly who the policy applies to and the consequences for non-compliance, if applicable.
5.	**Definitions**	Definitions of terms (as needed).
6.	**Cognizant office(s)/ Getting Help**	The office and specific individual position title (with telephone number and electronic mail address, as appropriate) that should be contacted for interpretations, resolution of problems, and special situations.
7.	**Policy authority**	The highest administrative or academic officer or group authorizing the policy. If appropriate, one might also note the next required review date.
8.	**Related policies/ References for more information**	Information about related policies or procedures, guidelines, forms, etc. Give complete references and ensure that documents cited are readily available (i.e., either as widely distributed manuals such as the Business and Finance Bulletins, Accounting Manual, Contracts and Grants Manual; or available in the on-line campus Policies and Procedure Manuals). If needed, provide additional background discussion here.
9.	**Implementation procedures**	Reference to detailed procedures that are recommended in order to carry out the intent of the policy.

3.1.1What is the main purpose of documentation?

The purpose of documentation is to: Describe the use, operation, maintenance, or design of software or hardware through the use of manuals, listings, diagrams, and other hard- or soft-copy written and graphic materials

Why proper documentation is so important?

The purpose of complete and accurate patient record documentation is to foster quality and continuity of care. It creates a means of communication between providers and between providers and members about health status, preventive health services, treatment, planning, and delivery of care.

3.2 MAINTENANCE MANUAL

Overview

The Maintenance Manual provides maintenance personnel with the information necessary to maintain the system effectively. The manual provides the definition of the software support environment, the roles and responsibilities of maintenance personnel, and the regular activities essential to the support and maintenance of program modules, job streams, and database structures.

In addition to the items identified for inclusion in the Maintenance Manual, additional information may he provided to facilitate the maintenance and modification of the system. Appendices to document various maintenance procedures standards, or other essential information may he added to this document as needed.

INTRODUCTION

This section provides general reference information regarding the Maintenance Manual. Whenever appropriate, additional information may be added to this section.

Purpose

In this section, describe the purpose of the manual and reference the system name and identifying information about the system and its programs.

Points of Contact

This section identifies the organization(s) responsible for system development maintenance, and use. This section also identifies points of contact (and alternate if appropriate) for the system within each organization.

Project Reference

This section provides a bibliography of key project references and deliverables produced during the information system development life cycle.

Glossary

Provide a glossary with definitions of all terms, abbreviations, and acronyms used in the manual. If the glossary is several pages in length, place it as an appendix.

SYSTEM DESCRIPTION

The subsequent sections provide an overview of the system to be maintained.

System Application

This section provides a brief description of the purpose of the system, the functions it performs, and the business processes that the system is

intended to support. If the system is a database or an information system, include a general description of the type of data maintained, and the operational sources and uses of those data.

System Organization

In this section, provide a brief description of the system structure, major system components, and the functions of each major system component. Include charts, diagrams, and graphics as necessary.

Security

This section provides an overview of the system's security controls and the need for security and protection of sensitive data. For example, include information regarding procedures to log on/off of the system, provisions for the use of special passwords, access verification, and access statuses as appropriate.

System Requirements Cross-Reference

This section contains an exhibit that cross-references the detailed system requirements with the system design document and test plan. This document, also referred to as a trace ability matrix in other documents, assists maintenance personnel by tracing how the user requirements developed in the FRD are met in other products of the life cycle. Because this information is provided in the system design document, it may he appropriate to repeat or enhance that information in this section.

SUPPORT ENVIRONMENT

This section describes the operating and support environment for the system and program(s). Include a discussion of the equipment, support software, database characteristics, and personnel requirements for supporting maintenance of the system and its programs.

Equipment Environment

This section describes the equipment support environment including the development, maintenance, and target host computer environments. Describe telecommunications and facility requirements, if any.

- **Example**

Computer Hardware

This section discusses the computer configuration on which the software is hosted and its general characteristics. The section should also identify the specific computer equipment required to support software maintenance if that equipment differs from the host computer. For example, if software development and maintenance are performed on a platform that differs from the target host environment, describe both environments. Describe any miscellaneous computer equipment required in this section, such as hardware probe boards that perform hardware-based monitoring and debugging of software. Include any telecommunications equipment.

Facilities

This section describes the special facility requirements, if any, for system and program maintenance and includes any telecommunications facilities required to test the software.

Support Software

This section lists all support software - such as operating systems, transaction processing systems, and database management systems (DBMSs) - as well as software used for the maintenance and testing of the system. Include the appropriate version or release numbers, along with their documentation references, with the support software lists.

Database Characteristics

This section contains an overview of the nature and content of each database used by the system. Reference other documents for a detailed description, including the system design document as appropriate.

Personnel

This section describes the special skills required for the maintenance personnel. These skills may include knowledge of specific versions of operating systems, transaction processing systems, high-level languages, screen and display generators, DBMSs, testing tools, and computer-aided system engineering tools.

SYSTEM MAINTENANCE PROCEDURES

This section contains information on the procedures necessary for programmers to maintain the software.

Conventions

This section describes all rules, schemes, and conventions used within the system. Examples of this type of information include the following:

- System-wide labeling, tagging, and naming conventions for programs, units, modules, procedures, routines, records, files, and data element fields
- Procedures and standards for charts and listings
- Standards for including comments in programs to annotate maintenance modifications and changes
- Abbreviations and symbols used in charts, listings, and comments sections of programs

If the conventions follow standard programming practices and a standards document, that document may be referenced, provided that it is available to the maintenance team.

Verification Procedures

This section includes requirements and procedures necessary to check the performance of the system following modification or maintenance of the system's software components. Address the verification of the system-wide correctness and performance.

Present in detail, system-wide testing procedures. Reference the original development test plan if the testing replicates development testing. Describe the types and source(s) of test data in detail.

Error Conditions

This section describes all system-wide error conditions that may be encountered within the system, including an explanation of the source(s) of each error and recommended methods to correct each error.

Maintenance Software

This section references any special maintenance software and its supporting documentation used to maintain the system.

Maintenance Procedure

This section describes step-by-step, system-wide maintenance procedures, such as procedures for setting up and sequencing inputs for testing. In addition, present standards for documenting modifications to the system.

SOFTWARE UNIT MAINTENANCE PROCEDURES

For each software unit within the system, provide the information requested. If the information is identical for each of the software units it is not necessary to repeat it for each software unit. If the information in ally of the areas discussed below is identical to information provided in Section 4, System

Maintenance Procedures, for the system maintenance procedures, then reference that area. This section should contain the following:

- Unit Name And Identification—Provide the name or identification of each software unit that is a component of the system. Repeat the following information for each unit name.
- Description—Provide a brief narrative description of the software unit. Reference other sections within the life cycle that contains more detailed descriptive material.
- Requirements Cross-Reference—Include the detailed user requirements satisfied by this particular software unit. It may he a matrix that traces the system requirements from the FRU) through the system design document and test plan for the specific software units. Other life cycle documentation may be referenced as appropriate.
- Conventions—Describe all rules, schemes, and conventions used within the program. If this information is program-specific, provide that information here. If the conventions are all system-wide, discuss them Section 4. If the conventions follow standard programming practices and a standards document, that document may be referenced here.
- Verification Procedures—Include the requirements and procedures necessary to check the performance of the program following modification or maintenance and addresses the verification of program correctness, performance and detailed testing procedures. If the testing replicates development testing, it may be appropriate to reference the original development test plan.
- Error Conditions— Describe all program-specific error conditions that may be encountered provide an explanation of the source(s) of each error, and recommend methods to correct each error. If these error conditions are the same as the system-wide error conditions described in Section 4.3, Error Conditions. that section may be referenced here.

Listings—Provide a reference to the location of the program listings.

Self-check 3	choose

Name: _____Date: _____

Time Start: _____Time Finish: _____

Instruction: Answer all the questions provided correctly, if you have some clarification regarding the test just raise your hand and ask the assistance of the teacher.

1_____ includes the tasks that are required to restore or maintain the systems, components, and structures of an aircraft in a safe and airworthy condition.

A. maintenance documents
B. CMD
C. SMD
D. all

2._____ is a set of documents provided on paper, or online, or on digital or analog media, such as audio tape or CDs.

A. Research
B. Documentation
C. Report writing
D. all

answer score

1._____

2_____

Information sheet 4	Disposing waste materials in accordance with environmental requirements

4.1How do you dispose of waste materials?

1.How to Dispose of Garbage Properly

1. Sort your garbage into a few different bins. ...
2. Bring any garbage that can be reused, such as toys or clothing, to a second-hand store to be resold.
3. Take recyclables such as glass, plastics and paper to a local recycling canter. ...
4. Turn food and garden waste into compost.

2. What should be considered when disposing of waste?

When waste is generated, it must be disposed of properly. Sink disposal may not always be appropriate and may end contaminating drinking water. Alternative methods of disposal should be considered including incineration, treatment, and land disposal.

When waste is generated, it must be disposed of properly. Sink disposal may not always be appropriate and may end contaminating drinking water. Alternative methods of disposal should be considered including incineration, treatment, and land disposal

The methods of waste management involve proper dumping, recycling, transportation and collection, and the creation of awareness.

- Dumping methods. The most common waste dumping methods include landfill and incineration. ...
- Recycling methods. ...
- Collection and transportation. ...
- Creation of awareness.

The most important reason for proper waste management is to protect the environment and for the health and safety of the population.Reduce the volume of the solid waste stream through the implementation of waste reduction and recycling programs.

Legal Requirements of Waste Disposal and Documentation

As a result of the Environmental Protection Act (EPA) 1990, the Environmental Protection (Duty of Care) Regulations 1991 & the Environment Act 1995 the University has a 'Duty of Care' with regards to waste.

This Duty of Care places responsibility on producers of waste to store, transport and dispose of waste legally and in a way that doesn't harm the environment. The person/company who collects the waste from our site is the Waste Carrier and all Waste Carriers are required to be registered. For approved suppliers these checks have been made and the records are held centrally with the Environmental Manager.

As a producer we must ensure any waste carriers we use are authorised and that any waste transfers must be accompanied by a written description of the waste (i.e. via a Waste Transfer Note – WTN or Consignment Note for Hazardous Wastes).

For scheduled collections of general waste and recyclables collected by our approved suppliers we operate under an annual Duty of Care WTN and no further paperwork is required. However for adhoc and special waste collections a WTN or Consignment note is required.

These notes must be completed for every load of waste we pass to others (i.e. that leaves our site/campus to go to a contractor). They show details of the carriers and site operators who handle our waste what they are dealing with – it ensures safe and legal management. They also ensure a clear audit trail from when the waste is produced until it is disposed of.

These notes must be completed and signed by both the person sending the waste and the person collecting the waste. The information on the WTN must include:

- A description of the waste – including the appropriate EWC Code
- How the waste is contained or packaged
- The quantity of the waste
- The place, date and time of transfer
- The name and address of both parties (producer and receiver)
- Details of the permit, license or exemption of the person receiving the waste
- Pre-treatment declaration?

The University is required to keep copies of all WTN's and Consignment Notes for two and three years respectively and must be able to produce them on demand to our environmental regulator or local council. As a result departments are required to scan in any documentation received and email this to waste@lboro.ac.uk for central archives but also to keep the documentation for the required period of time.

Self-check 4	Written test

Name: _____Date: _____

Time Start: _____Time Finish: _____

1. How do you dispose of waste materials?

Answer score

1._____
_____
_____

Operation Sheet 2	**Practical Demonstration (Extracting an SMD)**

PURPOSE: To **Extract** SMD Cell phone properly and without damage the cell phone board.

Equipment and Tools for cell phone **Extract** SMD.

Tools	**Equipment**
Flat and Philips screwdriver kit **Soldering Iron, Soldering Station equipment's, PCB holder, PCB Cleaner, Tweezers, Hot Air Blower,** side cutting plier	Digital Multi-meter Faulted cell phone PPEs Clean and ESD free work bench

PROCEDURE:-first try to check your safety

Follow the following steps to the cell phone Extract.

step1. Select the required cell phone to Extract.

Step 2. Paint the Paste Flux to the surface.

Step 3. Heat up Hot Air Blower

Step 4. Adjust the balance of the temperature

Step 5. Use Tweezers to avoid the movement of the parts

LAP TEST #1	**Practical Demonstration (Re-solder SMD)**

Name: _____Date: _____Time started: _____Time finished _____

Instructions: You are required to perform the following individually with the presence of your teacher.

A. Tools & Materials

1. Nokia 3310 board or any motherboard
2. Maintenance Plate Board
3. Maintenance Plate Stand
4. Hot Air & Soldering Station
5. Tweezers
6. Soldering Flux

B. Procedure

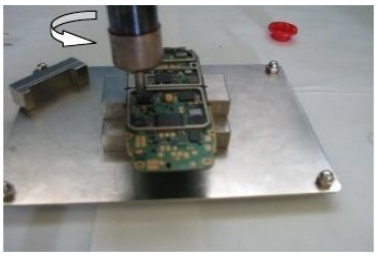
Prepare SMD. If it is a BGA IC, rework it.

Step 1.Prepare hot air soldering iron station. Plug into outlet. Turn the station on. Set operational air and heat combination and wait for few minutes for the heat to stabilize before using.

(Air = 4.0, Heat = 4.0)

Step2. Place soldering flux on the SMD, i.e. CCONT BGA IC of Nokia 3310.

Step. 3Apply the hot air station nozzle over the SMD at about 1 cm and start to move the nozzle counterclockwise. Try to move the BGA IC occasionally until the BGA IC is lodge in its place.



References

www.mobilephone repairing .com

ACPO (2003) Good Practice Guide for Computer Based Electronic Evidence, URL
http://www.acpo.police.uk/asp/policies/Data/gpg_computer_based_evidence_v3.pdf, Accessed 1 October
2007
BKForensics (2007) Cell Phone Analyzer, URL
http://www.bkforensics.com/CPA.html, Accessed 8 October
2007
Breeuwsma, M., Jongh, M. d., Klaver, C., Knijff, R. v. d. & Roeloffs, M. (2007) Forensic Data Recovery from
Flash Memory. *Small Scale Digital Device Forensics Journal,* 1.
EmbedTronics (2005) Welcome to Embedtronics, URL
http://www.embedtronics.com/, Accessed 6 October
2007
ENFSI (2006) Guidelines for Best Practice in the Forensic Examination of Digital Technology v, URL
http://www.enfsi.org/ewg/fitwg/documents/ENFSI_Forensic_IT_Best_Practice_GUIDE_5.0.pdf,
Accessed 1 October 2007
Espiner, T. (2007) Mobile phone forensics 'hole' reported, URL
http://news.zdnet.co.uk/hardware/0,1000000091,39277347,00.htm?r=6,
Accessed 29 September 2007
FoneFunShop (2007) JAF WM : Flashing Windows Mobile Smart Phones Video Turorials, URL
http://www.fonefunshop.co.uk/helpzone/jafwm.htm, Accessed 29 September
2007
FTS (2007) Forensic Telecommunication Services Ltd, URL
http://www.forensicts.co.uk/phone-forensics.asp,
Accessed 8 October 2007
Gratzer, V. & Naccache, D. (2007) Cryptography, Law Enforcement, and Mobile Communications, URL
http://info.computer.org/portal/site/security/menuitem.6f7b2414551cb84651286b108bcd45f3/index.jsp?
&pName=security_level1_article&TheCat=1001&path=security/2006/v4n6&file=crypto.xml, Accessed
27 September 2007
GSMServer (2007) JAF WM - Windows Mobile based phones solution. Debranding, software update, language
change functions implemented, URL http://gsmserver.com/software/JAF-

WM.php, Accessed 29
September 2007
GTS (2007) GTS-Box.org, URL http://www.gts-box.org/, Accessed 5 October 2007
GuidanceSoftware (2007) Neutrino, URL
http://www.guidancesoftware.com/products/neutrino.aspx, Accessed
8 October 2007
Harrington, M. (2007) Hex Dumping Primer Part 1, URL
http://www.mobileforensicscentral.com/mfc/include/Hex_Primer_Pt_1.pdf,
Accessed 6 October 2007
Horenbeeck, M. V. (2007) Key constraints in forensic mobile device acquisition, URL
http://www.daemon.be/maarten/mobforensics.html, Accessed 2 October 2007
IPMart (2007) I-Pmart 2 In 1 Box With Smart Card Holder, URL
http://www.ipmart.com/main/product/IPmart,2,In,1,Box,With,Smart,Card,Holder,,
Packaged,with,187,pcs
,GSM,,CDMA,Cables,16927.php?cat=10&prod=16927&prod=16927, Accessed
29 September 2007
Knijff, R. v. d. (2007) Ten Good Reasons Why You Should Shift Focus to Small Scale Digital Device
Forensics, URL http://www.dfrws.org/2007/proceedings/vanderknijff_pres.pdf,
Accessed 6 September
2007
McCarthy, P. (2005) Forensic Analysis of Mobile Phones, URL
ANSI/ESD S8.1-1993
“ESD Awareness Symbols”
ANSI/ESD S20.20
“ESD Association Standard for the Development of an Electrostatic Discharge Control Program”
ESD STM5.1-2001
“MIL-HDBK-263
“Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (excluding electrically-initiated explosive devices)”
MIL-STD-1686C
“Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (excluding electrically-initiated explosive devices)”

JESD625-A
“Requirements for Handling Electrostatic-Discharge-Sensitive (ESDS) Devices.”