



Facilitator Guide



Sector
Electronics

Sub-Sector
Communication & Broadcasting

Occupation
After Sales Service

Reference ID: ELE/Q8104, Version 3.0
NSQF Level 4

**Mobile phone
Hardware
Repair
Technician**

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Shri Narendra Modi
Prime Minister of India

**“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”**

Acknowledgement

The need for having a standard curriculum for the Job Role based Qualification Packs under the National Skills Qualification Framework was felt necessary for achieving a uniform skill based training manual in the form of a participant handbook.

I would like to express my gratitude to the Electronics Sector Skills Council, India team for working hard and coming up with a Faciliator Guide for the Assistant Technician-Smartphone Hardware Job role. The handbook is the result of tireless pursuit to develop an effective tool for imparting the Skill Based training in the most effective manner. I wish them all the best for their future endeavor in similar pursuits.

CEO
Electronics Sector Skills Council of India

About this Guide

India is currently the world's second-largest telecommunications market and has registered strong growth in the past decade and half. The Indian mobile economy is growing rapidly and is expected to contribute substantially to India's Gross Domestic Product (GDP). The Indian telecommunication services market is likely to grow by 10.3 per cent year-on-year. Mobile Phone subscription in India is expected to increase four-fold to 810 million users by 2021, while the total Mobile Phone traffic is expected to grow 15-fold to 4.5 exabytes (EB) per month by 2021. According to Telecom Regulatory Authority of India (TRAI), the total telecom subscriber base in December 2015 stood at 1.04 billion, out of which 1.01 billion were mobile subscribers and 25.52 million were wireline subscribers. In line with the rapid technological advancement in this field, there are exciting prospects for a fulfilling career in this industry.

This book is designed to enable a candidate to acquire skills that are required for employment. The content of this book is completely aligned to the National Occupation Standards QP/NOS and conform to the National Skills Qualification Framework (NSQF).

The Qualification pack of Mobile Phone Hardware Repair Technician, Level-4 includes the following NOS's which have all been covered across the units:

ELE / N 8106: Interact with customer and perform front end repair

ELE / N 8107: Repair and rectify faults in Mobile Phones

ELE / N9905: Coordinate with colleagues

ELE / N1002: Maintain safe and secure environment

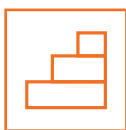
Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS. The symbols used in this book are described below.

Happy Learning !!

Symbols Used



Learning Outcomes



Steps



Time



Tips



Notes



Objectives



Exercise



Activity



Resources



Do



Say



Demonstrate

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Transforming the skill landscape



Unit 1.1- Introduction, Scope of QP & NOS

Unit 1.2- Role & Job Description - Mobile Phone Repair

Unit 1.3- Personal Attributes for Mobile Phone Repair

Unit 1.4- Mobile Phone History



Key Learning Outcomes

At the end of this module, you will be able to:

1. Know your fellow participating team members
2. Form a formidable Team for an exciting Learning Exercise
3. Describe the scope NOS for mobile hardware repair technician
4. Explain role of mobile hardware repair technician
5. Explain Job description of the mobile hardware repair technician
6. Prepare for the personal attributes required for mobile hardware repair technician
7. Acquire the knowledge of mobile phone history

UNIT 1.1: Introduction - Scope of QP & NOS

Unit Objectives

At the end of this unit, students will be able to:

- Explain the scope of work for mobile hardware repair technician
- Describe NOS for mobile hardware repair technician

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable

Do

- Make the participants stand in a circle, close enough to the person each side of them so that they can pass the parcel quickly.
- Say 'Stop' when the when students least expect it. The person who has the parcel at that time should get out.
- Those who get out should introduce themselves by providing their names and a little additional information such as favorite hobbies, likes, dislikes etc.
- The winner of the game should stand and introduce himself/herself at the end of the game.

Say

- Thank the participants for their involvement.
- Enthuse the participants by telling them, what is planned next

Notes for Facilitation

- You could ask the participants who get out during the game to be the music keepers. They can start and stop the music as the game progresses.
- Encourage shy students to provide information about themselves by prompting them with questions such as 'what do you enjoy doing the most', 'what is your favorite movie or book' etc.
- Ask the participants to describe why they like their mobile handsets

Qualifications Pack
Mobile Phone Repairs Technician
Level 4
Scope

SECTOR	Electronics
SUB-SECTOR	Communication & Broadcasting
OCCUPATION	After Sales Service
JOB ROLE	Mobile Phone Repair Technician
REFERENCE ID	ELE / Q 8104
ALIGNED TO	NCO-2004/NIL

UNIT 1.2. Role & Job Description - Mobile phone Hardware Repair Technician

Unit Objectives

At the end of this unit, students will be able to:

1. Explain the role of mobile hardware repair technician
2. Explain the job description of mobile hardware repair technician

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Ask the participants about their expectations from the program.
- Write their expectations on the Board.
- Elaborate on what the program is going to deliver to them.
- Ask them to explain the role & responsibilities of the handset repair technician.
- Explain the handset repair technician's role & responsibilities as the QP & NOS
- Ask them whether they can fulfil the role & responsibilities adequately

Say

- Thank the participants for their involvement.
- Enthuse the participants by telling them, what is planned next

Notes for Facilitation

- You could ask the participants whether they are facing any difficulties with their handsets.
- Ask their ideas on the resolution of the difficulties faced by them.
- Ask the participants to describe what they like the most in their mobile handsets
- ...

Brief Job Description: Responsible for rectifying faults in the mobile phone brought in by the customer. Receive the faulty mobile phone, diagnose the problems, perform front end or hardware level repair as required, resolve software issues and ensures effective functioning before delivering back to customer

Mobile Phone Repair Technician Role: The Mobile Phone Repair Technician diagnoses problems and repairs the faulty module of the mobile phone

UNIT 1.3. Personal Attributes of - Mobile phone Hardware Repair Technician

Unit Objectives

At the end of this unit, students will be able to:

1. Prepare for the personal attributes required for mobile hardware repair technician

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Ask the participants about their expectations from the handset repair technician.
- Write their expectations on the Board.
- Elaborate on what are attributes required of the handset repair technician as per the QP & NOS.
- Ask them whether they possess these attributes.
- Explain to understand & achieve these attributes
- Conduct role play exercise to help them understand the required attributes

Say

- Explain common mistakes made by the technician in dealing with the approaching customer, which may turn him off from giving his handset for the repairs.
- Thank the participants for their involvement.
- Enthuse the participants by telling them, what is planned next

Notes for Facilitation

- In the role play ask one of the participants to play the role of customer.
- Another participant becomes the technician.
- All the participants observe & learn from the role playing exercise.

Job Role	Mobile phone Hardware Repair Technician
Role Description	Receive the faulty mobile phone, diagnose the problem, decide on corrective action, repair the faulty mobile phone, rectify the software issues and ensure effective functioning of the mobile phone
NSQF level	4
Minimum Educational Qualifications	10th standard
Maximum Educational Qualifications	B. E.
Training	N.A.
Experience	10th Standard Pass
Applicable National Occupational Standards (NOS)	Compulsory: 1. ELE / N 8106 : Interact with customer and perform front end repair 2. ELE / N 8107 : Repair and rectify faults in mobile phones 3. ELE / N9905 : Coordinate with colleagues 4. ELE / N1002 : Maintain safe and secure environment Optional: N.A.
Performance Criteria	As described in the relevant OS units

UNIT 1.4: Mobile Phone History

Unit Objectives

At the end of this unit, students will be able to:

1. Explain the history of mobile phone

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Ask the participants about the history of mobile cell phone revolution.
- Let them describe how the mobile has changed their daily life.
- Ask them to describe their day without a mobile handset in their hands.
- Explain the historical events in mobile history.

Say

- Analog & digital clocks almost became redundant with the advent of cell phones.
- Google watch with mobile features may resurrect the wrist watches
- Enthuse the participants by telling them, what is planned next
- Thank the participants for their involvement.

Notes for Facilitation

- Show some interesting videos to enhance the participants' learning experience.
- Get feedback on their learning during course.

1.4.1: History of Mobile Phone

The history of mobile phones, covers mobile communication devices which connect wirelessly to the public switched telephone network.



Fig: 1.4.1.1 Mobile Phones Samples

While the transmission of speech by radio has a long history, the first devices that were wireless, mobile, and also capable of connecting to the standard telephone network is much more recent. The first such devices were barely portable compared to today's compact hand-held devices, and their use was clumsy. Origin of this gadget is quite interesting. Starting from bulky mobiles phones which were as long and heavy as one's forearms, to ultra thin and techno savvy handsets, mobiles phones have covered a long way so far. It all started with the basic telephony.

Along with the process of developing more portable technology, and better interconnections system, drastic changes have taken place in both the networking of wireless communication and the prevalence of its use, with mobile phone becoming common globally and a growing proportion of Internet access is now done via mobile broadband.

A mobile phone is a portable telephone that can make and receive calls over a radio frequency carrier while the user is moving within a telephone service area. The radio frequency link establishes a connection to the switching systems of a mobile phone operator, which provides access to the public switched telephone network (PSTN). Most modern mobile telephone services use cellular network architecture, and therefore mobile telephones are often also called cellular telephones or cell phones. In addition to telephony, 2000s-era mobile phones support a variety of other services, such as text messaging, MMS, email, Internet access, short-range wireless communications (infrared, Bluetooth), business applications, gaming, and digital photography. Mobile phones which offer these and more general computing capabilities are referred to as mobile phone.



Fig: 1.4.1.2
Mobile in 1973

The first handheld mobile phone was demonstrated by John F. Mitchell and Martin Cooper of Motorola in 1973, using a handset weighing 2 kg, carried around 30 circuit boards in it with recharge time of around 10 hours, talk time of 35 minutes, this phone gave comfortable talking experience to the users. In 1983, the DynaTAC 8000x was the first commercially available handheld mobile phone. From 1983 to 2014, worldwide mobile phone subscriptions grew to over seven billion, penetrating 100% of the global population and reaching even the bottom of the economic pyramid. In first quarter of 2016, the top mobile phone manufacturers were Samsung, Apple, LG, Micromax, Lenovo etc...

Mobile Phones have proved themselves to be one of the greatest gifts to the mankind. They have become an indispensable part of our lives. But going back in time, owning a mobile phone was confined to members of rich class. All thanks to cost cutting techniques and innovations over a period of time; mobile phones are now affordable for everyone. With a surplus of mobile phones sets flooding the market, they are not just catering to the needs but are acting as status symbols for many.



Fig: 1.4.1.3 Mobile Phone

The mobile phone market in India is expected to grow by 4% to 250 million units in 2016 and can see more handsets available for less than Rs 5,000, as per research report.



Fig: 1.4.1.4 Mobile Phone

"An examination of the present scenario, coupled with an analysis of historical trends tells us that the market for India mobile handsets will settle around 250 million units in 2016, a 4 per cent growth compared to 2015," the report, India Mobile Handsets Market, by CyberMedia Research (CMR) said.

The mobile phone segment grew at an annual average rate of 32% to about 95 million in 2015 from 77 million a year ago. The report said it expects 4G shipments to cross 50 million units in 2016.

Summary:

Mobile is an electronics instrument used to communicate between two or more persons.

Mobile technology connects call between two persons in nano seconds.

Wireless medium is used to connect mobile phones which is measured in frequency (Mhz).

Mobile network operates on 700 MHz to 2.6 GHz waves

Radio operates in the range of 100KHz to 110 MHz

Mobile was invented in 1973 by Martin Kooper of Motorola Company in Chicago city of America.

In 1983 DynaTac 8000x mobile was introduced to the world. Weight of this mobile was 2 Kg, battery backup was 20 minutes only and was costing around Rs. 5 Crore.

First commercial automated cellular network was launched by Nippon Telegraph and Telephone (NTT) in the year 1979 in Japan. This network was later on used by all other mobile operators . This Network, known as First generation (1G) used Analogue Technology.

In 1991, Second Generation (2G) digital cellular technology, based on GSM standard was launched by Radiolinja in Finland.

Post 10 years of launching 2G, in the year 2001 Third Generation (3G) was launched by NTT DoCoMo in Japan based on WCDMA standard. GSM EDGE, UMTS, CDMA 2000 and DECT and WiMAX are also included in 3G. This gave boost in mobile services by enabling features such as Video Calls, Wireless Data, Wireless Voice Telephone etc.

Now a days the latest technology we use is called Fourth Generation (4G), this includes WiMAX standard and LTE standard technology.

(4G) Mobile technology was developed post 1993 and new mobiles were introduced in the market.

In the year 2014 top manufacturers of Mobile phones were Samsung, , Apple and LG.

Notes

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Exercise-1: Fill in the Blanks

1. PSTN stands for
 - A. Public switched telephone network
 - B. Public system telephone network
 - C. Public switched telecom network
 - D. Public system telecom network

2. Most modern mobile telephone services use network architecture
 - A. Broadband
 - B. Baseband
 - C. Cellular
 - D. None

3. The first handheld mobile phone was demonstrated by John F. Mitchell and Martin Cooper of Motorola in
 - A. 1973 B. 1975 C. 1982 D. 1985

4. was the first commercially available handheld mobile phone
 - A. DynaTAC 8000x B. DynaTAC 6000x C. DynaTAC 4000x D. DynaTAC 2000x

5. The mobile phone market in India is expected to grow by in 2016
 - A. 6% B. 4% C. 8% D. 10%



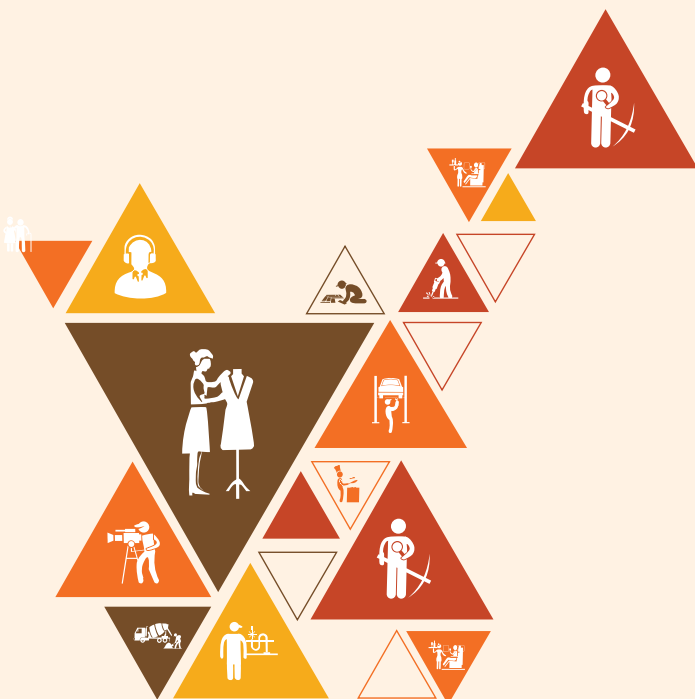
2. Interact With Customer and Perform Front end Repair

Unit 2.1- Role & Job Description - Interact with Customer & Front end Repairs

Unit 2.2- Scope of Work - Front end Operations

Unit 2.3- Performance Criteria for Front end Operations

Unit 2.3- Knowledge & Understanding - Front end Operations



Key Learning Outcomes

At the end of this module, you will be able to:

1. Apply best practices for customer interaction
2. Handle different types of customer
3. Perform front end repair operation of the mobile phone
4. Explain the performance criteria for front end operations of mobile hardware repair
5. Explain the organization context for the front end operations
6. Prepare job card

UNIT 2.1: Role & Job Description - Interact with Customer & Front end Repairs

Unit Objectives

At the end of this unit, students will be able to:

1. Explain the role mobile hardware repair technician for customer interactions
2. Explain the role of mobile hardware repair technician for front end repairs
3. Describe the job description of front end operations

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Ask the participants about their experience with the handset repair technician.
- Let them describe what went wrong.
- Explain what should have been better.

Say

- Right Customer interactions are necessary to get the customer repair orders .
- Bad Customer interactions may loose the customers
- Enthuse the participants by telling them, what is planned next
- Thank the participants for their involvement.

Notes for Facilitation

- Show some interesting videos to enhance the participants' learning experience.
- Ask questions to gauge their understanding of the subject matter.
- Give feedback on their learning during course.

Role: Interact with customer & perform front end repair

Job description: Interact with customers, understand their requirement / problems faced, by them, in the mobile phones and perform front end repair, without dismantling.

UNIT 2.2: Scope of Work - Front end Operations

Unit Objectives

At the end of this unit, students will be able to:

1. Describe the Scope of work for the front end operations

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Ask the participants what are the front end operations.
- Explain the scope of front end operations as per QP & NOS.
- Ask them to describe their day without a mobile handset in their hands.

Say

- Front end customer interactions may win or kill the customer.
- Emphasize the importance of soft skills to win over the customers
- Enthuse the participants by telling them, what is planned next
- Thank the participants for their involvement.

Notes for Facilitation

- Show some interesting videos to enhance the participants' learning experience.
- Get feedback on their learning during course.

UNIT 2.3: Performance Criteria for Front end Operations

Unit Objectives

At the end of this unit, students will be able to:

1. Explain the performance criteria for the front end operations

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Ask the participants about their understanding of the performance criteria for front end operations.
- Let them describe what is important in front end operations.
- Explain the performance criteria as per the QP & NOS.

Say

- Customer is the most important entity in the service station.
- He is the cause of our being there to service his requirements
- Enthuse the participants by telling them, what is planned next
- Thank the participants for their involvement.

Notes for Facilitation

- Show some interesting videos to enhance the participants' learning experience.
- Get feedback on their learning during course.

Performance Criteria

On the job Performance Criterion:

The following points are important for on the job performance:

2.3.1: Engage with Customers

Understand and learn the following:

- Receive the customers and greet them as per company's norms
- Follow behavioural etiquettes while interacting with customers
- Ensure the customers are comfortable in the store
- Communicate in the language which the customers are comfortable with
- Understand the requirements of the customers and offer service accordingly
- Inform about repair charges and warranty applicable
- In case the handset is beyond warranty, explain the terms & repair charges

2.3.2: Understand the Complaint

Understand and learn the following:

- Interact with customers to understand the customer's purpose of visit such as repair of phone, purchase of accessories, software upload, collection of repaired phone
- Listen to customers and understand the customer level complaint such as display not working, not switching on
- Interrogate the customers to assess the cause of problem such as physical damage, uploading of any unauthorised software or application
- Decide on the action to be performed, i.e., front end repair or hardware level repair is required
- Inform customers about the time taken
- In case the handset is beyond warranty, inform the customer the delivery time & the estimated cost of repairs
- Provide document to customers for collecting the device after repair

2.3.3: Document on Computer

Understand and learn the following:

- Use the system to identify the warranty coverage of the mobile phone and other terms and conditions
- Understand the customer relationship management policy of the mobile brand and inform customers about them
- Log into customer portal and enter the details of the customer and other details such as phone model, complaints, warranty coverage
- Understand and use the interactive ERP system of the company and enter appropriate details
- Use the system to prepare invoice, stock management, order placement, accessories availability, etc.

2.3.4: Perform Front end Repair

Understand and learn the following:

- Identify problem and decide the action to be taken
- Upload only licensed and brand approved applications as per customer requirement using system
- Understand the application and software compatibility with the mobile phone and suggest to customers accordingly
- Check the accessories and perform a demo with the customer to ensure their functionality (chargers, SD card, etc)
- Open the panel of the mobile phone without damaging them
- Replace the parts such as battery and clean the inner parts of the phone
- Ensure the functionality of the replaced part
- Provide necessary details on the warranty, terms and conditions of the replaced parts
- Educate customers on effective usage of mobile phone to save battery and to avoid any repeat problem

2.3.5: Interact with Superior & Meet Targets

Understand and learn the following:

- Understand the work requirement from superior, periodically
- Report to superior on the work completed
- Seek technical assistance from superior whenever required
- Document the work completed

UNIT 2.4: Knowledge & Understanding - Front end Operations

Unit Objectives

At the end of this unit, students will be able to:

1. Explain the organizational context for mobile hardware repair
2. Apply best practices for customer interaction
3. Handle different types of customer
4. Perform front end repair of mobile phone

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Explain the technical knowledge involved in the front end operations.
- Let them describe what some important in front end operations.

Demonstrate

- The front end operations during role play & practical exercises.
- Call a volunteer and let him explain the front end operations
- Demonstrate the process of repairs.
- Demonstrate the process of work order entries.
- Demonstrate the process of getting customer feedback.

Say

- Customer is king & he has to be delighted with our service.
- Explain the difference between customer satisfaction & customer delight

2.4.1: Organizational Context - Knowledge of the Company

Organization and its processes :

Understand and learn the following :

- Company's policies on: incentives, delivery standards, and personnel management
- Company's sales and after sales support policy
- Importance of the individual's role in the workflow
- Reporting structure
- Company's policy on product's warranty and other terms and conditions
- Company's line of business and product portfolio
- Company's service level agreement (SLA) with the brand



Fig: 2.4.1 Organization Context

2.4.2: Technical Knowledge

Understand & learn the following:

2.4.2.1: Customer Interaction

Customer is King:

Customer is king is an old yet valid quote as no business can flourish if it does not have customers to buy their offerings. In the olden days guests were welcomed with flowers, perfumed spray of water droplets and sweets in India. Even today we have a great affection to treat our guests with lots of love. The customers are like guests who are satisfied by the company's product/service.

A customer satisfied with the product or service spreads the benefits to their circle of family, friends, relatives and colleagues. So if one of their family members were planning to buy the similar product they will chose the same brand over others. A satisfied customer is actually a brand ambassador of the organi-zation.



Fig: 2.4.2.1.1 Make Customers Happy



Fig: 2.4.2.1.2 Customer is King

Is it that difficult to make the customers happy? If the service offered to the customer is good then why won't customer buy? Customers are no living beings from Jupiter. They are humans too. Like the way we want to be treated they expect the same. Who holds the responsibility to make them happy? It is the employees of the organization. People make an organization successful or failure. Therefore the employees are the face of the organization,

Every employee from the tongue to tail of the organization is responsible, though the frontend employees have the higher portion of responsibility.

Greet the Customer:

The steps involved in the process of are :

- Welcome the customer (The way we do for our guests at home)
- Bringing him/her in their comfort zone
- Creating Confidence
- Making Customer feel important

STEP 1: Welcome the Customer

Welcoming the customer involves the following things:

- Greet the customer: As per the timings greet the customer
- Good Morning/Evening/Afternoon
- Offer a handshake or say Namaste by folding your hands
- Introduce yourself with your name. Example: My name is XYZ.
- Last step is the first step to start a conversation "How may I Assist you?"



Fig: 2.4.2.1.3 Welcome the Customer

STEP 2: Bring them to comfort zone:

Anyone who is coming from outside environment may have gone through either physical stress or mental stress. (Example physical stress- extreme heat in mid noon, may be unwell, have gastric/ head-ache etc. It can be any condition that is bringing the customer into stress and tiredness. Mental Stress- stress to overcome heavy traffic, upset probably due to fight with boss, stress due to a clash during parking the car. Again it could be anything that may put off the customer's mood in bad way.)



Fig: 2.4.2.1.4 Bring them to comfort zone

A warm welcome ensures that some part of the stress is relieved with a bright smile and warm greetings. A small talk about how are you? It is very hot today. Let me arrange some cooling refreshments and water for you.

STEP 3: Create Confidence:

A person becomes interactive once he/she is confident to talk to the person in front of them. A villager may hesitate to talk to a person in city who is talking in a sophisticated manner over phone. Once the city person keeps the phone down and asks the villager in the language or style known to the villager. A villager can say his concerns with more confidence. You need to adjust your behaviour (does not mean to incorporate split personality) as per the customer.

Some of the key points to note during this conversation to create confidence are:

- Steady eye-contact
- A calm face
- Straight body posture
- Natural gestures

Try to match your communication style to that of customers. A comfortable eye contact shows that you are listening to the customer. This also shows a sense of responsibility and value to customer



Fig: 2.4.2.1.5 Create Confidence

STEP 4: Making Customer Feel Important:

Treat the customers like they own the brand. Give them undivided attention. Keep away from all the distractions like mobile, talking with colleagues etc.



Fig: 2.4.2.1.6 Making Customer Feel Important

Enquire and Understand Customer Queries:

Collecting customer information is very important to maintain records of purchase, services, repairs etc. There are various ways to collect information, but the best is by getting a form filled. Assist the customer to fill the form. Basic information includes:

- Name
- Age
- Address
- Contact number
- Mobile phone brand/model
- Customer complain

If the customer has visited for the first time a complete information is required. This is done for the new customers. Usually existing customers are given customer ID or any identification number.

2.4.2.2: Customer Types

Characteristics of Different Customers:

Different customers can have similar characteristics, such as interests, appearance, shopping behavior, etc. So, we can divide them into “types of customers”.

You may broadly deal with three different customer types:

Social

Dominant

Detached

Here are the personality traits of each customer type:



Fig: 2.4.2.2.1 Social



Fig: 2.4.2.2.2 Dominant



Fig: 2.4.2.2.3 Detached

- Affectionate
- Understanding
- Flexible
- Easy going
- Social active

- Aggressive
- Competitive
- Very ambitious
- Success driven

- Attention to detail
- Less expressive
- Reserved
- Silent

Handling Different Customers:

Let's now learn about some tricks to deal with different customer types and win them forever.

Social:

The effective ways to deal with the Social types of customers are to:

- Let the customer talk
- Touch emotions
- Use personal references
- Ask for feedback

Socializers love to receive and give compliments. However, they tend to be self-centered. They want to go to a store where they are made to feel important. Use compliments often with these customers. Do whatever you have to do to remember the names of these customers. Do remember although they look at the shopping experience as a fun, your goal is still to sell them your product.

Dominant:

The effective ways to deal with the Dominant types of customers are to:

- Make them feel important
- Let them see that you understand their viewpoint, and you are on their side
- Be quick in answering their queries
- Show latest versions of the products
- Avoid giving excuses and do not talk too much
- Give simple answers
- Have real solutions to what the customer wants
- Show seriousness, efficiency and interest for them and for what they need

You must show a genuine interest to them. Listen carefully to their complaints and resolving them as soon as possible.

An effective way to deal with this type of customer is by offering an excellent customer service.

Detached:

To deal with the detached types of customers,

- Don't get personal
- Focus on real situations
- Highlight value for money
- Let them speak at their own pace
- Spend more time with them than other customers
- Inspire confidence in them

These types of customers usually have trouble deciding their purchases, so you must try to give them time to choose the right product.

Also, they usually have difficulty in communicating clearly what they are looking for. Therefore, you must pose the right questions to help them communicate better.

2.4.2.3: Basic Mobile Phone Hardware



Fig: 2.4.2.3 Mobile Phone Hardware

2.4.2.4: Popular Mobile Phone Models of Mobile Phone



Fig: 2.4.2.4 Sample Mobile Phone model

2.4.2.5: Mobile Phone Features



Fig: 2.4.2.5 Mobile Phone Features

2.4.2.6: Mobile Phone Accessories



Fig: 2.4.2.6 Mobile Phone Accessories

2.4.2.7: Safety Rules, Policies & Procedures

Follow Safety rules, policies & procedures of the company

SAFETY RULES, POLICIES AND PROCEDURES

2.4.2.8: ERP & Front End Repair Procedures

Company's ERP system and operational procedure

Awareness about implementation of engineering change order process

Procedures of replacing accessories such as battery, SD card

Licensed and authorised software compatible for Mobile Phones and the downloading procedure

Specifications of accessories such as chargers, battery

Service level agreement with the brand on parameters such as turn around time (TAT), repair procedure, warranty

2.4.2.9: Software & Applications Available in the Mobile Phone Market

The main OS (Operating Systems) currently used on Mobile Phones in the market are:
Android (Samsung), iOS (i Phones – Apple), Symbian (Nokia), Microsoft, Black Berry etc.
Many user friendly Apps can be downloaded easily from the market place

2.4.2.10: How to Repair a Mobile Phone Software

Many problems in the Mobile Phone's software may arise, if it gets corrupted.

For ex. slow functioning, frequent freezing (hanging), booting related problems, apps malfunctioning, switching off automatically, restarting, etc.



Fig: 2.4.2.10.1 Mobile Phone - Software

There are 3 ICs which ensure proper functioning of the software i.e the flash IC, the CPU, the RAM. Whatever you see on the LCD of your device is the software known as operating system (OS).

The software of the mobile phone is stored in its flash memory (flash IC). The CPU does the main processing work, while all the temporary and virtual data is stored in the RAM.

The Operating System of the mobile phone can get corrupted easily and anytime. There isn't any specific reason for it. The most common reason can be through viruses coming through internet surfing or through sharing of files. This is when an antivirus program is not installed in your Mobile Phone. Hence it is always advisable to install an antivirus in you Mobile Phone. Also it should be always updated, as new malwares arise everyday.



Fig: 2.4.2.10.2 Mobile Phone - Software Corrupt

What to do, if your phone's software gets corrupted:

Reset the Mobile Phone's settings: Start with the basics first. That is to bring the Mobile Phone to the original factory default settings. This can be done by going to settings menu. Here there will be an option like reset / restore / original / factory settings. Select this option. Now it will ask for security code. If you know the code enter it. Your phone will come back to original settings. To know the default security codes of all companies, please visit the page on the internet.

If the Mobile Phone displays code error, then you may have changed your security code. You will have to get it reset through a software program. If the fault gets repaired, you may think that the problem in your handset was a minor one or there was some settings related problem!

Format the Mobile Phone: The next step is to try by formatting your Mobile Phone. Formatting means deleting all the data that you have downloaded or stored after buying the phone. Always take a backup of your important data, before formatting or flashing. So for formatting, you will have to again go to the settings menu and go to the same option as you went before i.e reset settings option. Here there will be 2 options 1. Reset settings only 2. Reset all / master reset. Select the second option, give code and it will be formatted. Now format the memory card as well. If the problem gets solved, then you may think that there was virus and it was creating problems.

Flash the Mobile Phone: This is the last step and if it is a software related problem, it will get fixed here. Flashing will reinstall the operating system, thereby solving any problem arising due to a corrupt OS. So if the problem gets solved here, you may think that the OS was corrupted.

So what if the fault is not repaired even now. Oh!

Then it's not a software related problem, the problem is in the hardware!

2.4.2.11: Quality Standards for Recurrence Prevention



Fig: 2.4.2.11 Quality Standard

UNIT 2.5: Skill (Optional)

Unit Objectives

At the end of this unit, students will be able to:

1. Prepare job card having information of customer, handset and repair requirement
2. Prepare document based on action taken for the complaint registered

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Explain the core / generic skills required for the front end operations.
- Explain the technical skills required for the front end operations.

Demonstrate

- Demonstrate Communication, reading, writing skills during practical exercises.
- Call for volunteers to do the role play & guide them during demonstrations.
- Demonstrate the analytical skills.

Say

- Knowledge, skills & attitude make the person competent.
- Explain the difference between knowledge & skill

2.5.1: Core / Generic Skills

Understand & learn the following:

2.5.1.1: Communication - Reading & Writing Skills

Understand & learn the following skills:

Prepare complaints note with customer details, issues faced, phone details

Note customer complaints and solution provided

Prepare invoice with appropriate details

Understand & learn the following skills:

The process of information transfer from the sender to the receiver, who understands and shares feedback, is known as communications. Every act of communication whether it is speaking, writing, listening or reading is more than a single isolated action. It is a chain of events which has certain characteristics:

It is two way process

It has a sender and receiver

A message is sent across

It is effective only when it gets the desired response from the receiver

Communicating with others involves three primary steps:

Thought: First, information exists in the mind of the sender. This can be a concept, idea, information or feelings

Encoding: Next, a message is sent to a receiver in words or other symbols

Decoding: Lastly, the receiver translates the words or symbols into a concept or information that a person can understand

Communication Skills:

Communication skills are used in our personal as well as professional life example:

While interacting with your family / friends

Applying for a job (Interviews)

Product demonstration

Responding to a message

Giving instructions to working partners, contractors

Components of Effective Communication:

Conviction:- It is an unshakable belief in something without the need of evidence. Almost all of us have the conviction in the existence of God. We don't need any proof for his presence.

Confidence:- It is belief in yourself and your abilities. For e.g. if you are sure about your efforts and the hard work, you gain confidence that you will succeed in whatever you do.

Enthusiasm:- It is a feeling of excitement. Remember your school/ college days when you enthusiastically used to take part in sport activities.

Pace:- The speed with which you speak. During an India – Pakistan match, the commentator uses the art of pace to create interest. One such commentator who comes to mind is Geoffery Boycott!

Clarity:- It means easy to understand. Ever noticed Amitabh Bachan delivering dialogues in movies like Don and Deewar. How clear his voice is, one can easily understand and feel the emotions.

Volume:- It is the pitch with which we talk. For e.g. we speak in high volume when we want to convey our message over a long distance.

Eye contact:- Looking in the eyes of the receiver (please note this is a lot different from staring).

Body Language :- It is maintaining appropriate distance, hand movements, gestures, nodding, etc. The body language reflects the personality of a human being, its is very important to maintain a positive body language.

Most common ways of communication:

To display confidence use positive words, communication is very necessary. Communication can be done through the following mediums –

Spoken word

Body Language

Written Word

Types of Communication:

There are a variety of verbal and non-verbal forms of communication. These include body language, eye contact, sign language, haptic communication, and chromatics.

Other examples are media content such as pictures, graphics, sound, and writing. The Convention on the Rights of Persons with Disabilities also defines the communications to include the display of text, Braille, tactile communication, large print, accessible multimedia, as well as written and plain language, human-reader, augmentative and alternative mode means and formats of communication, including accessible information and communication technology.

Feedback is a critical component of effective communication.

Types of Communication – Verbal:

Verbal communication refers to the use of sounds and language to convey a message.

Language plays a significant role in verbal communication

In order to describe events, ideas, products a person needs words – symbols that stand for thoughts arranged in meaningful patterns.

To create a thought with these words, we arrange them according to rules of grammar, putting the various parts of the speech in the proper sequence.

Ways to improve verbal communication

Use positive words

Ask the right questions

Think and prepare before you speak

Reduce usage of verbal pauses

Avoid careless language

Types of Communication - Written:

Written Communication

Provides records for future reference

Message written in black and white can be used as a record.

Written document is referred to in the absence of the person and therefore it must be fool proof.

One can explain the product benefits to a buyer in a one to one conversation but in the absence of the Salesperson the written communication is the basis for discussion.

Written communication is of prime importance in a company and has to be done in a proper manner.

In business written communication takes the form of a letters, memo and reports.

Following are the ways to effective written communication:

- Clearly, Coherently, Concisely, Correctly with Courtesy and Confidence

Effective Written Communication:

The 'C's of Effective Writing

Clearly

Concisely

Correctly

Types of Communication - Non Verbal:

Communication without words - Non Verbal clues

Body language

Emotion of the sender and receiver

Perceptions due to prior interactions

WHAT you say is not nearly as important as HOW you say it! "So Let Us Implement"

Listening Skills:

Listening is the act of hearing attentively and making sense of, what you hear. Hearing becomes listening only when an individual pay attention to what is said and follow it very closely.

2.5.1.2: Teamwork & Multi Tasking Skills

Understand & learn the following skills:

Share work load as required

Achieve the targets given on service

2.5.2: Professional Skills

Understand & learn the following:

2.5.2.1: Interpersonal Skills

Understand & learn the following skills:

- Develop a rapport with customers
- Listen carefully and interpret their requirement
- Suggest customer on possible solutions

2.5.2.2: Communication Skills

Understand & learn the following skills:

- To seek inputs from customers to assess the problems
- Put the customer at ease and suggest solutions
- Communicate in local language
- Educate and inform customer about contractual issues such as warranty, cost of service and module or accessories replacement
- Educate on precautions to be taken for effective usage of Mobile Phone

2.5.2.3: Behavioral Skills

Understand & learn the following skills:

- Importance of personal grooming
- Significance of etiquette such as maintaining the appropriate physical distance with customer during conversation
- Importance of being patient and courteous with all types of customers
- Be polite and courteous under all circumstances

2.5.2.4: Computer & Software Related Skills

Understand & learn the following skills:

- Operate computer and laptop with ease
- Software and applications related to mobile phone with its features and purpose
- Download software and application from company's website and from cloud
- Download mobile phone related document from company website such as model specification, repair manual

2.5.2.5: Entrepreneur & Entrepreneurship Skills

Entrepreneur

An individual who, rather than working as an employee, runs a small business and assumes all the risk and reward of a given business venture, idea, or good or service offered for sale. The entrepreneur is commonly seen as a business leader and innovator of new ideas and business processes.

Entrepreneurship

“Entrepreneurship is the professional application of knowledge skills and competencies and/or of Monetizing a new idea, by an individual or a set of people by launching an enterprise or diversifying from an existing on (distinct from seeking self-employment as in a profession or trade), thus to pursue growth while generating wealth, employment and social good”

Importance of Entrepreneurship

Increases opportunities for employment (comprising various competitive skill sets)

Additional wealth creation

Introduction, dissemination of new methods & technology

Overall economic growth

Personal Qualities of an entrepreneur:

Love a challenge and are driven by a need to challenge one's self – Self-motivated, High tolerance for ambiguous, unstructured situations

Possess a desire for change and constant improvement

Action oriented, Dedicated to work, Creative & confident

Think positively and quickly get over failures

Learn quickly, enjoy feedback and are able to learn from mistakes

Both listen and communicate well

Physical and Psychological Qualities of an entrepreneur:

Ample health and energy

Emotional stability

Money – enough to start the business

Time – A business requires a lot of time & attention, especially during its launch

Influence from entrepreneurial role models

Motivators for entrepreneurship:

Independence

Challenge

Market opportunity

Family background

Dream desire

Idea driven

Facilitators for entrepreneurship:

Independence

Challenge

Market opportunity

Family background

Dream desire

Idea driven

Following factors are responsible for entrepreneurship:

Family support in starting phase of the venture (approximately 74% received family support)

Financial assistance from the following – Self financed, Banks, Venture capitalist, Angel investor, State Finance Corporation etc.

Education, Innovation and Entrepreneurship – help in creating commercially viable products/services for sustained growth

Government Support – Infrastructure, Legal system, Labor laws, Corruption , Information Taxation, Licenses etc.

Difference between Wage & Self Employment

Basis of Difference	Wage Employment	Self Employment
Nature	Self-Saturation	Self Actualization
Scope	Limited	Unlimited
Tendency	Routine or Status-Quo	Imaginative, Creative or Innovative
Earning	Fixed	Generating/Flexible
Satisfaction	Through compliance of rules/Procedures	Through converting one's creativity to reality
Status	Employee	Employer

Tab: 2.5.2.5.1 Difference between Wage & Self Employment

Difference between Entrepreneur & Business Owner

Entrepreneur	Business Owner
Innovators and creatives always seeking a new , better way to present solutions	Satisfied with status quo as long as it works, solve local problems
Risk takers, live on the edge, love technology and simplistic methods, are willing to take a financial Risk	Conservative, play it safe, uncomfortable with change, are interested in the bottom line as long as they are in control
Are future focused, are thought leaders hand not good managers. Their interest is to find 'the thing' that is revolutionary	Manage their business, keep their hand on the pulse, often micro-manage. Are involved in all of the aspects of their business

Growth focused, seek scalable growth, follow other experts, continuously pursue business/professional development, acceleration in their passion	Keep their ideas close, do not pursue massive growth, will only play it safe, do not want to be surrounded by experts, are not open to business/professional development
Team players, get others involved in their vision, love to ignite creativity	Share information in an as needed basis with staff, do not want a lot of input from others
Will only work with creatives and innovators, relish thought leaders, savor a good challenge	Will only work with followers and type A personalities, dislike as challenge perceive it as confrontation

Tab: 2.5.2.5.2 Difference between Entrepreneur & Business Owner

Tab: 2.5.2.5.2 Difference between Entrepreneur & Business Owner

[illegible]

Exercise-1: Fill in the Blanks

1. In case the handset is beyond warranty, you need to
A. Start repair work B. Explain the terms & repair charges C. None

2. Document to be provided to customer for collecting the device.....
A. Before repair B. After repair C. None of above

3. Operating System used in i Phone is -----
A. Android B. iOS C. Symbian

4. The customers are like
A. Friend B. Family member C. Guest

5. You need to adjust your behaviour as per the.....
A. Company policy B. Manager Instruction C. Customer

6. Socialisers are
A. Self-centered B. Aggressive C. Polite

7. An effective way to deal with dominant customer is by offering an excellent
A. Solution B. Customer service C. Greeting

8. Detached customer have difficult in
A. Reading B. Writing C. Communicating

9. Dominant customers are
A. Aggressive B. Flexible C. Silent

10. Social customers are
A. Aggressive B. Flexible C. Silent

Exercise-2: Answer the Following Questions



1. What are the steps involved in customer interaction?

2. What are the characteristics of different customers?

Exercise-3: Fill in the Blanks



1. There are manly ICs which ensure proper functioning of the software in mobile phone

A. 4 B. 3 C. 2 D. 5

2. The software of the mobile phone is stored in its

A. Flash memory B. Memory card C. RAM

3. Frequent freezing (hanging) problem in mobile phone arise due to.....

A. Network Problem B. Hardware Problem C. Software problem

4. The software of the mobile phone is stored in its.....

A. Flash memory B. CPU C. RAM.

5. Most of the time mobile operating system is get corrupted due to

A. Physical Damage B. Virus C. Mishandling

6. All the temporary and virtual data is stored in the

A. RAM B. ROM C. Flash IC

7.refers to the use of sounds and language to convey a message

A. Written Communication B. Non-Verbal communication C. Verbal communication

8. Before formatting always take a backup of.....

A. Operating system B. Data C. Both

9. If you are sure about your efforts and the hard work, you gain in whatever you do

A. Respect B. Revenue C. Confidence

10. The body language reflects the of a human being

A. Quality B. Personality C. Entrepreneurship

Exercise-2: Answer the Following Questions

1. What are the process to reset the mobile phone settings?

2. What kind of skill required in Computer and Software to repair Mobile Phone?

3. What are the differences between wage & self employment?

4. What are the difference between entrepreneur & business owner?



Transforming the skill landscape



Unit 3.1 - Role & Job Description - Repair & Rectify Mobile Phones

Unit 3.2 - Performance Criteria for Repairing & Rectifying Mobile Phones

Unit 3.3 - Knowledge & Understanding for Repairing & Rectifying Mobile Phones

Unit 3.4 - Skills (Optional)



Key Learning Outcomes

At the end of this module, you will be able to:

1. Explain role, job description, scope of work for repairing mobile phone
2. Identify key components of mobile phone and its functioning
3. Operate various tools and equipment required for the diagnosis of mobile phone
4. Operate various tools and equipments required to carry out repair work of mobile phone
5. Diagnose the defect and performance issues in various components of mobile phone
6. Diagnose faults, root cause and repair requirements in the mobile phone
7. Carryout repair work of components and micro-component of mobile phone
8. Carryout service and maintenance requirements of the mobile phone
9. Analyze customer complain and requirements
10. Prepare job card having information of customer, mobile phone brand & model and repair requirement
11. Prepare document for the action taken based on the complain registered in the job card

UNIT 3.1: Role & Job Description - Repair & Rectify Mobile Phones

Unit Objectives

At the end of this unit, students will be able to:

1. Explain role of Mobile phone repair technician in repairing & rectifying mobile phone fault
2. Explain job description in repairing & rectifying mobile phone

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Ask the participants about their problems with the handsets.
- Let them guess the resolutions to their handset problems.
- Explain the process of handset repairs.
- Explain the SOPs : Standard Operating Procedures for the handset repairs
- Explain the importance of Manufacturers' repair instructions
- Let the participants learn from the extensive practical exercises.

Say

- Proper fault diagnosis is important for repairing the handset correctly.
- Manufacturer's instructions on the repairs & replacement of parts should be strictly followed.
- Enthuse the participants by telling them, what is planned next
- Thank the participants for their involvement.

Notes for Facilitation

- Show some interesting videos to enhance the participants' learning experience.
- Ask questions to gauge their understanding of the subject matter.
- Give feedback on their learning during course.

Role : Repair and rectify the faults in mobile phone

Job Description : Repairing the faulty module in the hardware and checking for effective functioning. Also, check software issues and rectify

UNIT 3.2: Performance Criteria for Repairing & Rectifying Mobile Phones

Unit Objectives

At the end of this unit, students will be able to:

1. Explain performance criteria for Mobile phone repairs

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments

Do

- Ask the participants about their understanding of the performance criteria for handset repairs.
- Let them describe what is important in the repair operations.
- Explain the performance criteria as per the QP & NOS.

Say

- Repair technician's performance is very important in retaining a customer.
- Customer base will increase depending on the technician's performance on the job.
- Enthuse the participants by telling them, what is planned next
- Thank the participants for their involvement.

Notes for Facilitation

- Show some interesting videos to enhance the participants' learning experience.
- Get feedback on their learning during course.

3.2.1: Follow Standard Repair Procedure

The following points are important for on the job performance:

- Follow the standard procedure as documented by the mobile phone brand for each model
- Take anti static precautions before work and wear ESD wrist straps or aprons
- Follow standard operating procedure while handling hardware modules such as handling PCB with ESD standards
- Use recommended tools for specific operation suggested by the brand
- Maintain zero-material defect during material handling by following standard operating procedure

3.2.2: Assembling & Disassembling Mobile Phone

Understand and learn the following:

- Open the outer panel of the mobile phone using metal / plastic case opening tools
- Use the brand recommended screwdrivers to remove the screws to open the inner casing
- Locate the connectors and release them to remove the motherboard from the device
- Use hot air gun and other devices to remove the LCD screen from the panel
- Follow similar process and use appropriate tools to assemble the mobile phone

3.2.3: Diagnose Problem

Understand and learn the following:

- Understand the customer level complaint and confirm the issue
- Take preventive measures and identify if there are any other issues in the mobile phone
- Use the self diagnostic tools (similar to power on self test (POST) card) to perform standard diagnosis process and ensure functionality of different parts of the device
- Follow the standard diagnostic procedure as documented by the mobile phone brand for each model
- Check the recently installed application or software and verify the compatibility of the software with the mobile phone

3.2.4: Fix Software

Understand and learn the following:

- Check the recently installed application or software and verify the compatibility of the software with the mobile phone
- Uninstall the applications that is not compatible or creating issues in the mobile phone
- Install the licensed and authorised software to resolve issues and suiting the customer's require-ment

3.2.5: Repair the Component or Module

Understand and learn the following:

- Understand the scope of component level of repair as suggested by the brand
- Estimate the cost of repair and verify if it is within Beyond Economic Repair (BER)
- Heat the singled out component using hot air gun to melt the solder joints and remove from PCB
- Clean the board by melting the old solder and removing
- Place the new component precisely on the board at specified location
- Solder the component on the PCB using soldering stations
- Ensure the soldering is proper and the component is fixed as per the specification
- Operate automated BGA (ball grid array) work station to precisely remove the chip from the board and repair them
- Perform re-balling function by dismantling, heating the chip to be removed from the board, remove the solder remains, put new solder balls, place the chip and solder them with the PCB
- Check for functioning of the hardware after repairing
- Ensure that there is no damage of PCB while removal and fixing of SMD components
- Ensure other components are not damaged while using hot air gun for removal of a component which could cause damage
- Ensure adequate soldering for fixing the component and no further rework is required

3.2.6: Replace Faulty Component

Understand and learn the followin:

- Receive spare module / component from stores
- Identify and decide on replacing the module or component as the appropriate solution
- Take adequate measures and follow procedures when replacing expensive or delicate components such as LCD
- Ensure that cost of replacing is justified as the repair cost is beyond economic repair (BER)
- Ensure that replaced module or component is working and no further rework is required

3.2.7: Use of Equipment

Understand and learn the following:

- Identify and use appropriate tools and manuals for repairing the specific issue
- Prevent any accidents while handling hazardous tools
- Achieve results using appropriate tools for specific rework activity
- Maintain zero material defect during material handling by following standard operating procedure for tools handling

3.2.8: Seek Assistance on Unresolved Faults

Understand and learn the following:

- Seek technical assistance from engineer on faults that cannot be fixed
- Receive instruction from engineers on use of specific tools or new repair processes
- Discuss with superior if the cost estimate is found to be Beyond Economic repair (BER) and take recommended action
- Coordinate with superior for performing quality check on the repaired module

3.2.9: Report and Achieve Productivity Target

Understand and learn the following:

- Report on the work load and completion status
- Submit the appropriate documentation on completion of task assigned
- Document the work completed on the company ERP software for tracking and future references
- Achieve 100% daily and weekly target of number of repairs
- Meet the target of quality as per the Service Level Agreement (SLA) of the brand and avoid rework
Repair within the turnaround time (TAT) and deliver them

UNIT 3.3: Knowledge & Understanding for Repairing & Rectifying Mobile Phones

Unit Objectives

At the end of this unit, students will be able to:

1. Explain various mobile phone terminology
2. Identify key components of mobile phone and its functioning
3. Identify various mobile phone accessories and its functions
4. Operate various tools and equipment required for the diagnosis of mobile phone
5. Operate various tools and equipments required to carry out repair work of mobile phone
6. Explain the SOP : Standard operating procedures for mobile phone repair
7. Practice dismantling and assembly process of mobile phone
8. Diagnose the defect and performance issues in various components of mobile phone
9. Diagnose faults, root cause and repair requirements in the mobile phone
10. Carryout repair work of components and micro-component of mobile phone
11. Carryout service and maintenance requirements of the mobile phone
12. Explain ESD preventive measures

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments
- Repair tools & equipment

Do

- Explain the technical knowledge involved in the repairs & rectifications of the handsets.
- Let them describe some important in repair operations.
- Let them learn through the practical exercises the use of proper repair tools & equipment
- Explain the repair & defective component replacement techniques

Demonstrate



- The repair & replacement of defective components during role play & practical exercises.
- Call a volunteer and let him explain the repair operations
- Demonstrate the process of repairs.
- Demonstrate the process of work order entries.
- Demonstrate the process of getting customer feedback.

Say



- Customer delight is vital to our business.
- Explain the difference between customer satisfaction & customer delight

3.3.1: Organizational Context : Knowledge of the Company / Organization and its Processes

Understand and learn the following:

- Company's policies on: incentives, delivery standards, and personnel management
- Company's after sales support policy
- Importance of the individual's role in the workflow
- Reporting structure
- Company's policy on product's warranty and other terms and conditions
- Company's line of business and product portfolio
- Company's repair and stores policy
- Documentation procedure followed in the company
- Company's policy on repair time, turnaround time, production targets, working hours

3.3.2: Technical Knowledge

Understand & learn the following:

3.3.2.1: Introduction - What is a Mobile Phone?

A mobile phone is a mobile phone with an advanced mobile operating system which combines features of a personal computer operating system with other features useful for mobile or handheld use.

They typically combine the features of a cell phone with those of other popular mobile devices, such as personal digital assistant (PDA), media player and GPS navigation unit.

Most mobile phones can access the Internet, have a touchscreen user interface, with either a Gorilla Glass, sapphire, or similar screen, can run third-party apps, music players and are camera phones.

Most mobile phones produced from 2012 onwards also have high-speed mobile broadband 4G LTE internet, motion sensors, and mobile payment.

3.3.2.2: Mobile Phone Features

Most of the modern mobile phones have the following primary built in features:

- Phone and contact address book
- Texting
- Video calling (Apple FaceTime)
- Web browser
- E-mail
- Weather
- Predictive typing (see predictive text).
- Voice dictation
- Voice-activated virtual assistant
- Alarm clock, stopwatch, Timer
- Calculator
- Calendar
- Note pad
- Music player
- Photo album
- Camera (still and video)
- GPS navigation
- App store search

3.3.2.3: Most Popular Mobile Phone Brands in India

The following are the current most popular mobile phone brands in India:

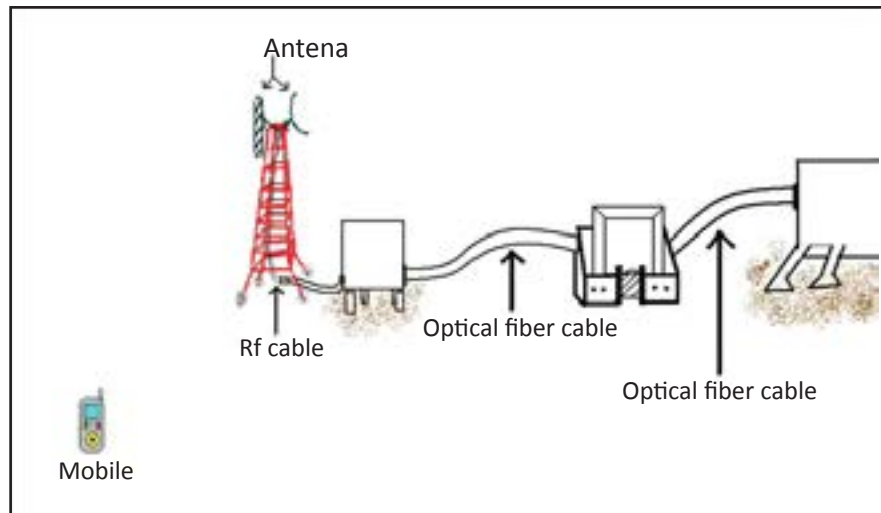
- | | |
|-------------|---------|
| • Samsung | • HTC |
| • Apple | • Sony |
| • Nokia | • Intex |
| • Micromax | |
| • Microsoft | |
| • Motorola | |
| • LG | |

3.3.3: Basic

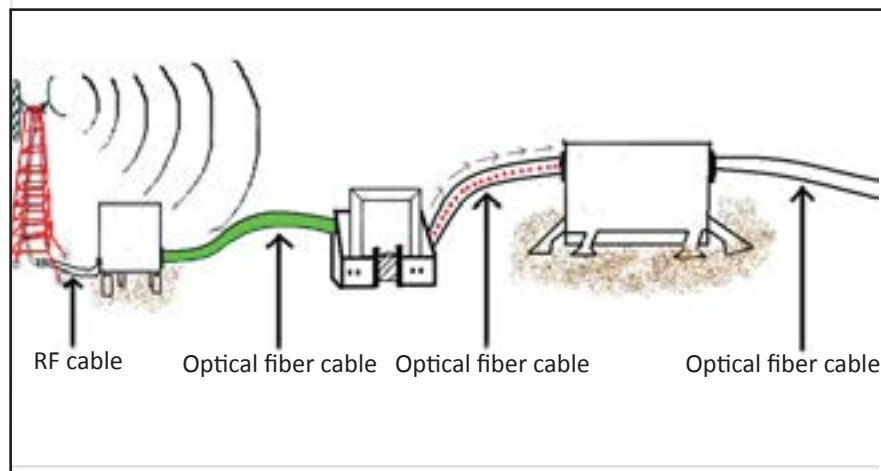
Understand & learn the following:

3.3.3.1: This is Mobile Communication Diagram

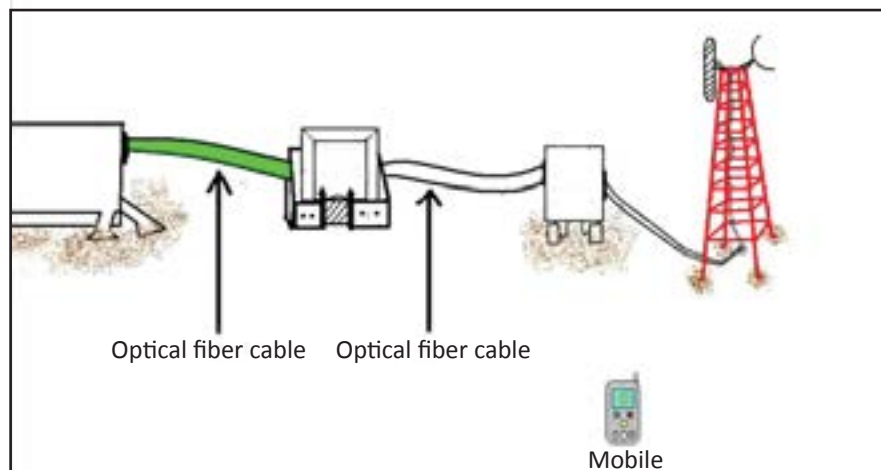
Step 1:



Step 2:



Step 3:



3.3.3.2: Mobile Operating System (OS)

Mobile operating System is a software similar to windows and Linux operating system and is compact in size. Mobile Operating system is installed on the mobile device which helps in operating mobile and also in operating other mobile based software and applications.

Mobile operating system integrates facilities of personal computer operating system for mobile device along with other facilities. These facilities are now mandatory requirements in modern mobile system like Touchscreen, Cellular, Bluetooth, WiFi, GPS mobile navigation, Camera, Video, Speech Recognition, Voice Recorder, Music Player, near field communication and infrared blaster etc.

Timeline:

- From 1973 to 1993 embedded system was used to control the operation of mobile phones
- In 1994 first Mobile Phone “IBM Simon” was launched with facilities such as Touch Screen, e-mail and Personal Digital Assistant.
- In 1999 Nokia officially launched first Mobile Phone Nokia S40 and Nokia 7110
- In 2002 Blackberry launched its first Mobile Phone
- In 2007 Apple launched iPhone with iOS
- In 2009 Samsung launched Samsung S8500 Mobile Phone with Bada OS
- In 2010 Windows launched its Mobile Phone with windows OS
- In 2013 Blackberry launched its new operating system Blackberry 10.
- In 2013 Google launched Android KitKat 4.4
- In 2014 Microsoft launched Windows Phone 8.1
- In 2014 Google launched Android 5.0 Lollipop
- In 2015 February Google launched Android 5.1 Lollipop and further in the month of September launched Android 6.0 Marshmallow

Types of Mobile Operating System (OS):

1) Android OS



Fig: 3.3.3.2.1 Operating System - Android

2) iOS

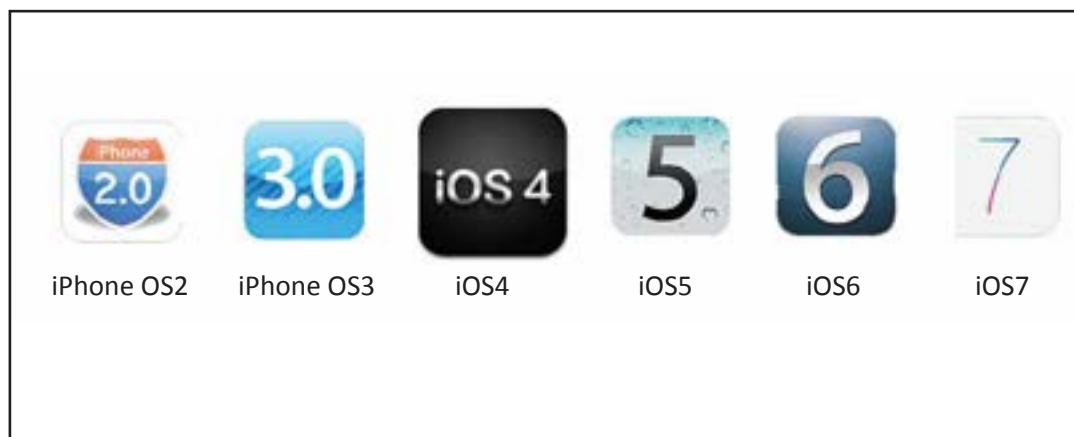


Fig: 3.3.3.2.2 Operating System - iOS

3) Windows OS

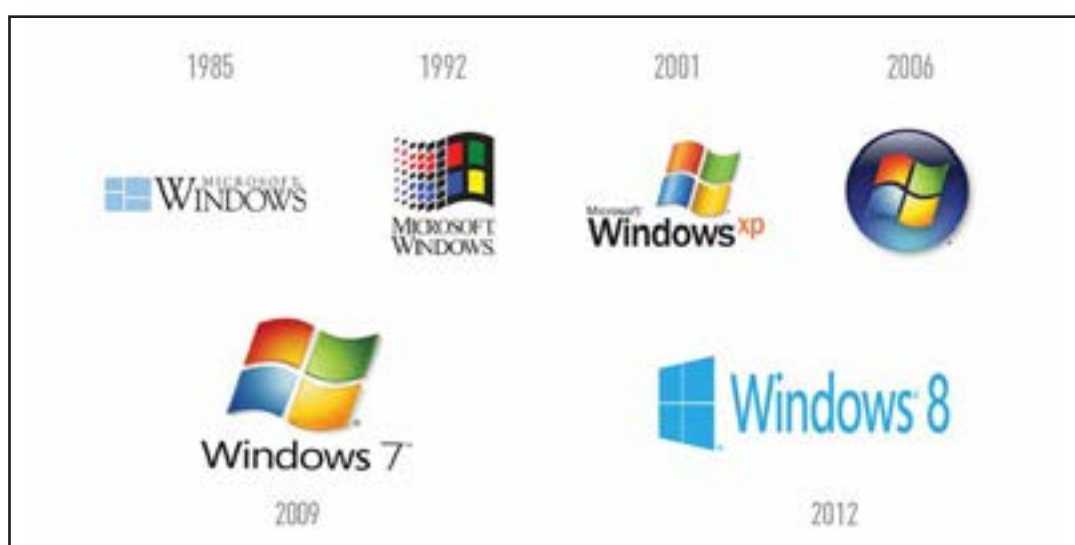


Fig: 3.3.3.3.2 Operating System - Windows

4) Blackberry OS

Versions of Blackberry	Release Date
	January 1999
	March 2002
	August 2009
	2010
	Summer 2011
	2012
10	January 2013

Tab: 3.3.3.3.2 Operating System - Android

3.3.3.3: Dismantling Mobile Phone

In this section we are going to learn mobile phone disassembly. In disassembly process we will open the mobile phone and dismantle all the parts.

3.3.3.4: Back Cover

First of all by using opener, we need to take out back cover of mobile phone carefully. To take out back cover we need to push slots carefully by the opener and then remove the back cover. Now place the back cover properly so that it should not get any scratches.



Fig: 3.3.3.4 Back Cover

3.3.3.5: Battery

Now we need to remove battery from mobile phone. To remove battery, push the battery carefully inside using opener and slightly lift it.



Fig: 3.3.3.5 Battery

3.3.3.6: Removal of Screws

After removing battery, we need to remove this back panel. To remove the back cover we need to remove all these screws. During removal of screws, we need to be very careful as if one screws goes missing it will be difficult to locate it. We need to use proper screw driver to remove these screws. Hold the screw driver as shown. Tip of this screw driver has magnetic property, which helps in lifting and removing the screws from the slot. During disassembly process of mobile, make sure to use good quality tools because ordinary tools may damage the top thread of screws.



Fig: 3.3.3.6 Body Screw

Now we will remove all the screws of middle portion one by one. It will be better to keep white paper or cloth while disassembling so that small parts will not get lost.

Now we will remove screws from lower portion. In case, if any screw get stuck in such case we can remove it carefully using tweezers. Now we will inspect this mobile to make sure none of the screw is stuck on the body slot and ensure that all are removed.

3.3.3.7: Middle Panel

Now we will remove this middle panel using opener. Make sure not to apply extra force otherwise this panel may break also. Now you can see this volume switch which is attached with the panel and post removal of the middle panel it will also come out. Keep all the parts carefully so that we can find it easily. Now slowly remove this panel, once the panel is removed, then On/Off switch will also come out.



Fig: 3.3.3.7 Middle panel

3.3.3.8: Shortcuts

BC - Battery Connector
 DC - Display Connector
 HF - Headphone Connector
 SPK - Speaker
 RIN - Ringer
 M/C - Microphone
 CC - Charging Connector
 MM - Multimeter
 HW - Hardware
 SW - Software
 USB - Universal Serial Bus
 GND - Ground
 VB - Vibrator Motor
 IC - Integrated Circuit
 PW - Power On / Off
 IMEI - International Mobile Equipment Identity
 CDMA - Code Division Multiple Access
 GSM - Global System for Mobile
 MMC - Multimedia Memory Card
 PUK - Pin Unlock Key
 SMS - Short Message Service
 MMS - Multimedia Message Service
 E-Mail - Electronic Message
 LCD - Light Crystal Display
 LED - Light Emitting Display
 RX - Receiver
 TX - Transmit

UI - User Interface
VBAT - Voltage for Battery Connector
VCHA - Voltage for Charging
SIM - Subscriber Identity Module
HDMI - High Definition Multimedia Interface
BSI - Battery Status for Information
MHz - Mega Hertz (Fer)
IPS - In-Plane Switching
TRAI - Telecom Regularity Authority of India
VAS - Value Added Services
TVC - Total Video Convertor
PIN - Personal Identification Number
GPRS - General Packet Radio Service
UIM - User Identity Module
UFS - Universal Flashing Software
WAP - Wireless Application Protocol
FDMA - Frequency Division Multiple Access
Wi-Fi - Wireless Fidelity
IR - Infra Red
GPS - Global Positioning System
TDMA - Time Division Multiple Access
MIN - Mobile Identification
RF - Radio Frequency
IMSI - International Mobile Subscriber Identity
PUC - Personal Unlock Code
RBS - Radio Base Station
BTS - Base Transmitting Station
BSC - Base Transmitting or Transceiver Station
MSC - Mobile Service Switching Center
ITU - International Telecommunication Union
UMTS - Universal Mobile Telecommunication System
ISD - International Subscriber Dialing
PCO - Public Call Office
DSP - Digital Signal Processor
DCS - Digital Cellular Service
LAI - Location Area of Identity
PCBA - Printed Circuit Board Assembly
MMM - Multimedia Mode
HSDPA - High Speed Downlink Protocol Access
WCDMA - Wideband Code Division Multiple Access

3.3.4: Tools

Understand & learn the following:

3.3.4.1 Solder Gun

This is one of the important tool used in mobile repairing. As you can see this is a micro solder gun. Bit of solder gun is very sharp which helps us to do the soldering at very small level. We should always purchase good quality micro solder gun so that we can use it efficiently for a longer period. It works on 12 Volt DC. It helps us in repairing process and also soldering of small components. In 90% of mobile repairing works, we need to use micro solder gun.



Fig: 3.3.4.1 Solder Gun

Scan image to view Mobile Video

3.3.4.2: Solder Wire

While doing any type of soldering we need soldering wire along with soldering gun. Solder wire is made-up of lead and tin, used for solder-ing and sometime also used for jumpering. Solder wire is easily avail-able in the market costing around Rs. 20 to 25 . We need soldering wire during mobile repairing process on a regular basis.



Fig: 3.3.4.2 Solder Wire

3.3.4.3: Soldering Paste

During soldering process we need soldering paste along with solder iron. It helps in giving good finishing while soldering. Variety of solder-ing paste are available in the market, but we should always purchase best quality soldering paste as shown here.



Fig: 3.3.4.3 Soldering paste

Scan image to view Mobile Video

3.3.4.4: PCB Stand

PCB stand is also known as PCB holder. It is used during repairing, to hold the motherboard. If PCB is getting over heated we can place it on holder and can do soldering or de-soldering process easily.



Fig: 3.3.4.4 PCB Stand

Scan image to view Mobile Video

3.3.4.5: PCB Cleaner

You can see two liquid bottles. These are PCB cleaners. One of these liquid looks like water called I.P (I.P.A) liquid and another one is pink coloured called "Elmaa". We use both of these liquid to clean the motherboard. It helps to wash the motherboard which also helps in solving other minor problems on the motherboard.



Fig: 3.3.4.5 PCB Cleaner

3.3.4.6: Ultrasonic Cleaner

Used to clean PCB of a mobile phone and electronic components



Fig: 3.3.4.6 Ultrasonic Cleaner

3.3.4.7: ESD Brush

It is an antistatic brush used to clean the motherboard and also used in washing motherboard with I.P and Elmaa liquid.



Fig: 3.3.4.7 ESD Brush

Scan image to view Mobile Video

3.3.4.8: Cutter Blade Set

This is a cutter blade set and have various types of blades used for different purposes. It is mainly used in locating display strip track, Motherboard track, cutting of jumper wire etc...



Fig: 3.3.4.8 Cutter Blade Set

3.3.4.9: Opener

It is made-up of plastic and helps in opening mobile phone.



Fig: 3.3.4.9 Opener

Scan image to view Mobile Video

3.3.4.10: Multimeter

Multimeters are of two types – Analog Multimeter and Digital Multimeter. How to use Multimeter to check voltage, Ohms, battery, continuity etc is more or less the same. The only difference is that a digital Multimeter has a digital display of all the readings. An analog Multimeter has a needle-type pointer that moves to a reading while testing any device or electronic component. Digital multimeter is widely used in service and repair work.

Digital Multimer:

Digital multimeter provide following :

Function and Range Switch: This switch is used to select the function and desired range as well as to turn the instrument. In order to extend the life of the battery of the Multimeter, this switch must be kept in the "OFF" position when the instrument is not in use.

Display or LCD: To display all the readings.

Common Jack: Plug in connector for black (negative) test lead or probe.

V ? mA Jack: Plug in connector for red (positive) test lead or probe for all voltage, resistance and current (except 10A) measurements.

10A Jack: Plug in connector for red (positive) test lead or probe for current measurement.



Fig: 3.3.4.10.1 Digital Multimeter

Analog Multimeter:

It is one of the very useful tool for repairing the mobile. Just like it is important for a doctor to always carry stethoscope with them, a mobile service technician should always keep multimeter with them. It is very useful in testing the mobile phone. With the help of multimeter we can test mobile phone in different angle and can say mobile is live or dead. Incase mobile is dead then also it helps to identify the cause. With the help of multimeter we can test all com-ponents of mobile and battery. It helps in finding Voltage, continui-ty and resistance very efficiently which plays very important role during repairing. Always purchase good quality Multimeter as it will give you accurate reading.



Fig: 3.5.4.10.2 Analog Multimeter

Scan image to view Mobile Video

3.3.4.11: Screwdriver Kit

It has several screwdrivers of different shapes and sizes to disassemble and assemble a mobile phone. Aven Tools is a world renowned manufacturer, exporter and supplier of all kinds of tools and tool kits.

T6 Screwdriver

This type of screw driver is mainly used to open Nokia and other old types of mobile phones.

Star Screw Driver

This type of screw drivers are mainly used to open latest Mobile Phone.



Fig: 3.3.4.11 Screwdriver Kit

3.3.4.12: Power Supply

It is used to boost the power of battery of a mobile phone



Fig: 3.3.4.12 Power Supply

3.3.4.13: Magnifying Lamp

It is used to see the magnified view of the PCB of a mobile phone. Most magnifying lamps also have light. Magnifying lamps are available in different magnification such as 3x, 4x, 5x, 10x, 50x etc.



Fig: 3.3.4.13 Power Supply

3.3.4.14: Multi Charger

Multi charger is a device used to charge various brands and models mobile phone.



Fig: 3.3.4.14 Multi charger

3.3.4.15: DC Power Supply

Regulated DC (Direct Current) power supply is used to supply DC current to a mobile phone. Most repair person used DC power supply to switch ON a mobile phone with-out battery.



Fig: 3.3.4.15 DC Power Supply

3.3.4.16: Antistatic Mat

It is laid or placed on the table or workbench where mobile repairing is done. The mat is grounded using a grounding cord or normal grounding wire. This also prevents damage from static electricity.



Fig: 3.3.4.16 Antistatic Mat

3.3.4.17: Antistatic Hand Gloves

It is important to wear ESD-Safe hand gloves while repairing a mobile phone to prevent PCB and electronic components from static charge.



Fig: 3.3.4.17 Antistatic Hand Gloves

3.3.4.18: Wrist Strap

It is worn in the wrist of the person who is repairing a mobile phone. It helps to discharge or ground static charge thus preventing the PCB or electronic components from any damage.



Fig: 3.3.4.18 Wrist Strap

3.3.4.19: BGA Kit

BGA Kit or BGA Reballing Kit is used for reballing the solder balls of a BGA IC (Ball Grid Array). There are several BGA Reballing kit and BGA rework stations available in the market. Most repairing professionals generally start with a starter BGA Reballing kit and gradually shift to latest universal kits and stations.

How to Use a BGA Reballing Kit

Desolder and remove the BGA IC from the PCB.

Now clean the solder from the bottom of the IC and the PCB where the IC was soldered. Use a soldering iron and desoldering wire or wick.

Now select the right size of the IC depending on the number of balls from the stencil supplied with the kit.

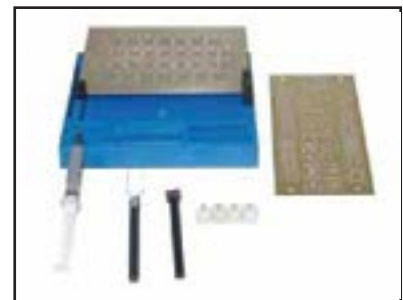


Fig: 3.3.4.19 BGA Kit

Place the IC on the stencil and tightly hold it with the stencil using clip or tape.
 Now apply solder Paste from the other side of the stencil. Solder paste will stick to the IC through the tiny holes in the stencil.
 Now apply hot air using SMD rework station. This will solidify the solder paste and it will form solder balls that will stick to the IC.
 Now clean the IC with Acetone or IPA solution and remove it from the stencil.

3.3.4.20: ESD

Mobile Phone components assembled on motherboard are sensitive to electrostatic discharge. It is possible for electronic devices to be damaged by ESD that is hardly noticeable to the human body. These components or devices can be damaged by common static charges which build up on people, tools, and other non-conductors or semiconductors. Humidity also has a significant effect on ESD.

Common electrostatic-sensitive devices

- MOSFET transistors, used to make integrated circuits (ICs)
- CMOS ICs (chips), integrated circuits built with MOSFETs.
- TTL chips
- Laser diodes
- Blue light-emitting diodes (LEDs)
- High precision resistors

How does damage from ESD happen?

When a statically-charged person or object touches an electrostatic discharge sensitive device, there is a possibility that the electrostatic charge could be drained through sensitive circuitry in the device. If the electrostatic discharge possesses sufficient energy, damage could occur in the device due to localized overheating

What damage does ESD cause in an electronic

There are basically two categories of damage from ESD:

Catastrophic damage – the electronic device is rendered inoperable immediately after the ESD event. A semiconductor junction or a connecting metallization could have been damaged by the electrostatic discharge.

Latent damage – the electronic device appears to be working fine following the ESD event. However, the sensitive circuitry has been damaged and could fail to operate properly at some time in the future

A recent investigation found the human body and its clothing capable of storing between 500V and 2,500V electrostatic during the normal workday this is far above the level that damages circuits. In order to prevent damage, while working with sensitive components, technician should use a grounding mat or other grounding tool. A technician may also need to wear antistatic wristband strap or an antistatic apron.

3.3.5: Android Mobile Phone Disassembly

Understand & learn the following:

3.3.5.1: Back Cover

First of all by using opener, we need to take out back cover of mobile phone carefully. To take out back cover we need to push slots carefully by the opener and then remove the back cover. Now place the back cover properly so that it should not get any scratches.

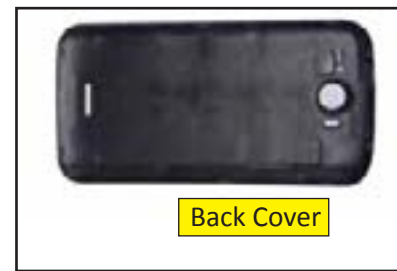


Fig: 3.3.5.1 Back Cover

3.3.5.2: Battery

Now we need to remove battery from mobile phone. To remove battery, push the battery carefully inside using opener and slightly lift it.



Fig: 3.3.5.2 Battery

Scan image to view Mobile Video

3.3.5.3: Removal of Screws

After removing battery, we need to remove this back panel. To remove the back cover we need to remove all these screws. During removing the screws we need to be very careful as if one screws goes missing it will be difficult to locate it. We need to use proper screw driver to remove these screws.

Hold the screw driver as shown. Tip of this screw driver has magnet-ic property, which helps in lifting and removing the screws from the slot.

During disassembly process of mobile, make sure to use good quality tools because ordinary tools may damage the top thread of screws.

Now we will remove all the screws of middle portion one by one. It will be better to keep white paper or cloth while disassembling so that small parts will not get lost.

Now we will remove screws from lower portion. In case, if any screw get stuck in such case we can remove it carefully using tweezers. Now we will inspect this mobile to make sure none of the screw is stuck on the body slot and ensure that all are removed.



Fig: 3.3.5.3 Screw Assembly

Scan image to view Mobile Video

3.3.5.4: Middle Panel

Now we will remove this middle panel using opener. Make sure not to apply extra force otherwise this panel may break also. Now you can see this volume switch which is attached with the panel and post removal of the middle panel it will also come out. Keep all the parts carefully so that we can find it easily. Now slowly remove this panel, once the panel is removed, then On/Off switch will also come out.



Fig: 3.3.5.4 Middle Panel

3.3.5.5: Camera Strip

Now we can see the motherboard which is also called PCB (Printed Circuit Board). All connection of mobile phone are made thru this PCB. Now we will remove all the plastic strips very carefully.

First of all we will remove camera strip. To remove camera strip, hold the strip using tweezers and carefully pull it outside.

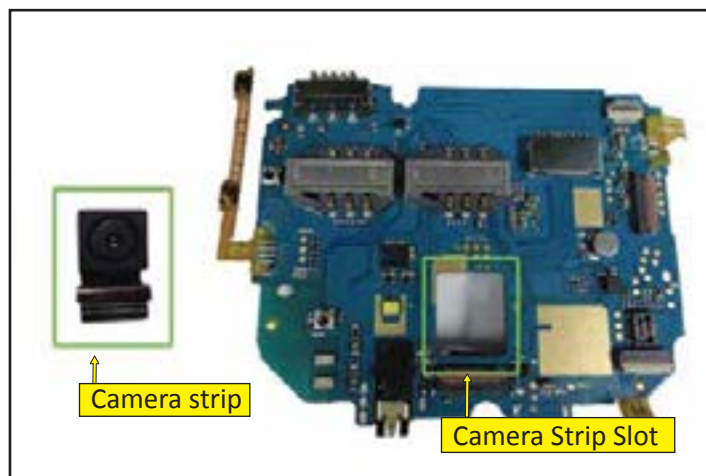


Fig: 3.3.5.5 Camera Strip

Scan image to view Mobile Video

3.3.5.6: Touchpad Strip

Now we will remove touchpad strip carefully using tweezers. We need to be very careful in removal of strip as these strips are very sensitive and may even get damage by tweezers tip also. IF it gets damaged touchpad will stop working.

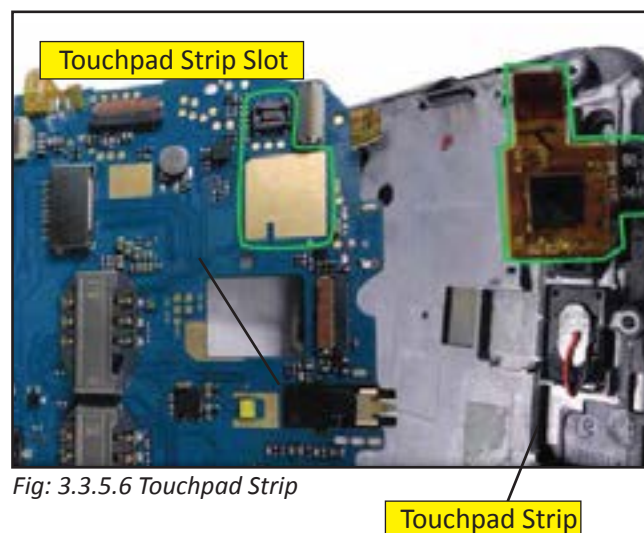


Fig: 3.3.5.6 Touchpad Strip

3.3.5.7: Front Module Camera

Now we will remove front module camera strip. We need to remove this strip very carefully without applying force otherwise it may also get damaged.

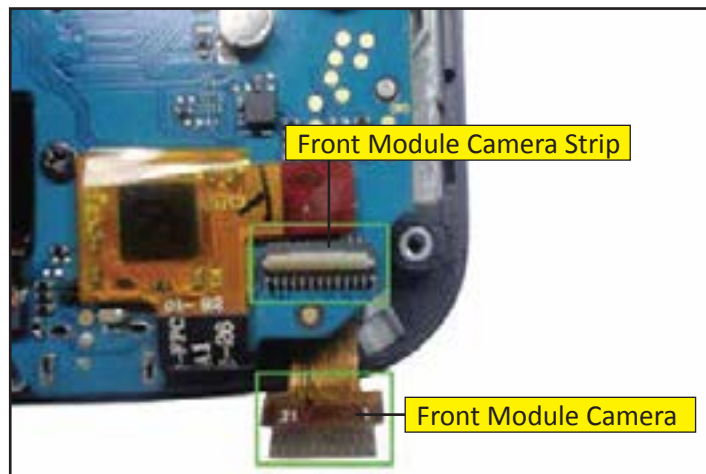


Fig: 3.3.5.7 Front Module Camera

Scan image to view Mobile Video

3.3.5.8: Display Strip

Now we will remove display strip. This is very important strip. To remove display strip lift the lock of strip using tweezers and then open the lock and now remove the strip carefully from motherboard.

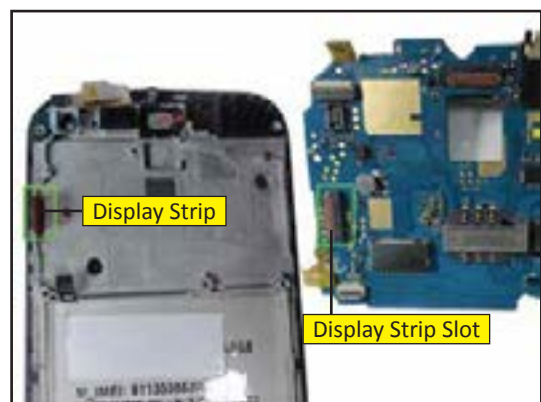


Fig: 3.3.5.8 Display Strip

3.3.5.9: Power Supply Strip

Now we are going to remove the strip from motherboard which connects parts like Mic and Vibrator with motherboard and also connects motherboard with lower-board.

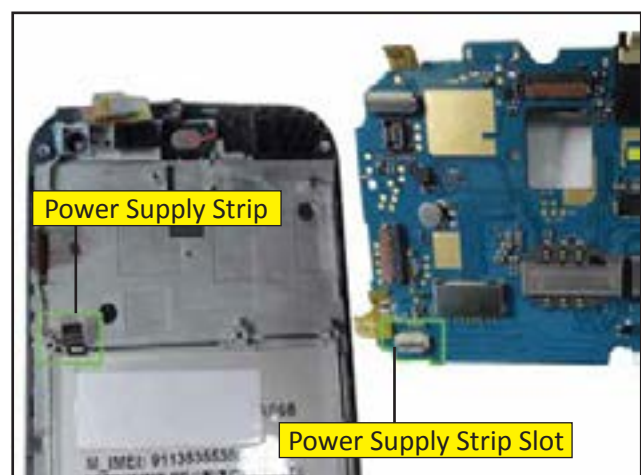


Fig: 3.3.5.9 Power Supply Strip

Scan image to view Mobile Video

3.3.5.10: Antenna Wire

Once all the strips are removed, we will also remove this antenna wire from motherboard.

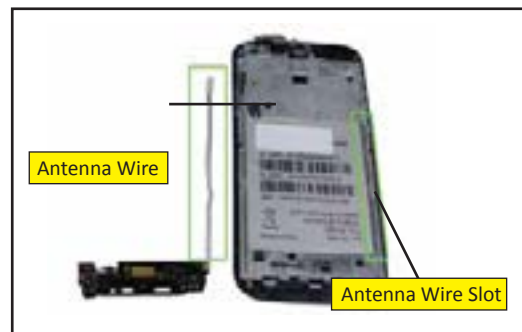


Fig: 3.3.5.10 Antenna Wire

3.3.5.11: Motherboard

Now we will remove motherboard carefully using hand and keep it carefully. Now we can see upper portion of mobile is fully dismantled.



Fig: 3.3.5.11 Motherboard

3.3.5.12: Ground Panel

Now we will dismantle lower portion which is also called ground panel. This section has no screw. To remove ground panel we need to pull it slightly upwards and then open the lock using tweezers. Now ground panel is also removed, keep it carefully in safe place.

Disassembly process of Smartphone is over now. We need to be very careful during disassembling process as a minor mistake may permanently damage mobile phone.

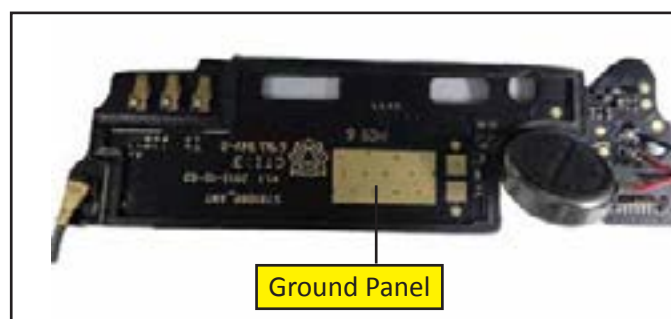


Fig: 3.3.5.12 Ground Panel

3.3.5.12: Ground Panel

In this portion we are going to learn how to assemble android Smartphone. Assembling process is reverse process of disassembling. During disassembling the part which was dismantled last will be used first during assembling process.

3.3.6.1: Ground Panel

This is the ground panel which we dismantled at the end. We will first connect the ground panel in the same way we removed it.

Place the ground panel at lower end on the slot and carefully lock it. Now place the vibrator in its slot properly.

Lower portion of the Smartphone is assembled, now we will place the antenna wire properly in its slot.

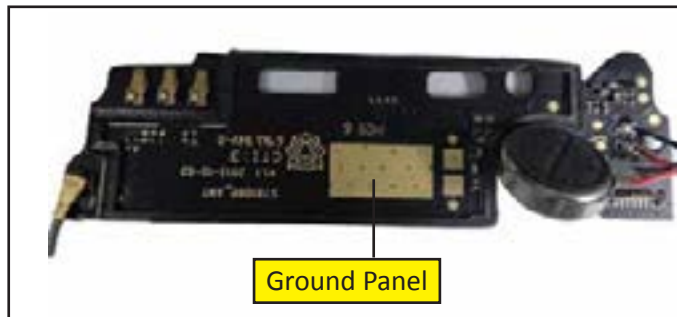


Fig: 3.3.6.1 Ground Panel

Scan image to view Mobile Video

3.3.6.2: Camera Strip

Place the camera properly in the camera slot and then place the camera strip carefully in camera strip slot. Before placing the camera strip in the strip slot make sure, line on camera strip is straight so that it can be placed properly in the slot otherwise camera may not work properly.

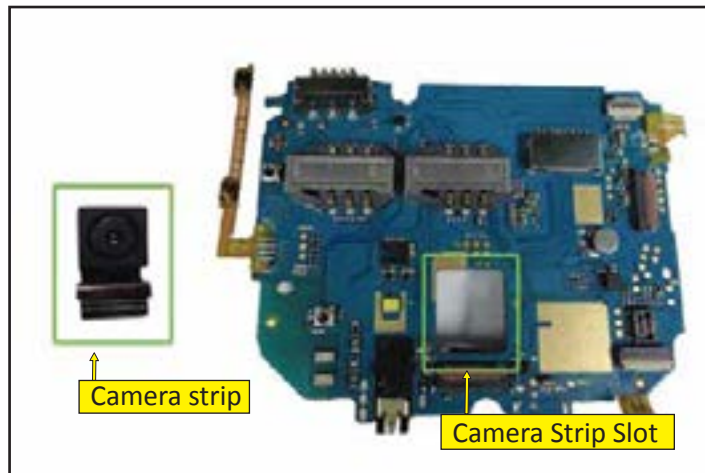


Fig: 3.3.6.2 Camera Strip

3.3.6.3: Motherboard

Now place the motherboard in its slot. While placing the motherboard never apply force to adjust in the slot. Place it slowly and carefully in the slot.

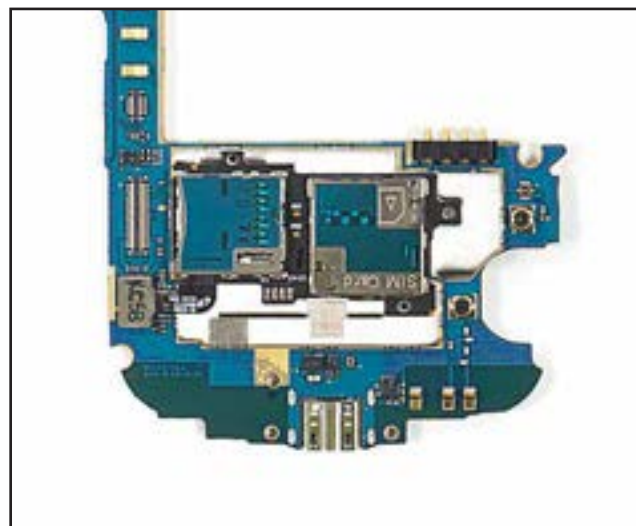


Fig: 3.3.6.3 Motherboard

Scan image to view Mobile Video

3.3.6.4: Antenna Wire

Place the Antenna wire properly and carefully using tweezers in it's slot

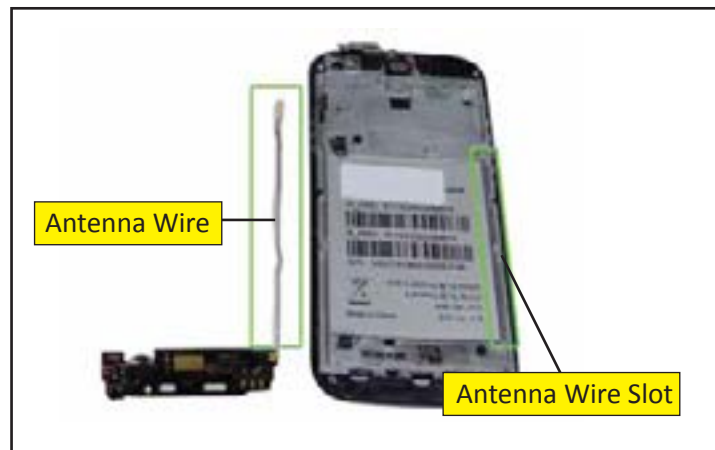


Fig: 3.3.6.4 Antenna Wire

3.3.6.5: Power Supply Strip

First we will place the strip which gives supply to lower portion of the phone. Place the strip inside slot by holding it using twee-zers and push it inside strip slot carefully and then lock it.

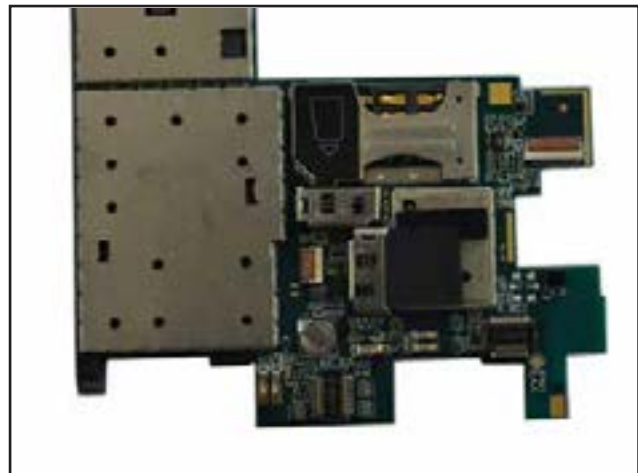


Fig: 3.3.6.5 Power Supply Strip

Scan image to view Mobile Video

3.3.6.6: Display Strip

Now we are going to place display strip which is an important strip. Hold the display strip using tweezers and push it inside the strip slot carefully while doing it make sure camera strip line should be straight. Now lock the strip.

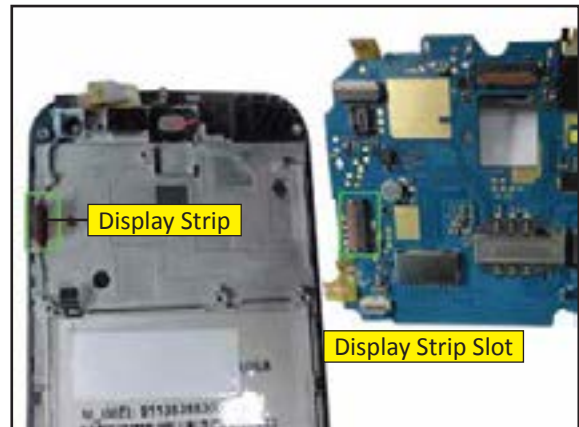


Fig: 3.3.6.6 Display Strip

3.3.6.7: Front-end Module Camera

Now we are going to connect front module camera. Hold the front module camera strip using tweezers and push it inside strip slot carefully while doing it make sure camera strip line should be straight.

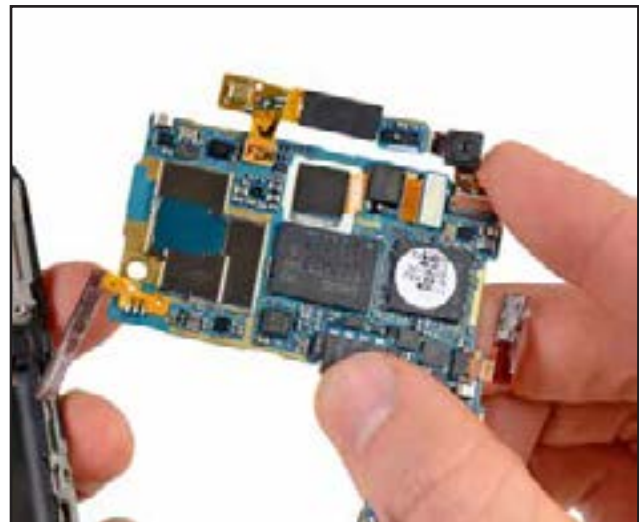


Fig: 3.3.6.7 Front Module Camera

Scan image to view Mobile Video

3.3.6.8: Touchpad Strip

Now we are going to place touchpad strip which was removed as the first strip during disassembly process and this is going to be the last strip during assembly process. Now we have placed all the strips properly on the motherboard.

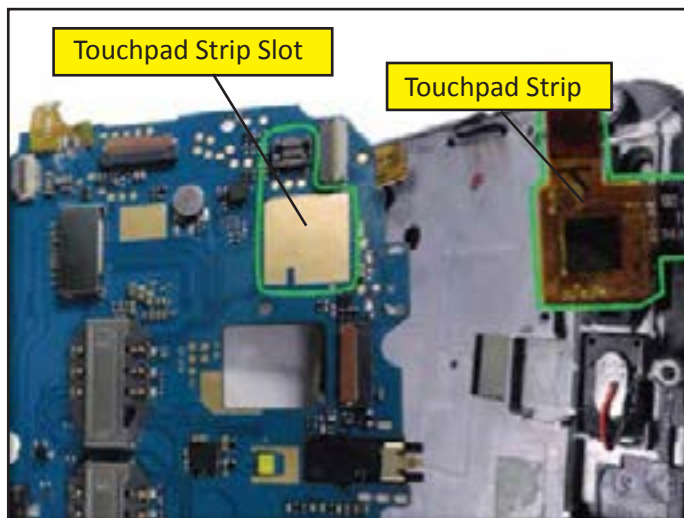


Fig: 3.3.6.8.1 Touchpad Strip

Scan image to view Mobile Video

Now we are going to tighten the screw on the motherboard using a suitable screwdriver. Make sure the volume and On/Off switch is in its place and should not get disturbed because during fitting when we will press the body, if the strip will come on the body panel, it may get damaged also.

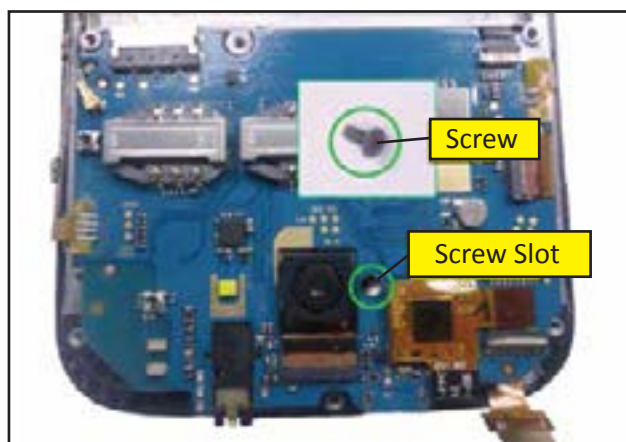


Fig: 3.3.6.8.2 Screw Slot

Now we will place the antenna wire properly in its slot. If the antenna wire will not get properly locked, it may give a network problem in the mobile. We need to place it the way it is being demonstrated.

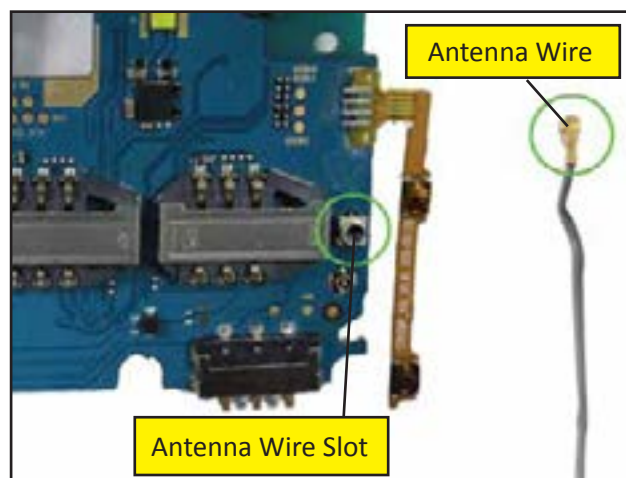


Fig: 3.3.6.8.3 Antenna Wire Slot

3.3.6.9: Middle Panel

Now we are going to fit middle panel. First press the top portion so that it should be placed properly in the slot, we will also observe sound while we press it.

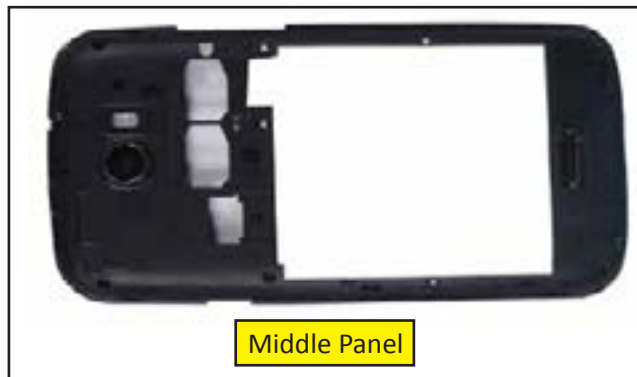


Fig: 3.3.6.9.1 Middle Panel

Now place the On/Off switch in its slot properly using tweezers and press it slightly. Now we will place volume key in its slot.

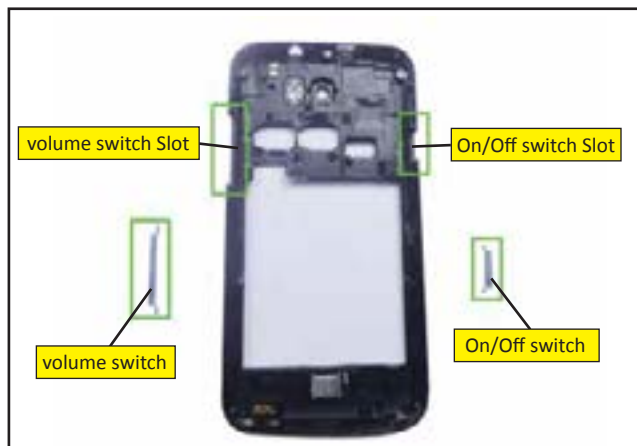


Fig: 3.3.6.9.2 On/Off Switch

Make sure strip should be in proper place otherwise we cannot place volume key in its location.

3.3.6.10: Screw Fitting

Now we are going to tighten all screws. First we will place screws on the lower end using magnetic screwdriver and tighten it. Then after we will place the screw on upper end and tighten it. Now we will place screw in middle section and tighten it and finally we will place top 2 screws which is very important and tighten them.

During tightening the screw hold the screw driver like this, do not hold the screw driver like this. Now we have tightened all the screws.



Fig: 3.3.6.10 Screw Assembly

3.3.6.11: Battery

Now we are going to place battery. Place the battery properly in it's slot and then press it slightly.

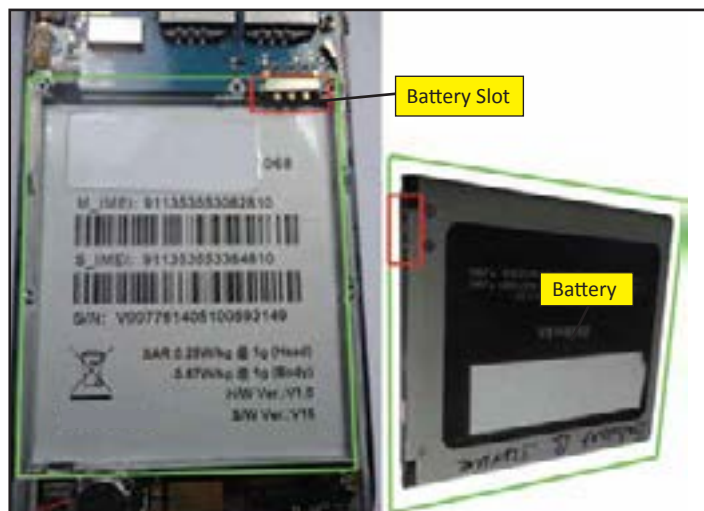


Fig: 3.3.6.11 Battery

3.3.6.12: Back Cover

Now we are fitting the back cover. Press all sides of back cover properly . Make sure there is no gap between two panels. Now test the mobile properly to make sure all the jobs has been done properly. Post testing the assembly process of Android Smartphone, assembly process is completed.



Fig: 3.3.6.12 Back Cover

3.3.7: Practical Hardware

Understand & learn the following:

3.3.7.1: Removing and Soldering Components

Before touching motherboard or any component of Mobile phone make sure you have grounded yourself for ESD and have also taken necessary action for ESD like use of Antistatic Mat / Hand Gloves / Wrist Strap to prevent any damage to components of mobile phone.

In this section we will see how to connect charging connector. As you can see this is a mobile PCM board. First place the board on PCB stand and make sure charging connector is in open area.

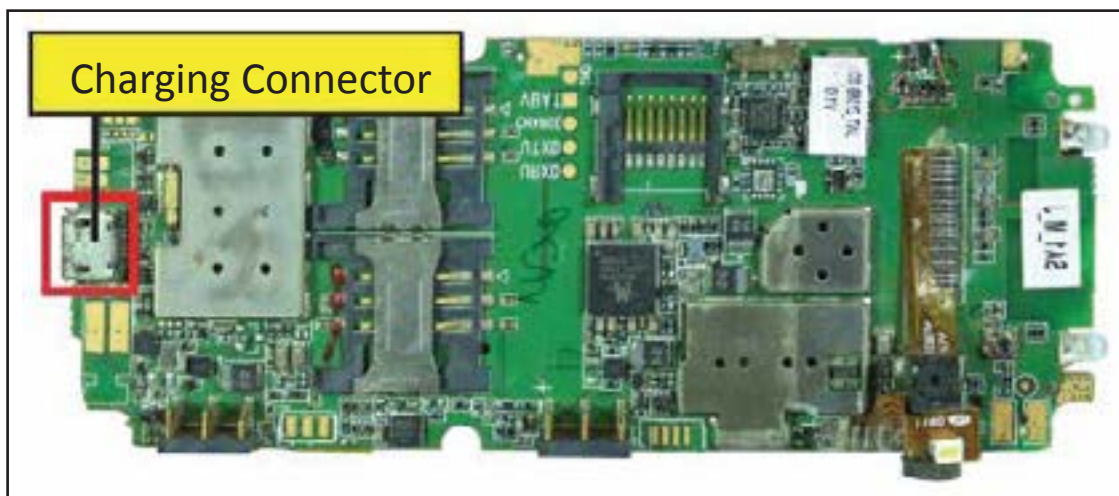


Fig: 3.3.7.1.1 Motherboard - Charging Connector

Scan image to view Mobile Video

Now we will apply soldering flux on charging connector and hold the connector using tweezers. Now apply hot air gun on charging connector and slowly remove the charging connector.



Fig: 3.3.7.1.2 Soldering Flux on Charging Connector

As you can see we have removed the charging connector. Now we have to remove the charging connector track without damage. As you can see, the holes are now not properly visible on the board. We have to make it proper so that the base of the charging connector should go smoothly into the holes to connect the charging connector on the board.

Now we can see four bases which need to be soldered using soldering wire. Once the soldering of base is over, turn it over. Now we need to do the soldering of the track on the backside. To perform this process we need soldering gun with small bit. First clean the bit by filing, now apply flux on the track and then press the track from bottom to top area



Fig 3.5.7.1.3: Charging Connector and Slot

Scan image to view Mobile Video



Fig: 3.3.7.1.4 Charging Connector Soldering - Step 1



Fig: 3.3.7.1.5 Charging Connector Soldering - Step 2

Now you can see charging connector is connected. Now we will remove the holes on the backside using soldering gun it will give further strength to the connector base.

3.3.7.2: Battery Connector

This is battery connector of mobile phone. Apply flux on the track and hold the connector using tweezers now with the help of hot air gun remove it slowly. Now apply flux on track and clean it then after connect the battery connector back on its track through soldering process.

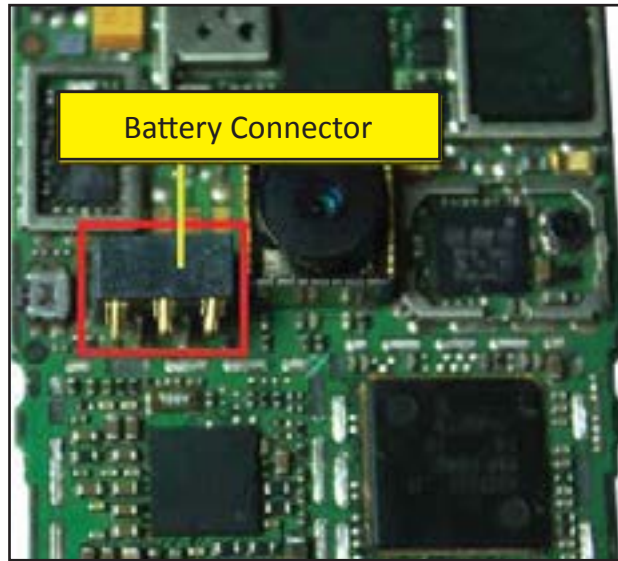


Fig: 3.3.7.2 Battery Connector

Scan image to view Mobile Video

3.3.7.3: Headphone Connector

In this section we will see how to remove and connect the headphone connector. Headphone connector is more or less common in different types of mobile phones.



Fig: 3.3.7.3.1 Headphone Connector

Scan image to view Mobile Video

Apply flux on the headphone connector track and hold it properly with tweezers and now apply hot air gun and slowly remove it.

To connect It back clean the track by applying flux. Now create hole on the board using hot air gun and tweezers.



Fig: 3.3.7.3.2 Headphone Connector Soldering - Step 1

Now place the headphone connector properly on the hole and do the soldering process using soldering iron and soldering wire.



Fig: 3.3.7.3.3 Headphone Connector Soldering - Step 2

3.3.7.4: SIM Tray

In this section, we will learn how to remove and connect back SIM tray. Process involved in removal and connecting back of SIM tray and Memory tray in mobile phone is identical. Apply flux on connecting point of SIM tray, hold it with tweezers and then apply hot air gun and slowly SIM tray will be de-soldered and can be removed. Post removal of SIM tray, apply flux on the SIM tray track and clean it. The SIM tray we have removed as a part of demonstration has six soldering points. Place the SIM tray back on the same points and solder it back using solder gun and solder wire.

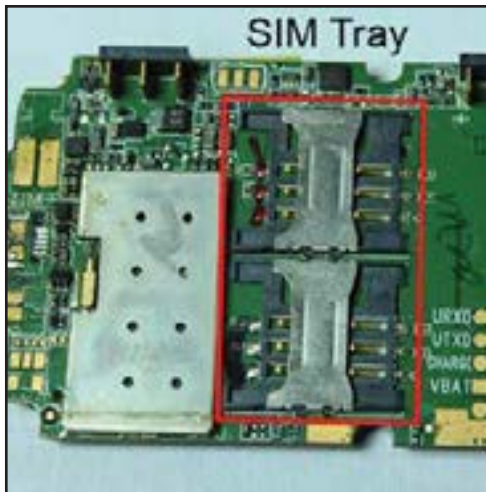


Fig: 3.3.7.4 SIM Tray

Scan image to view Mobile Video

3.3.7.5: Memory Tray

In this section, we will learn how to remove and connect back memory tray. Process involved in removal and connecting back of SIM tray and Memory tray in mobile phone is identical. Apply flux on connecting point of memory tray, hold it with tweezers and then apply hot air gun and slowly memory tray will be de-soldered and can be removed. Post removal of memory tray, apply flux on the memory tray track and clean it. The memory tray we have removed as a part of demonstration has eight soldering points. Place the memory tray back on the same points and solder it back using solder gun and solder wire.

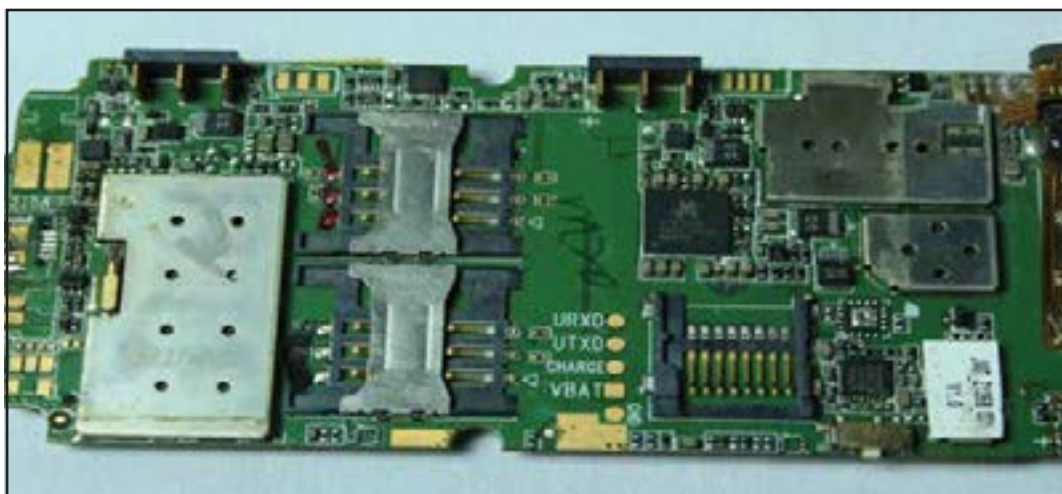


Fig: 3.3.7.5 Memory Tray

Scan image to view Mobile Video

3.3.7.6: Speaker

In this section we will see how to remove and connect speaker. Speaker is used in mobile phone for listening the voice. On speaker you will find one red mark (+) and one black mark (-)

To remove speaker we will use soldering flux. Apply flux on both points of the speaker and with the help of soldering iron de-solder both the wires. We can connect it back by re-soldering.



Fig: 3.3.7.6 Speaker

3.3.7.7: Ringer

This is PCB board and this component on PCB board is called ringer. This is used for ringtone in mobile phone. On ringer you can see + sign for red wire and – sign for black wire. To remove ringer first

apply flux on both the point and de-solder the wire using soldering iron. Now we will see how to connect ringer. As per the indication given, solder red wire on “+” point and black wire on “-” point.



Fig: 3.3.7.7 Ringer

Scan image to view Mobile Video

3.3.7.8: Mic (Microphone)

Mic. is used to record our voice and pass it on to the network to be delivered to the recipient. Mic. Also has red wire with “+” sign and black wire with “-” sign. By applying flux on Microphone Point we can de-solder Microphone. To solder it back we need to solder red wire on “+” point and black wire on “-” point.



Fig: 3.3.7.8 Microphone

Scan image to view Mobile Video

3.3.7.9: Display

In this section we will learn how to remove display and connect it back. Display problem is very common in mobile phones. There are three types of displays. Lock Display – Most of the Smart phones are using lock display. In this type of display, just by removing lock on the display strip we can remove the display.

Soldering Display - To remove this type of display we need to apply soldering/de-soldering flux on display track. Hold the display strip and apply hot air gun on soldering point and slowly remove it without pulling. Never pull display strip as it may cause track to break and the strip will get damaged and will be difficult to solder it back. Now we have removed the display strip. To connect it back first clean the track of display strip using solder gun. Post cleaning, see it carefully and you will observe two holes on both the sides and we can see similar holes on the PCB board. To connect the display we need to match the holes and then do the initial soldering just to hold it and then solder it properly. As you can see we have soldered the display strip. **Plug Display** – In this type of display we need to just unplug it to take it out and to put it back just plug it back.

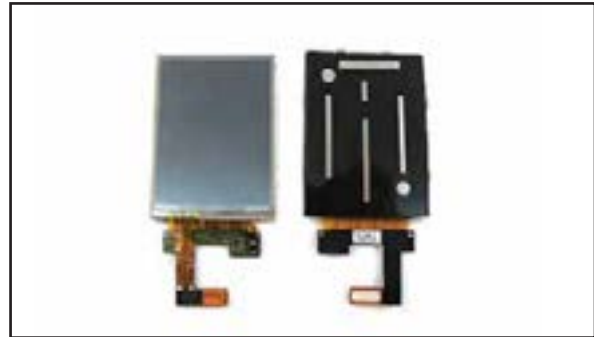


Fig: 3.3.7.9.1 Display Strip

Scan image to view Mobile Video



Fig: 3.3.7.9.2 Display Strip Assembly

Scan image to view Mobile Video

3.3.7.10: Display Connector

This is display connector of mobile. To remove connector, first apply flux on the track and remove it with the help of hot air gun. We cannot simply connect the connector back as it gets burnt during the process. Now clean the track. Now you can see small track. Now we need to match these tracks with the PCB track. Once matched apply flux and with the help of soldering gun press it slightly, make sure while pressing tracks should not connect with each others. Using this process we can connect charging connector.



Fig: 3.3.7.10 Display Connector

Scan image to view Mobile Video

3.3.7.11: On/OFF Switch & Battery Connector

Now we are going to learn how to remove On/Off switch and battery connector and place it back. First of all apply flux on the track of the component then hold it with the help of tweezers and apply hot air gun on the component and slowly remove it with pulling it. To connect it back first apply flux on the track and clean it after cleaning place the component properly on track and do the soldering process.



Fig: 3.3.7.11 Battery Connector

Scan image to view Mobile Video

3.3.8: PCB Board

Understand & learn the following:

3.3.8.1: Mobile Phone Antenna

Mobile phone antenna is used to receive and transmit radio frequency in mobile phone and is available in each and every mobile phone.



Fig: 3.3.8.1.1 Mobile phone Antenna -1



Fig: 3.3.8.1.2 Mobile phone Antenna -2

3.3.8.2: Ear Speaker

Ear phone speaker is used to receive the call voice in normal mode.



Fig: 3.3.8.2 Ear Speaker

3.3.8.3: Ringer or Loud Speaker

Ringer or loud speaker is used to listen to the ringtone and also listen to the voice in speaker mode.



Fig: 3.3.8.3 Ringer / Loud Speaker

3.3.8.4: Vibrator Motor

Vibrator motor is used in mobile phone for vibration alert

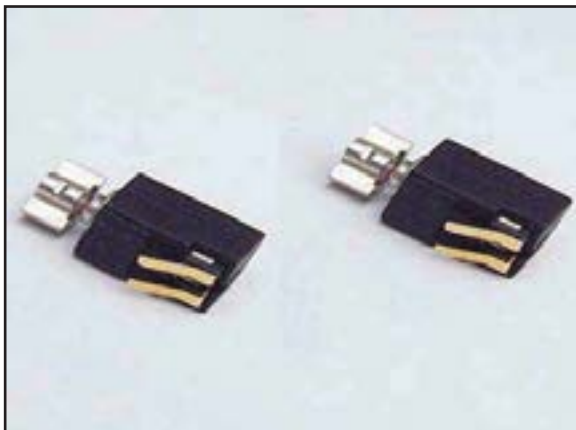


Fig: 3.3.8.4.1 Vibrator Motor - 1



Fig: 3.3.8.2.2 Vibrator Motor 2

3.3.8.5: MiC (Microphone)

Mic is used in mobile phone to transmit voice message

1) Universal MIC



Fig: 3.3.8.5.1 Universal Mic.

2) Box or Cristal MIC



Fig: 3.3.8.5.2 Crystal Mic.

3.3.8.6: LED (Backlight)

LED are used along with LCD



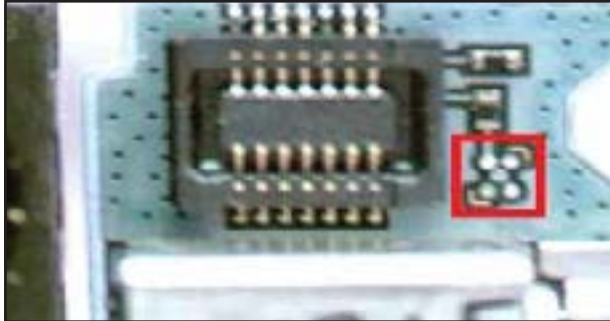
Fig: 3.3.8.6 Backlight LED

3.3.8.7: Display Connector

Display connector is used to connect display unit of mobile phone with PCB board.

Types of display connector

1) Plug



2) Lock



3) Soldering



Fig: 3.3.8.7 Display Connector Type

3.3.8.8: Charger Connector

Charger connector is used to connect mobile phone with external power source for charging and also used to connect to the computer by using USB cable.

Types of charger connector

1) Soldering



2) Plug



Fig: 3.3.8.8 Charger Connector Type

3.3.8.9: SIM Card

SIM is short form of Subscriber Identity Module. It is used in all types of GSM phone. SIM card is having a microchip inside which stores certain information about phone and also certain data. a smart card inside a mobile phone, carrying an identification number unique to the owner



Fig: 3.3.8.9 SIM Card

3.3.8.10: SIM Card Socket

SIM card socket is used to place the SIM card in Mobile phone and send information to CPU for processing. CPU processes the information and passes it to the base station for registration. SIM card socket acts as SIM reader or writer.

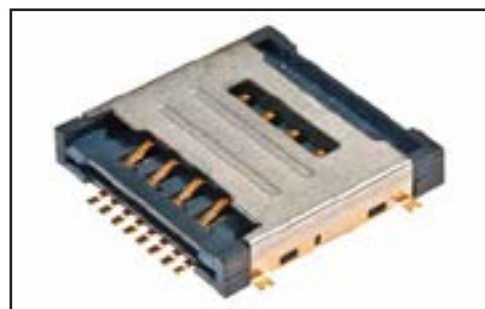


Fig: 3.3.8.10 SIM Card Socket

3.3.8.11: Memory Card Socket

Memory card socket is used to place memory card in the mobile phone. Memory card socket is used to read or write information on the memory card.



Fig: 3.3.8.11 Memory Card Socket

3.3.8.12: Display

Display is an integral part of mobile. There are three Types of Displays

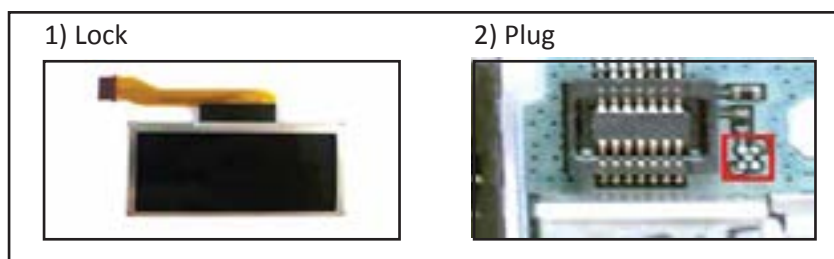


Fig: 3.3.8.12.1 Display Type

3) Soldering



Fig: 3.3.8.12.2 Display Type

3.3.8.13: PCB Board

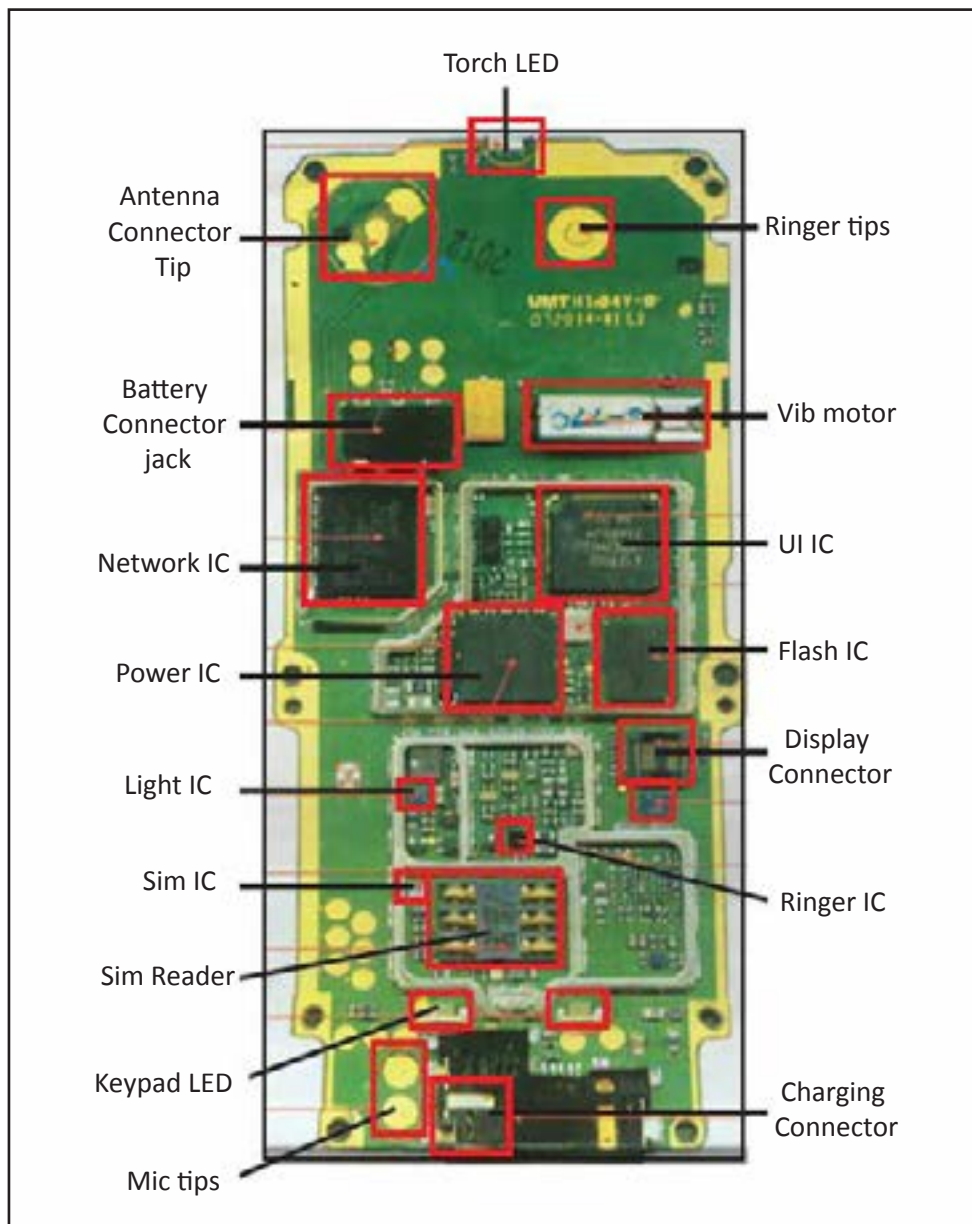


Fig: 3.3.8.13.1 PCB Backside

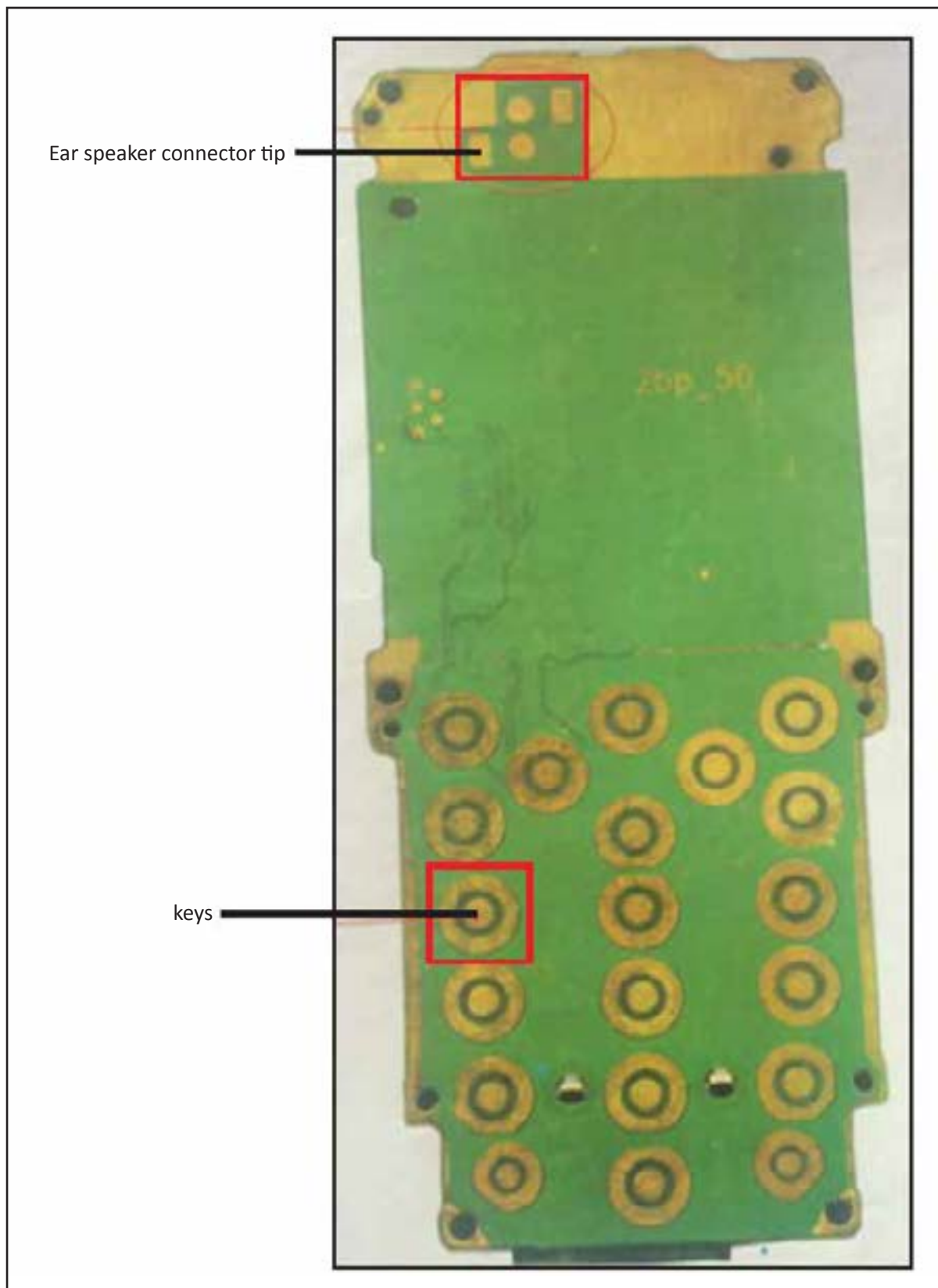


Fig: 3.3.8.13.2 PCB Front Side

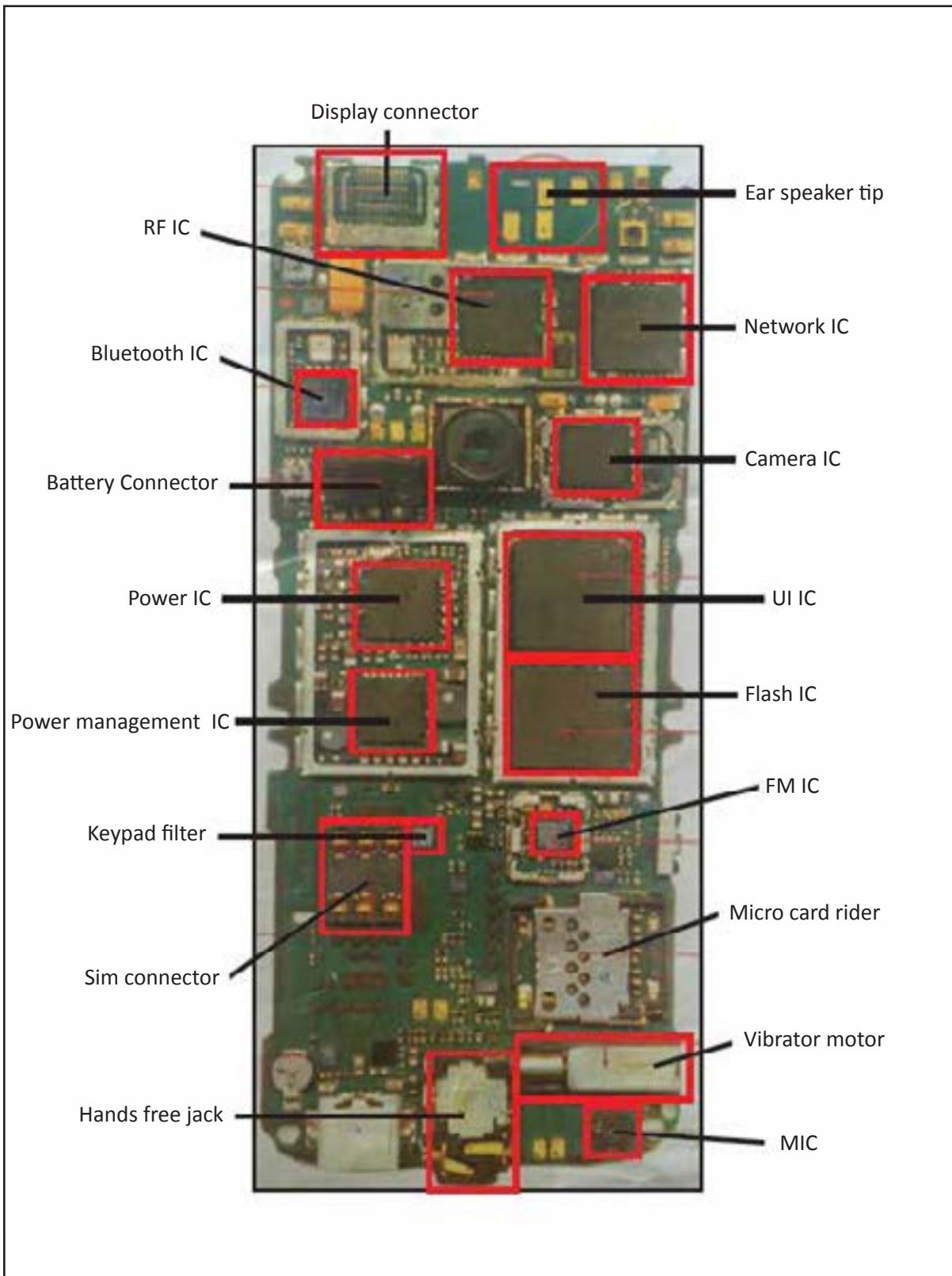


Fig: 3.3.8.13.3 Multimedia PCB Back Side

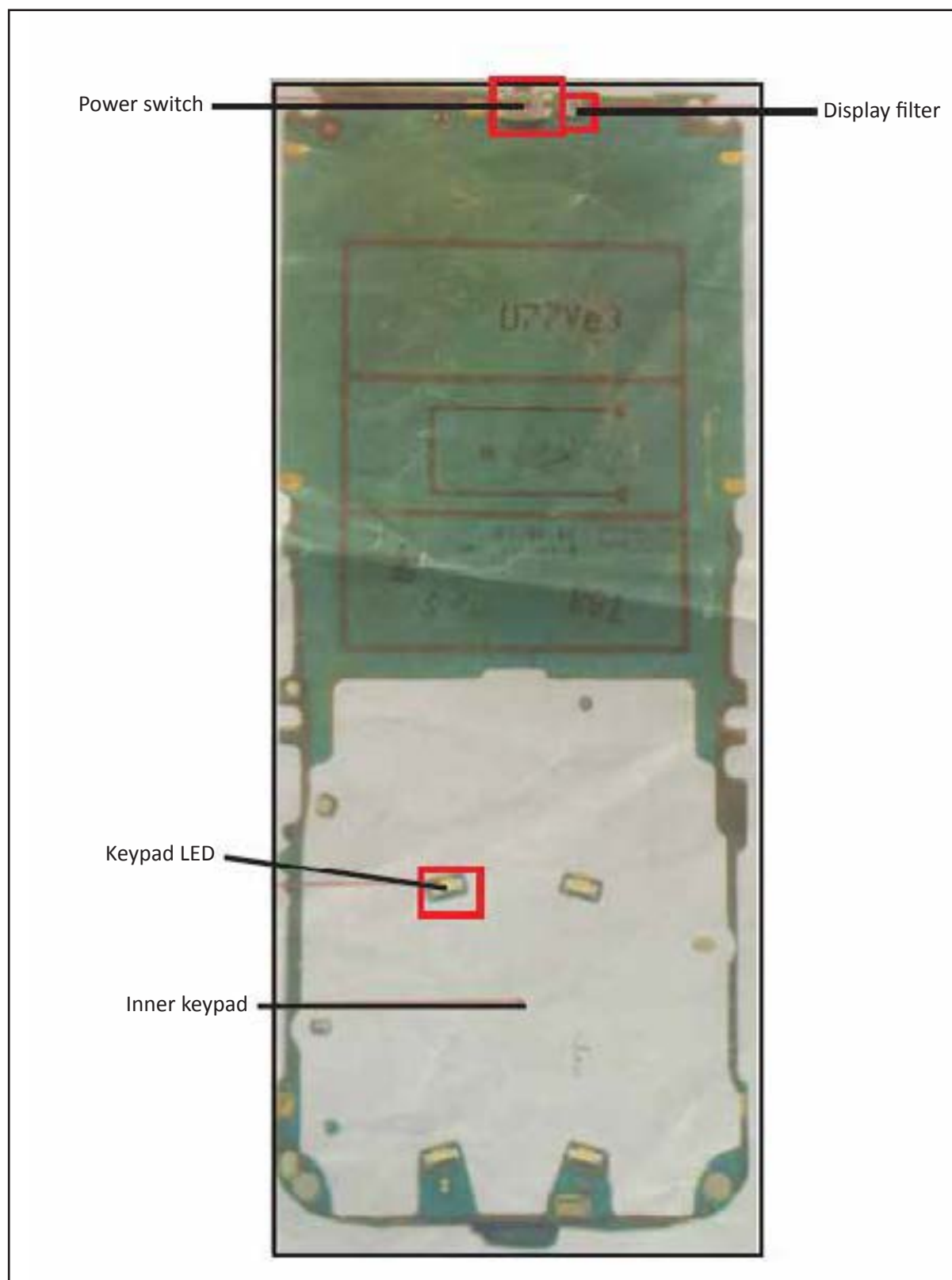


Fig: 3.3.8.13.4 Multimedia PCB Front Side

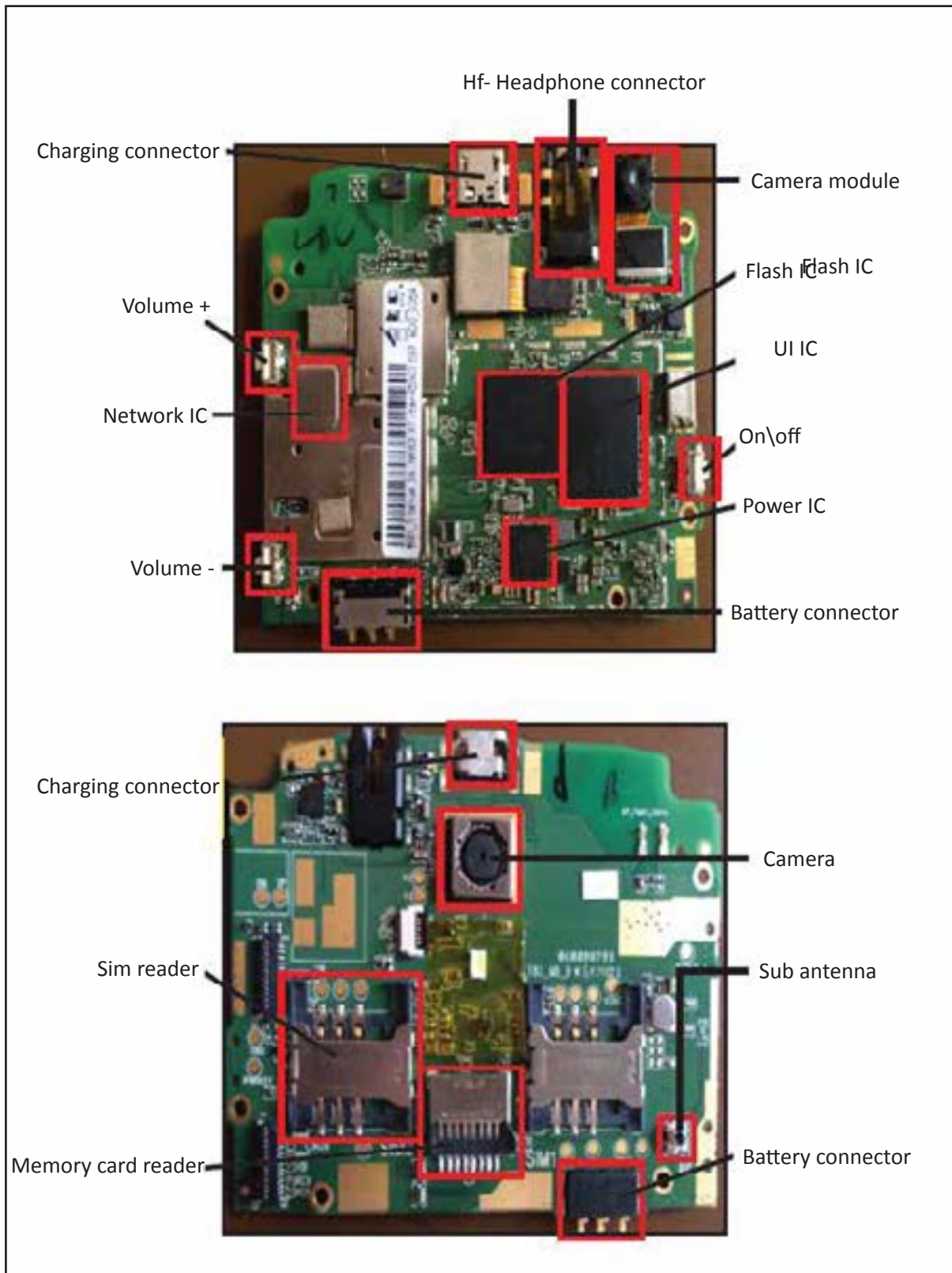


Fig: 3.3.8.13.5 Android Board

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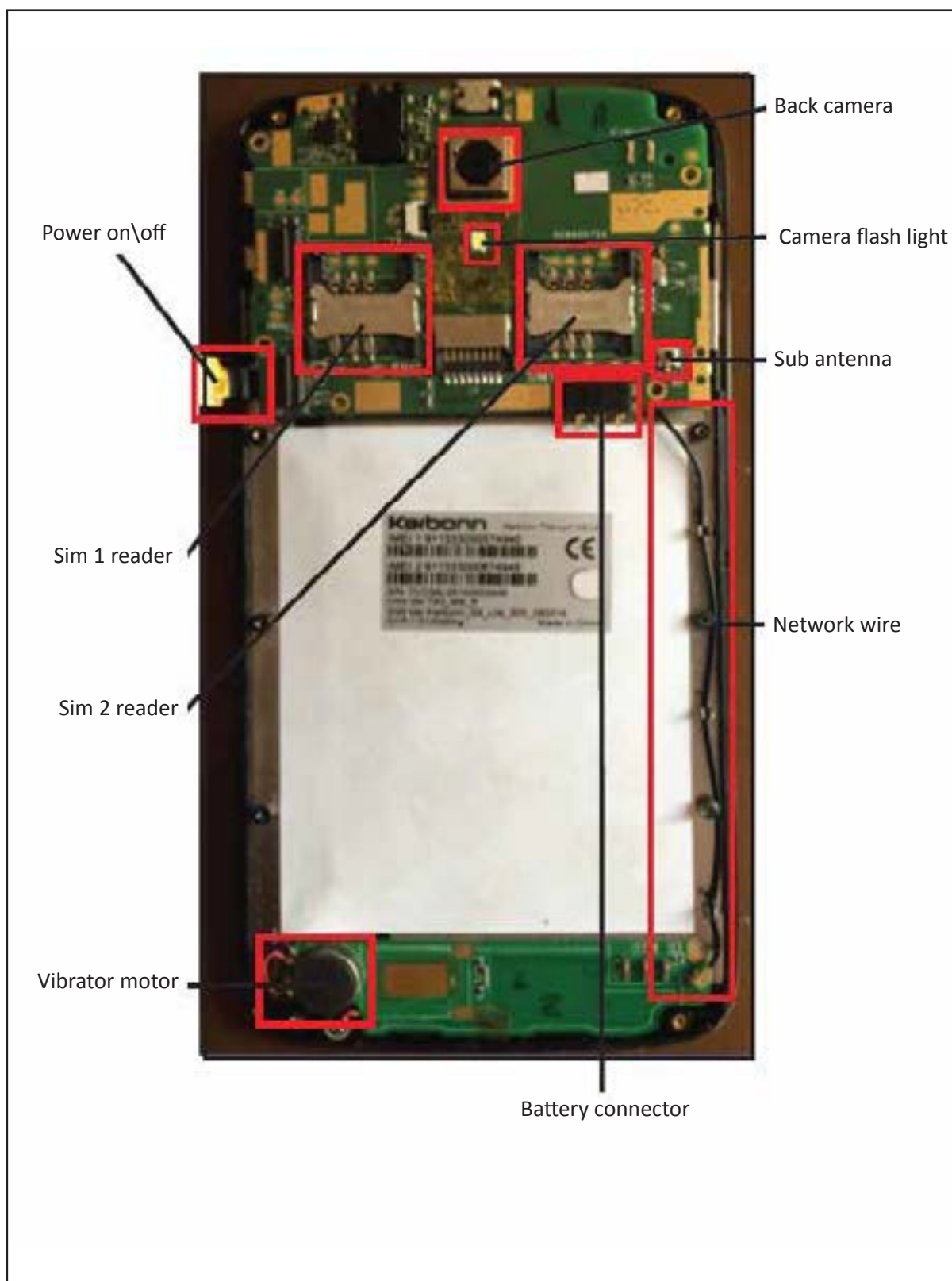


Fig: 3.3.8.13.6 Android PCB Board

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Tablet PCB

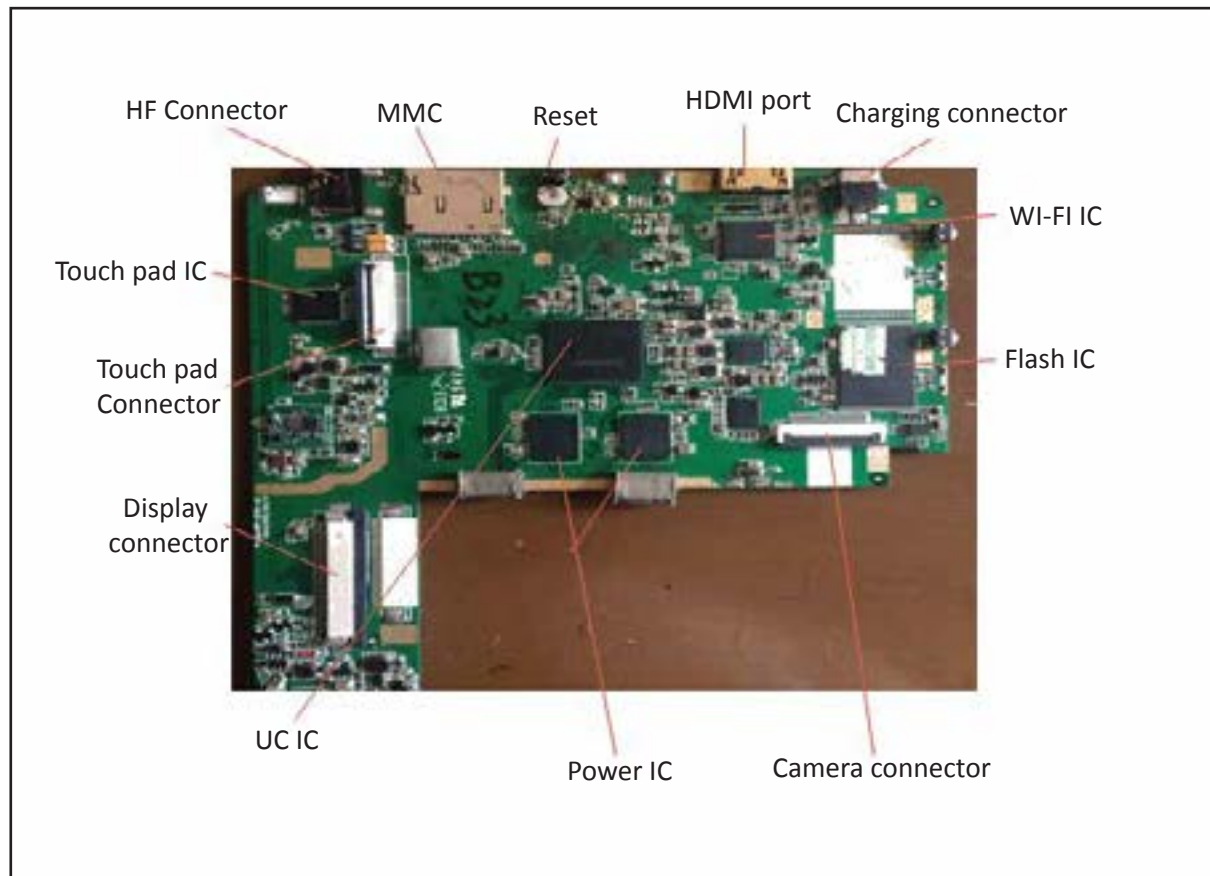


Fig: 3.3.8.13.7 Tablet PCB

3.3.8.14: Sample PCB of Various Brands & Models

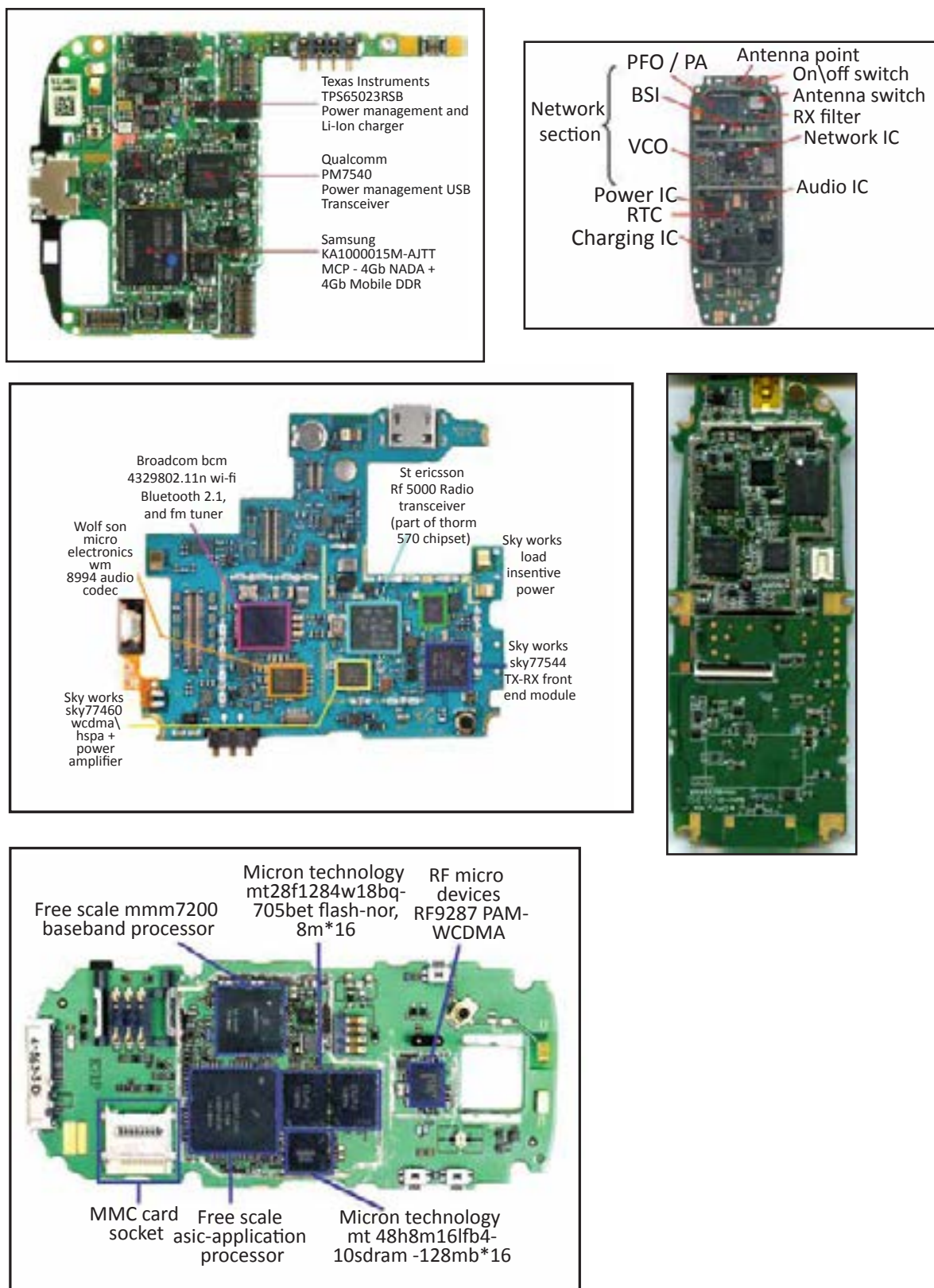


Fig: 3.3.8.14.1 Sample PCB

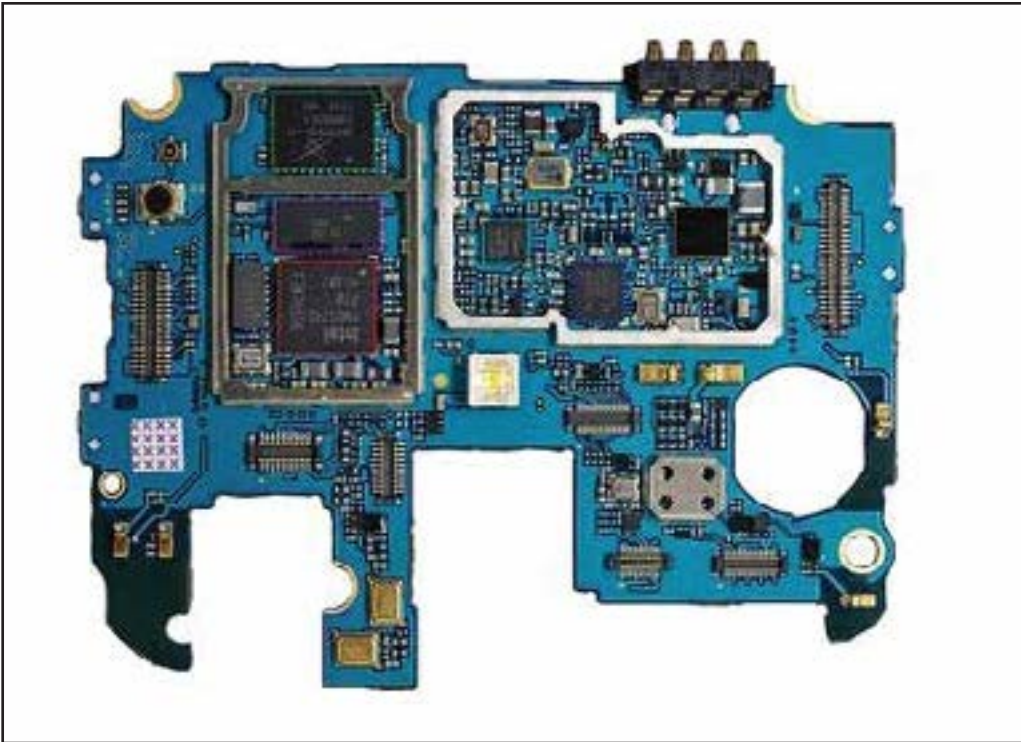


Fig: 3.3.8.14.2 Sample PCB - 1

3.3.9: Mobile Strips

- Cable used to connect the front board and the back board is called Strip.
- What if strip is damaged ?
 - 1) Button on front board will not work
 - 2) White, Indigo, Black & Zig Zag display
 - 3) Malfunctioning of Speaker, Ringer, Call drop
 - 4) Touchpad not working even after replacing
 - 5) Back board will show light but no display on front board

3.3.9.1: Types of Strips

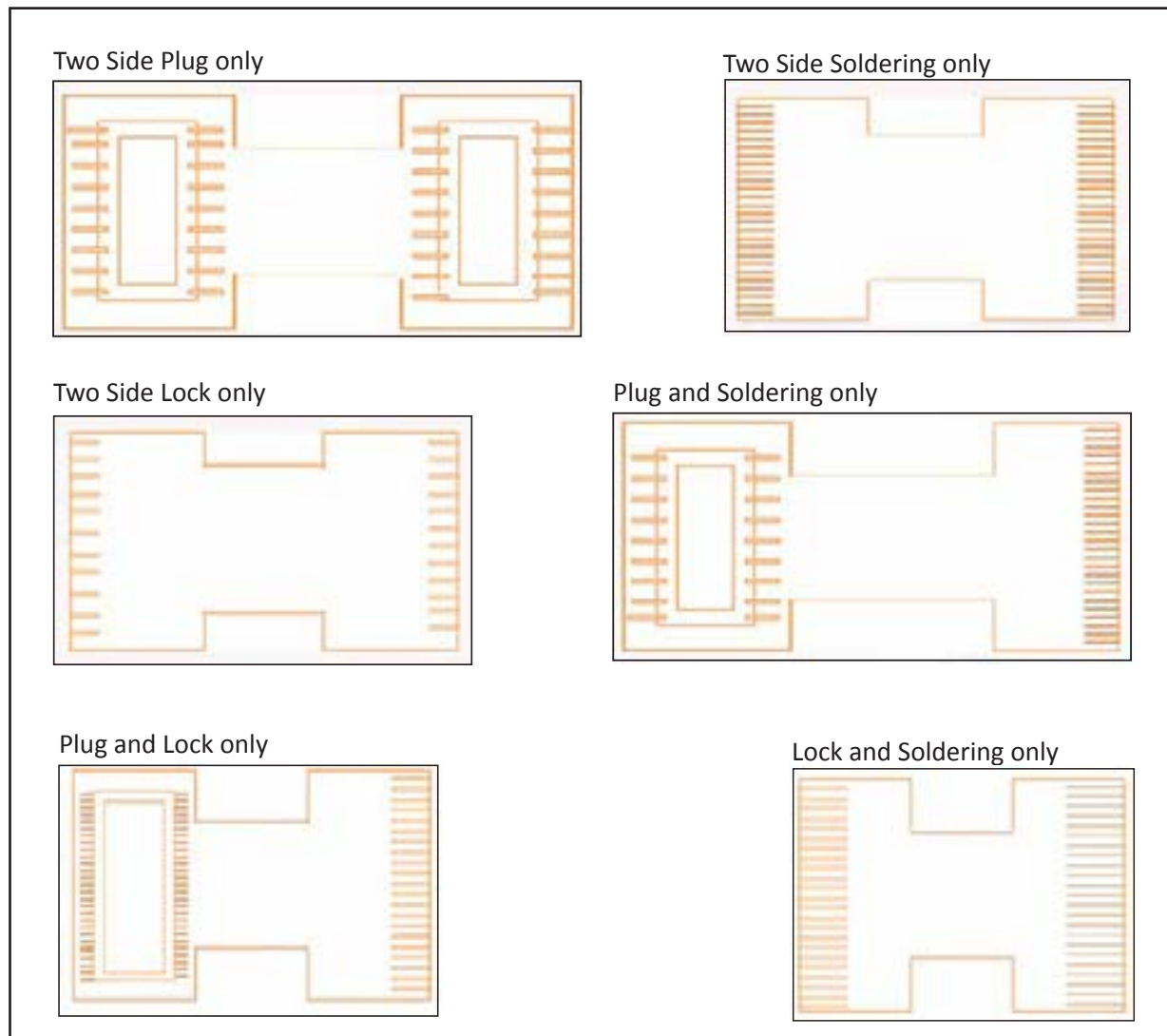


Fig: 3.3.9.1 Types of Mobile Strips

3.3.10: How to Test Components using Multimeter

Multimeter has three units namely:

- 1) Display
- 2) Section Nob
- 3) Port

Use of Multimeter

- To measure voltage and current
- To measure resistance
- To check continuity
- It helps in testing and diagnosing problems in mobile phone. To make sure whether circuit as well as all switches are working or not.

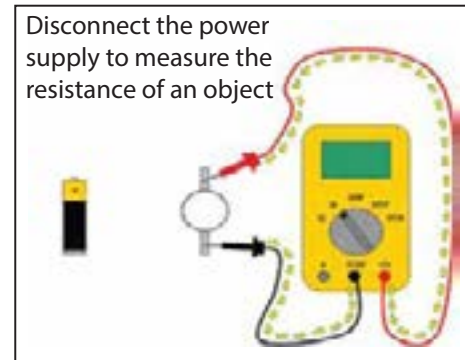


Fig: 3.3.10 Measuring Resistance

3.3.10.1: Battery

- Battery supplies power to the mobile phone
- Earlier we were using Nikil-Cadmium battery. Size and weight of this battery was big and heavy
- Now days we are using Lithium Ion battery
- If your battery is showing full charge in relatively short time and also shows voltage more than or equal to 4.3 V in open of charging then it indicates that your battery may be faulty



Fig: 3.3.10.1 Sample Battery

3.3.10.2: Ear Speaker

- Ear speaker is used to listen to the voice communication over phone.
- How we can check ear speaker ?
- Select Resistance (Ohm) on multimeter

Place both the probe of multimeter on both the point of speaker

We can check it by two different methods

Method-1 : Post placing probe resistance range between 25-30 Ohm. If multimeter is showing range infinity then speaker is faulty

Method-2 : Turn the multimeter knob in beep mode. If you can listen to the beep then speaker is working fine.



Fig: 3.3.10.2 Ear Speaker

3.3.10.3: Ringer

- Ringer is used for listening to the ringer tone.
- Ringer is like speaker except that its resistance range is 8-10 Ohm.
- In some of the mobile phone ringer is also acting as speaker, in such cases, resistance range of the speaker is 8-9 ohm.



Fig: 3.3.10.3 Ringer

3.3.10.4: Mic.



Fig: 3.3.10.4.1 Mic.



Fig: 3.3.10.4.2 Testing of Mic.

3.3.10.5: Vibration Motor

- Vibration motor is used by mobile phone for vibration alert.
- How to check vibration motor
- Change the knob of multimeter in Ohm range
- Touch both the end of vibration motor with multimeter probe. If reading is showing 15 Ohm or 35 Ohm or 39 Ohm, it means it is working. In-case it shows reading "0" ohm it means vibration motor is not working.



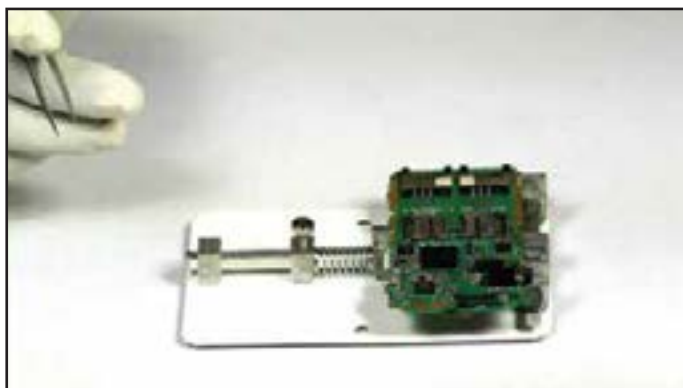
Fig: 3.3.10.5 Vibrator Motor

3.3.11: Soldering and De-Soldering Process

Understand & learn the following:

3.3.11.1: Process of Soldering and De-Soldering of Micro Component on PCB

Step 1: In this section we are going to learn how to do the soldering and de-soldering processes of micro component on PCB like Ceramic capacitor, Resistor or coil.

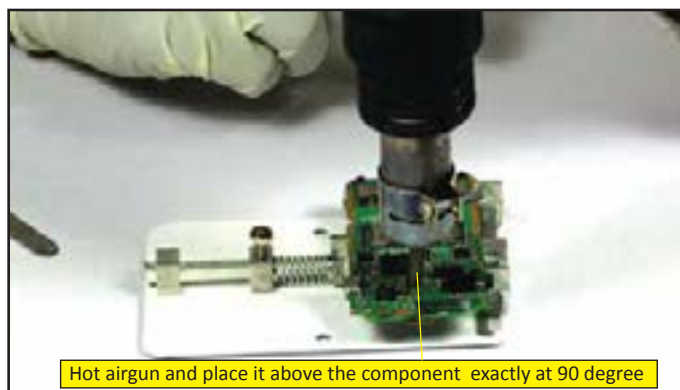


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Step 2: It is simple to remove these types of components from motherboard if we follow systematic process and we can also solder it back easily.



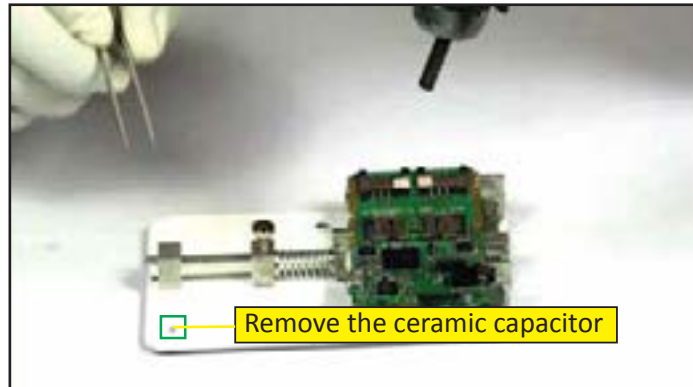
Step 3: First apply flux using tweezers on the component we need to remove. Now switch On hot airgun and place it above the component exactly at 90 degree. Now we can see this component can be separated easily from the motherboard. Remove the ceramic capacitor and keep it in safe place. Now Switch Off the hot air gun.



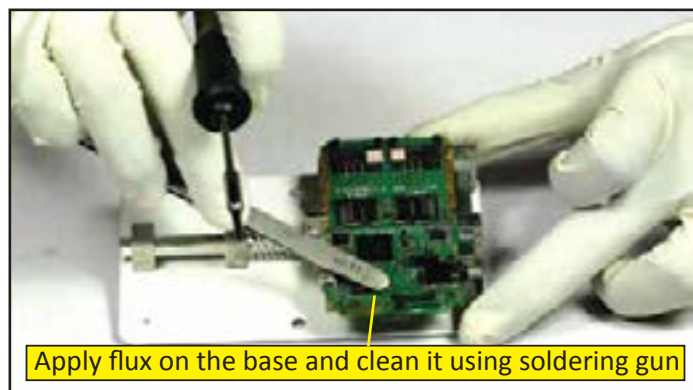
Hot airgun and place it above the component exactly at 90 degree

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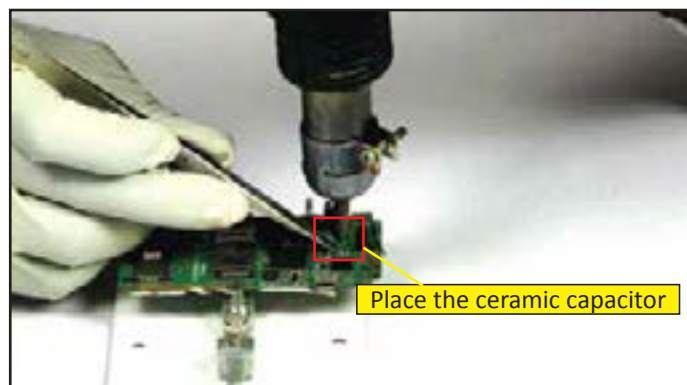
Step 4: To resolve the problem of battery discharge or battery blown or auto switch Off, we will use IP and Elmaa liquid to wash the motherboard. After drying the board using hot air gun we will assemble it back properly and after that switch it On.



Step 5: This is the base from where we can remove ceramic capacitor, apply flux on the base and clean it using soldering gun. Now we have to place the ceramic capacitor back to its location. Point the hot air gun to the location where we have to place the ceramic capacitor.

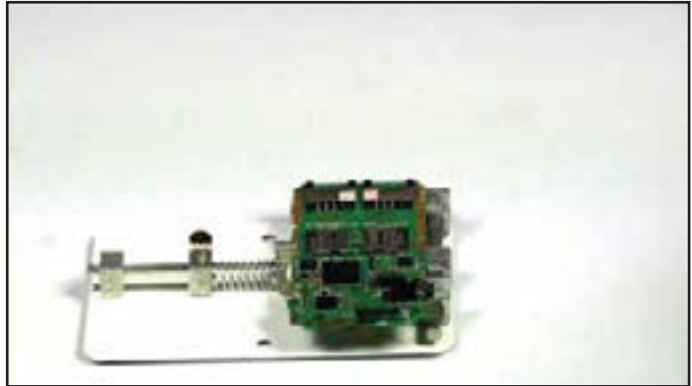


Step 6: Now we have assembled ceramic capacitor properly to its location using hot air gun. This is called soldering and De-soldering process.



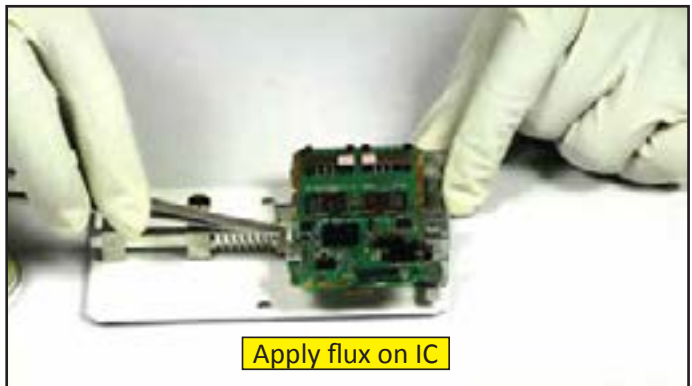
3.3.11.2: How to Remove and Place IC on PCB

Step 1: Now we are going to learn how to remove and place IC on PCB.



Step 2: The process we are demonstrating on this PCB can be done on any types of PCB.

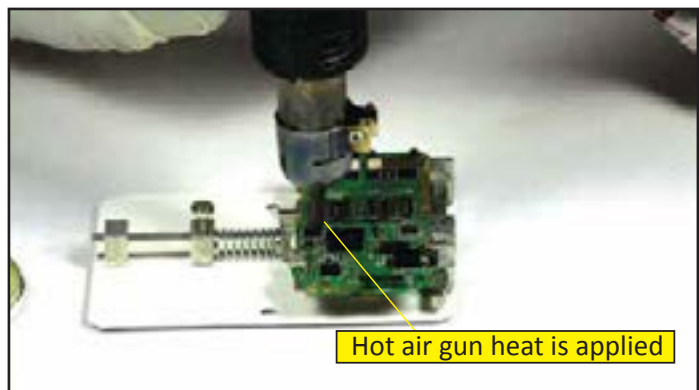
We need to be very careful while holding the gun it should be straight on top of IC or any other component in 90 degree angle and have to use good quality of tweezers which can helps us to lift any small components easily. Solder gun should also be of good quality so that we can perform soldering and de-soldering process easily with good finishing.



Apply flux on IC

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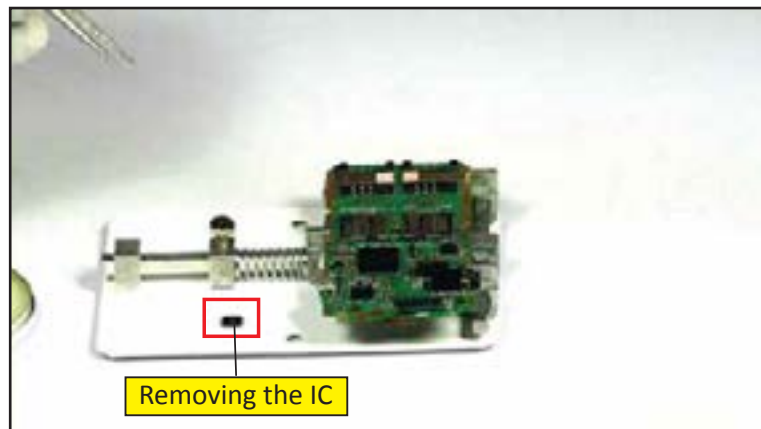
Step 3: Now we will remove this IC using hot air gun. As you can see I have hold the hot air gun at 90 degree angle on top of the IC. Now rotate the hot air gun in anticlockwise direction on top of the IC to make sure heat is applied on all sides of IC so that it will become easy to remove it. You can see I have removed this IC and kept it aside.



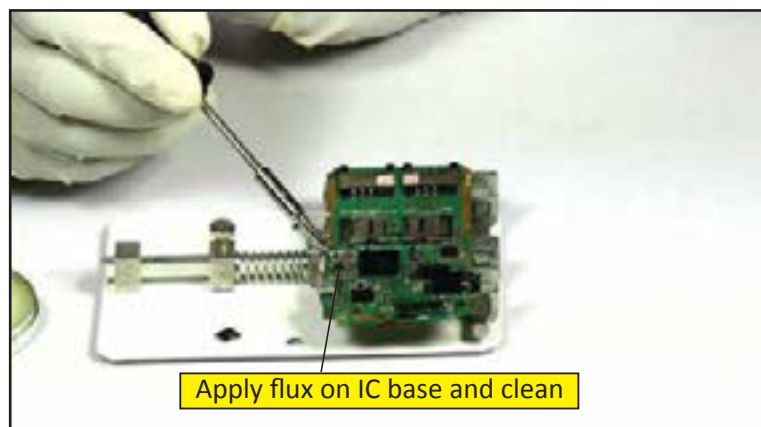
Hot air gun heat is applied

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Step 4: While removing the IC always mind the (.) Dot mark which is on top of IC, it help us to show right direction. While removing observe the (.)Dot and while placing it back make sure (.)dot is on same location. If IC is placed in a wrong way on PCB it will cause shorting on the mobile and it may lead to permanent damage to the PCB.

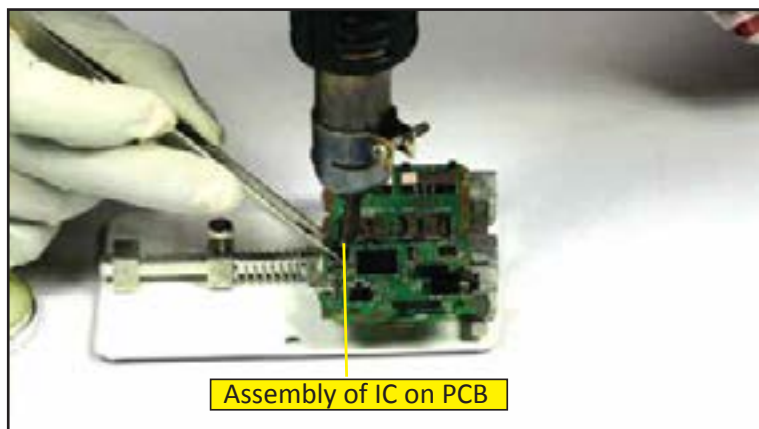


Step 5: Now inorder to place the IC back, we will apply flux and with the help of soldering gun try to do the re-soldering. At first we will clean all the legs then after apply flux on IC base and clean it properly.



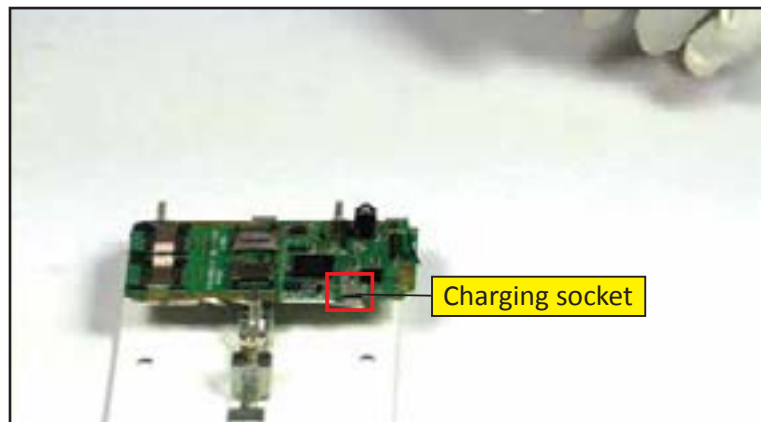
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Step 6: We will assemble the IC back to its location from where it was removed. Apply heat at base of IC using hot air gun so that base will become thin. It will help us to do the assembly of IC on PCB. Now we have assembled this “leg type IC”



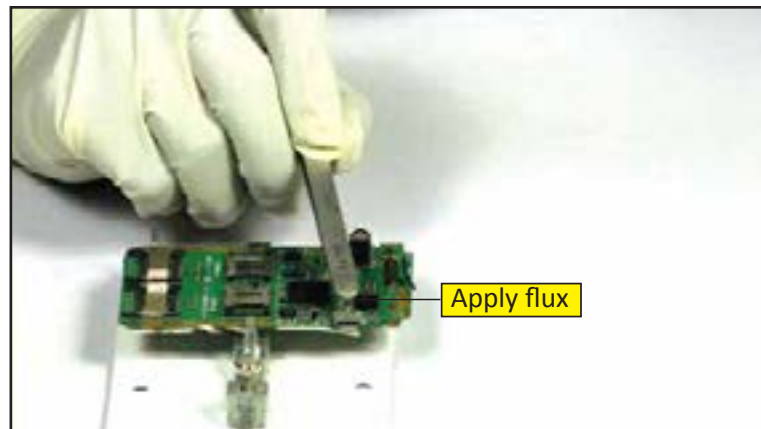
3.3.11.3: Charging Socket Soldering and De-Soldering on PCB

Step 1: Now we will learn how to remove and assemble charging base which is also called charging connector or charging socket and how to do soldering and de-soldering process.



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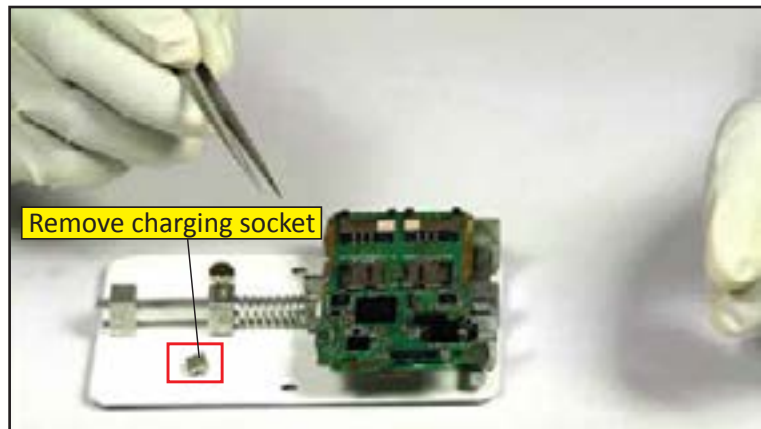
Step 2: Now we will see how to use hot air gun in this process. Switch On the hot air gun and place it on top of component we have to remove and apply flux on base so that component can be removed easily.



Step 3: Now we will rotate the hot air gun close to charging socket in half circle. Make sure air should be less while doing this process as it may damage other small components in the surrounding area on the Mother board.

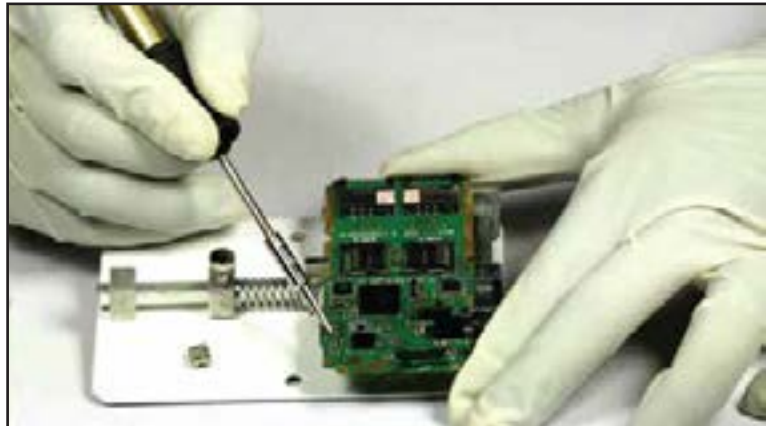


Step 4: Now you can see we have remove this charging socket from PCB. This is the lower portion of charging base where it is getting soldered.

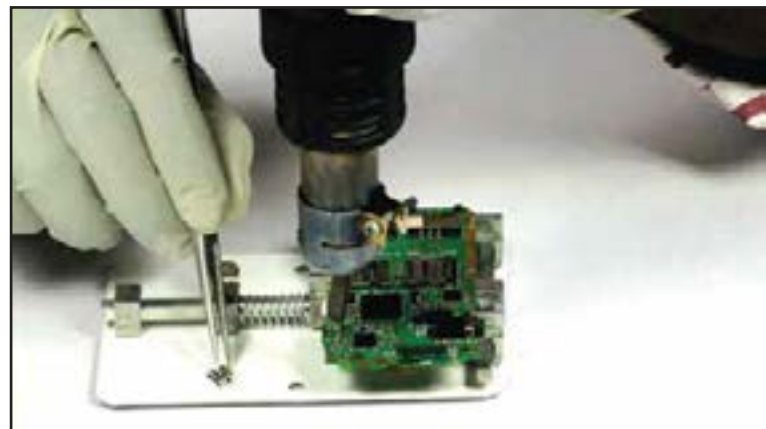


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Step 5: Now apply flux on base and clean it properly using soldering gun. Even we are assembling new IC on board, we should first apply flux and clean the base so that it will become easy to assemble it using hot air gun.

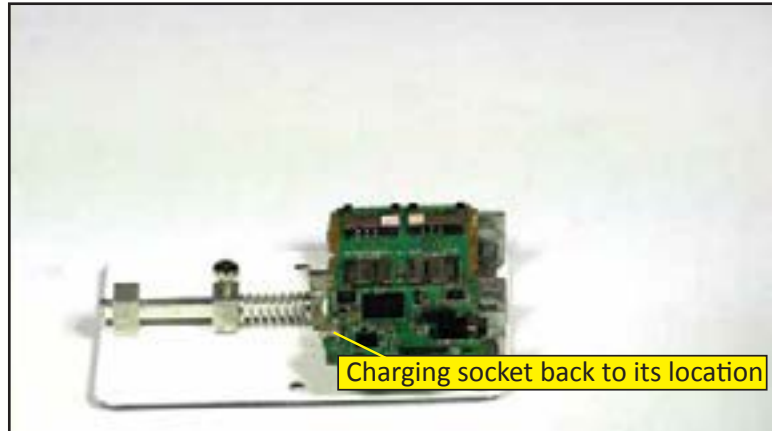


Step 6: Now we will apply heat on the base using hot air gun so that solder will melt and become thin. Once it melts we will place the charging socket back to its location.



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Step 7: Now we have assembled the charging base and as you can how easily it is assembled.



3.3.12: Systematic Process to Test Dead Mobile Phone

Understand & learn the following:

3.3.12.1: Dead Mobile Solution

Today we are going to learn testing process of a dead android mobile phone. First of all we will open the dead mobile phone and take the PCB out. Now you can see this is PCB. We will test the motherboard with the help of multimeter and try to identify and resolve the problem in mobile phone.

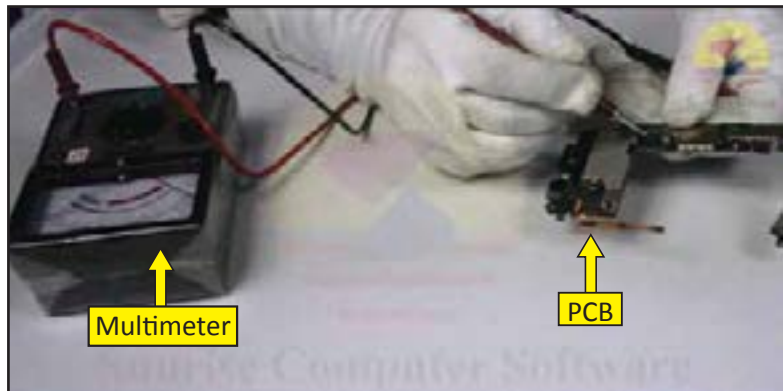
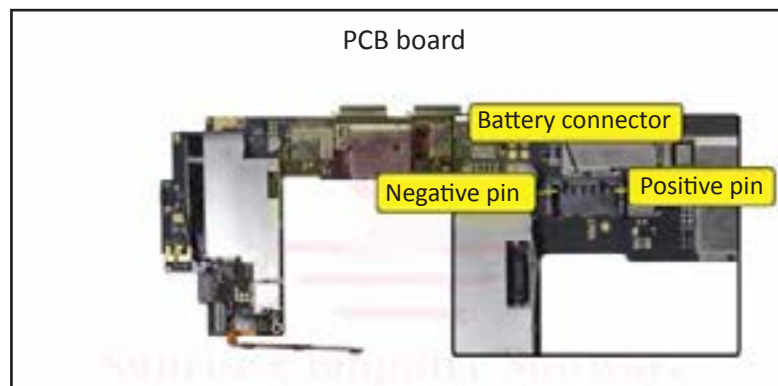


Fig: 3.3.12.1 Testing of Dead Mobile Phone

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3.3.12.2: Systematic Process to Test Dead Mobile Phone

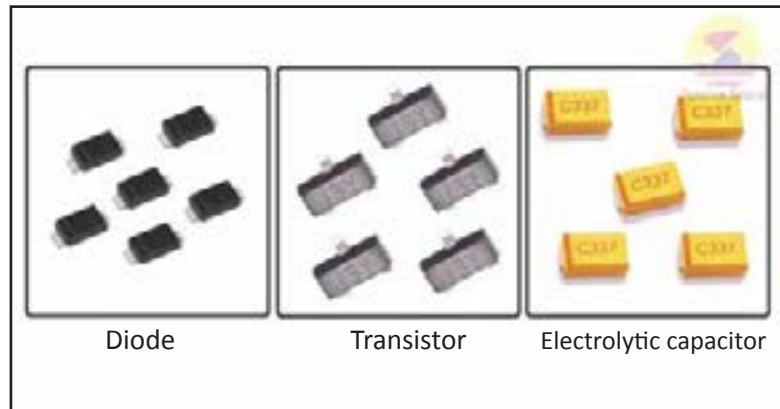
Step 1: First check the continuity of battery connector of motherboard. This helps us to identify whether the problem in mobile phone is related to hardware or software. We are going to test battery connector continuity on the battery connector's pin. This mobile is having 2 pins for positive (+) and two pins for negative (-).



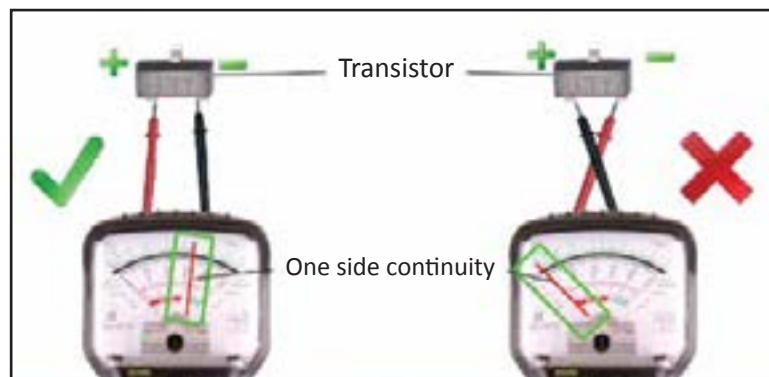
On multimeter it is showing continuity as it is showing multimeter pointer moving forward, it means supply is going from positive to negative. If we change the multimeter probe in reverse direction, multimeter pointer will not move forward. In case pointer is moving forward, it means mobile is having some hardware problem.

As you have seen we have checked battery connector pin by reversing the multimeter probe and multimeter pointer was not moving, this clearly indicates mobile is not having any hardware problem and also there is no shorting in any components of the mobile phone.

Step 2: Now we will do physical inspection of PCB to make sure any of the components is not looking black or burnt out.

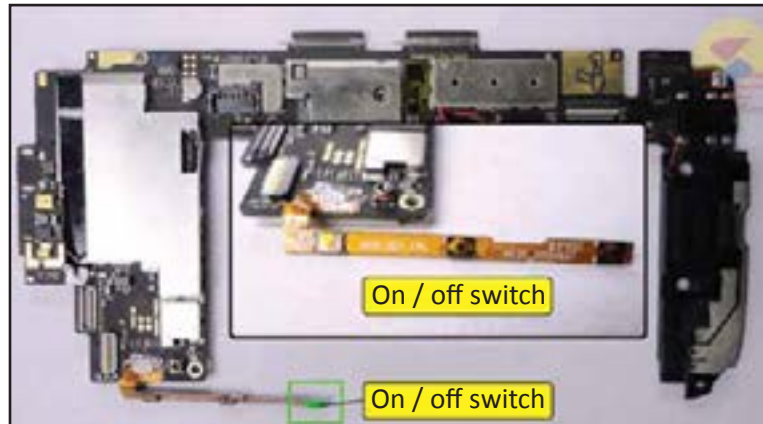


Step 3: Now we will test components like Diode, Transistor, Regulator Module, Electrolytic Capacitor etc.. whether it is working or not. Diode, Transistor, Regulator Module, Electrolytic Capacitor are the generic components and available in types and brand of mobile phone.



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Step 4: We will test the continuity of these components; all these components during test process will show one side continuity. In case any of these components are showing both side continuity this means that particular component is faulty and we need to replace it. After replacing the component probably problem will be resolved and we can turn dead mobile to working mobile phone.



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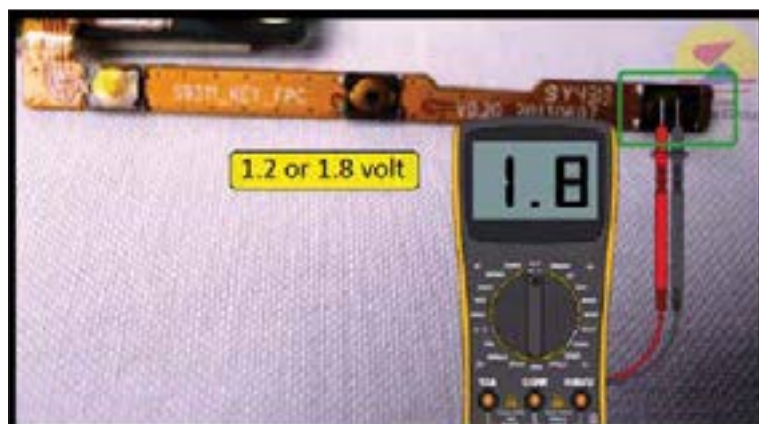
Now as we can see battery connector of this mobile phone is proper, board is also proper as there is no mark of repairing or burnt component thus we can say we are giving proper service to this mobile and we can make it operational.

This mobile battery is showing voltage and also not receiving charge. This means due to reduce Ampere capacity battery is not in a position to accept voltage capacity thus not getting charged.

Now we will place new battery in the phone and will try to switch it ON. After that only we can do the power testing because for power testing we need charged battery connected to the mobile phone. We will test the On/Off switch.

Step 5: Remove the plastic cover which is on top of ON/OFF switch and inside the plastic cover we can see the power supply point. We can test this point with the help of multimeter to ensure battery supply on the point.

IF we test On/OFF switch point, it will show 1.2 or 1.8 volt. If power switch point is showing power supply we can switch On the mobile phone.



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Step 6: As we can see there are dust particles in the mobile. Headphone and Microphone areas are also having dust particles. Antenna socket and speaker is also having some spots. This visual inspection tells us there is a high level of dust and humidity in the mobile phone.



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In such case we need to do the servicing of the mobile. We have to use Elmaa and IP liquid used to wash the PCB. First we need to remove all metal cover and then start washing the PCB.

Step 7: Now we have to reassemble all the parts of mobile phone. Once all the parts are reassembled we can switch it on and test it again. In more than 90% cases mobile will start working



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3.3.13: Servicing Mobile Phone Having Water Inside

Step 1: When mobile phone falls in water, take it out immediately and shake it so that water should come out. Make sure not to press any of the buttons on the mobile phone.

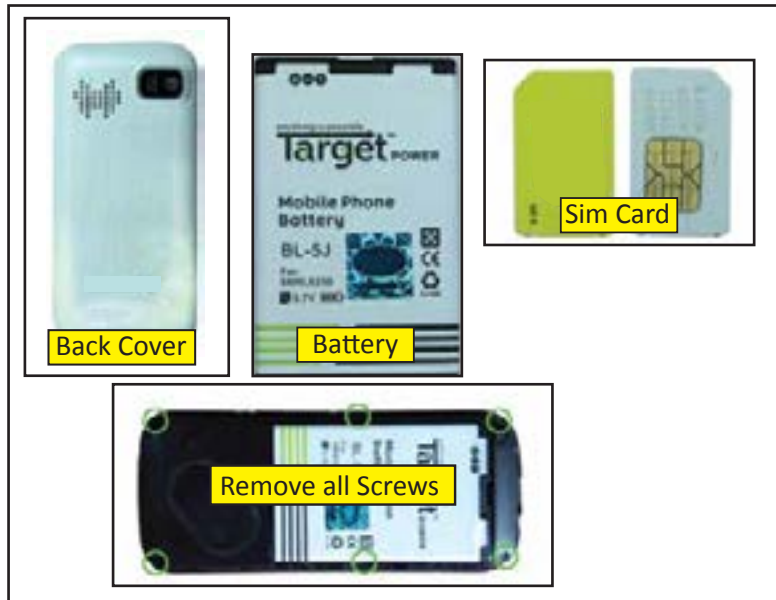
Step 2: Then remove back panel (back cover) of the mobile phone.

Step 3: Now remove battery of the mobile phone so that mobile get's switched Off immediately. It is necessary because when battery is connected it gives supply to the mobile phone and in such situation in case

“ON” button will be pressed, it can cause shorting on the motherboard especially to the areas having presence of the water particles and can cause permanent damage also.

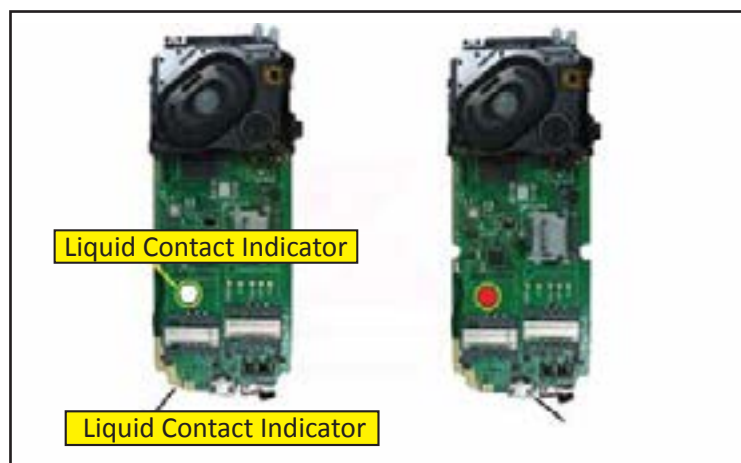
Step 4: Now remove SIM card from the mobile phone.

Step 5: Now remove all screws from the body of the mobile phone and open it slowly to remove the front panel. Once the mobile is open we can see the presence of water particle on the display, front panel and speaker areas.

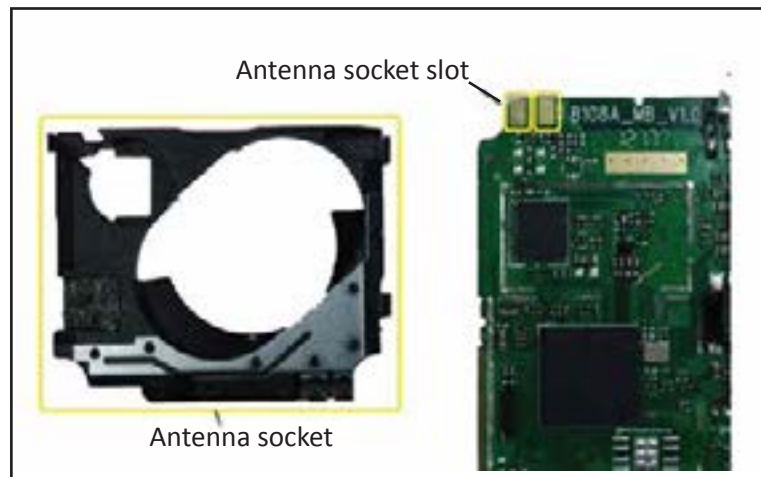


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Step 6: Now remove motherboard from the middle body. Motherboard of all brands and model mobile phones having one white paper called “Liquid Contact Indicator” paper. Once it comes in water contact, its colour change to Red. This helps to detect problems due to water at the service centre.

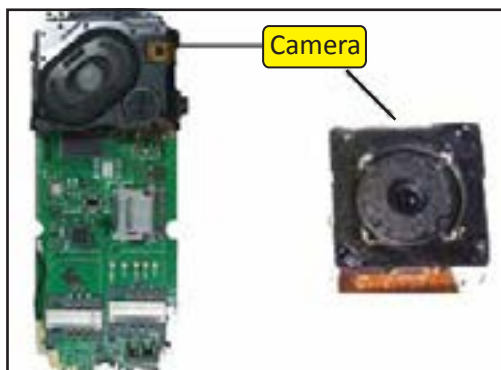


Step 7: Now remove antenna socket which is at back side of the mobile phone.

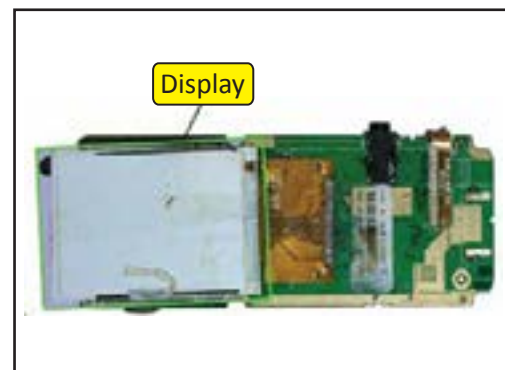


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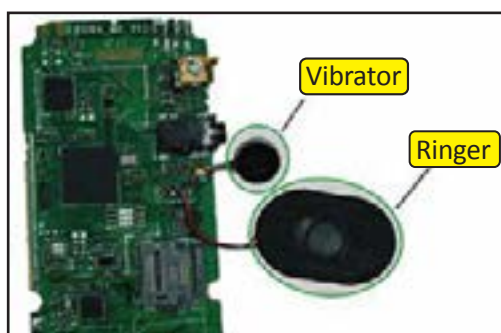
Step 8: Now remove camera



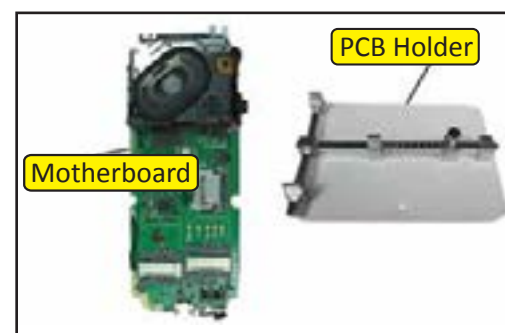
Step 9: Now slowly lift the display



Step 10: Now we have to remove ringer and vibrator from PCB



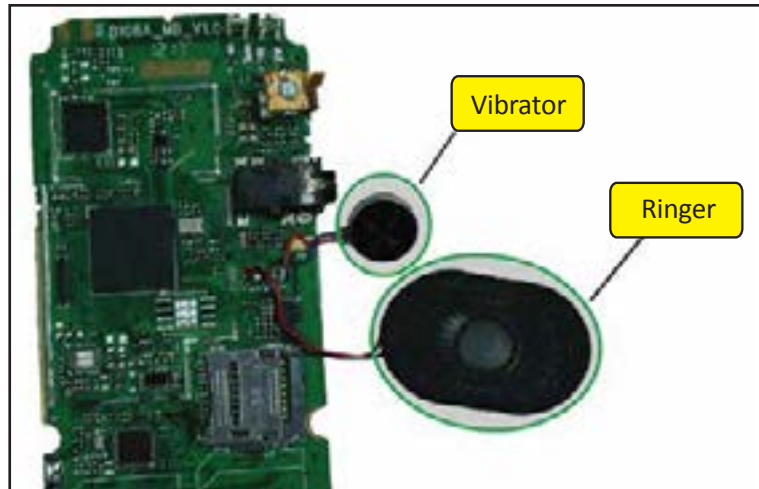
Step 11: To remove parts from motherboard set the motherboard on PCB holder



Step 12: Now remove speaker and ringer from motherboard. First remove vibrator using hot air gun and same way we will remove vibrator



Hot Air Gun

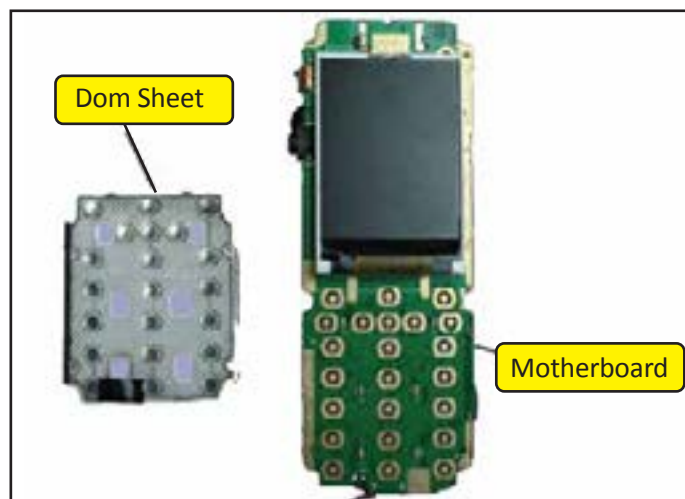


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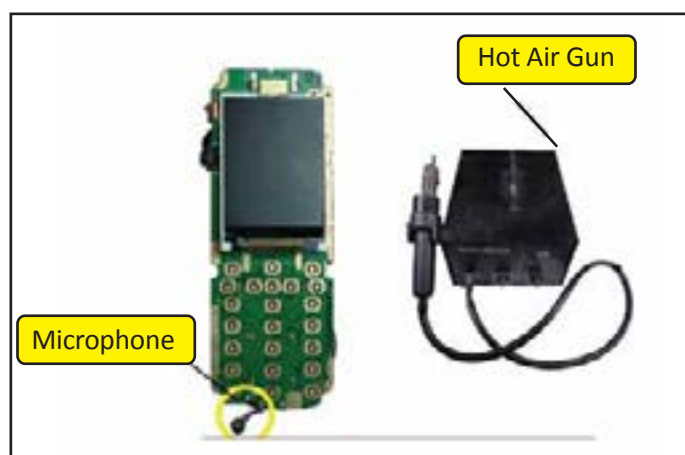
Step 13: Now remove motherboard from PCB holder and remove middle keypad (Dome Sheet) using tweezers

Step 14: Now we have to remove Mic. And display using hot air gun. Lower end of display is connected on to the motherboard. Pull the display slightly upwards as it helps to remove display using hot air gun. Be-careful while doing this process and do not apply any force. Now place the motherboard back on the PCB holder.

Step 15: To remove MIC apply soldering paste on Mic. using tweezers and using hot air gun remove Mic.



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Step 16: Now we have to remove display very carefully as display solder is very fragile. Never apply pressure while putting or removing Display. Apply heat using hot air gun and very slowly remove it. Before using hot air gun we should apply soldering paste at display solder location. Post applying soldering paste, hold the display and apply heat from one corner to another corner. Due to the effect of the heat display will slowly detach from soldering point. Post removal of display, we can see all the pins on display strip and motherboard are intact.



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Step 17 : Now remove motherboard from holder

Step 18: Now we have to service motherboard using I.P.A and Elmaa liquid.

Step 19: First apply Elmaa liquid on the motherboard and clean the board using brush. It helps to clean dust and moisture from the motherboard.

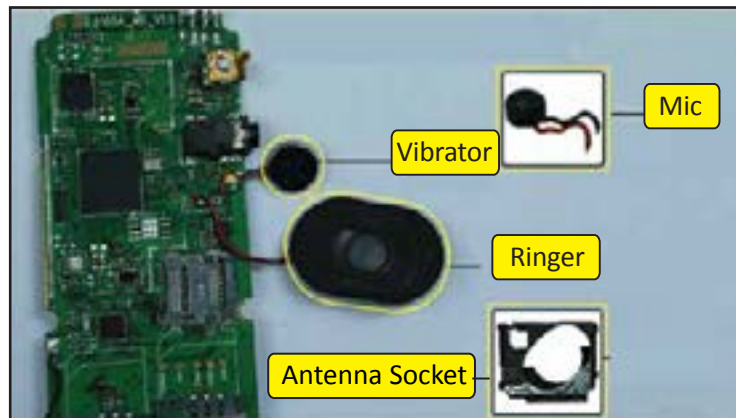
Step 20: Now turn the motherboard and repeat the process with Elmaa liquid on back side of motherboard also.

Step 21: Now wash both side of the motherboard properly using I.P.A liquid

Step 22: Now dry the motherboard properly by applying heat using hot air gun. Once front side is dry turn the motherboard and dry the back side also. Post drying process check the motherboard very carefully to make sure it is not wet at any point on either side. In-case we find wet spot dry it back using hot air gun.

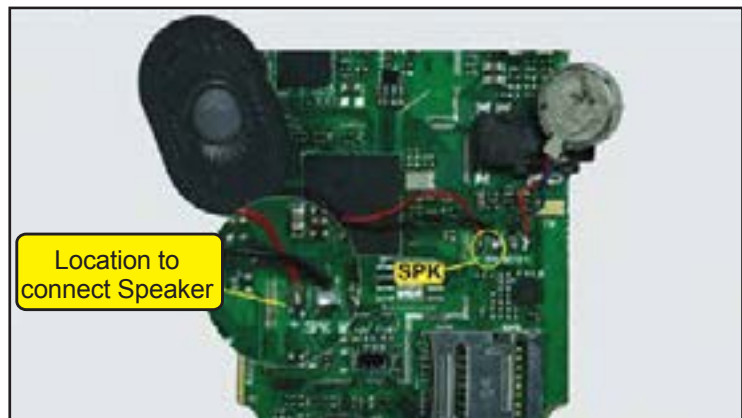


Step 23: Now we have to do the fitting of all parts which were removed, one by one and for that again place the motherboard on motherboard holder

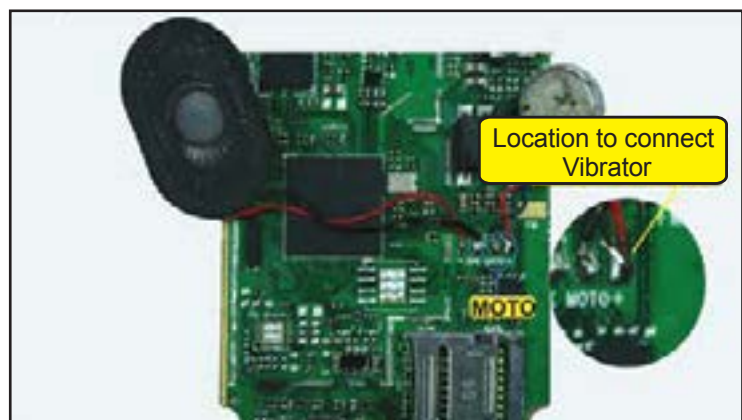


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Step 24: Now we will connect speaker. Location from which speaker was taken out having text marking SPK which indicates speaker location next to that location we can see text MOTO, it means Motor Vibrator. This indicates place to connect Vibrator. Text marking helps us to locate part's location on the motherboard. Now we will place both the parts at their respective locations.



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Step 25: Be careful while soldering the wire, always connect positive wire with positive pin and negative wire with negative pin. Location for positive is marked with “+” where as negative is marked with “-” sign.

Step 26: Before soldering the wire apply small amount of soldering paste on its base. Then do the soldering of negative wire first and then after positive wire. Make sure to use good quality of soldering iron for better result.

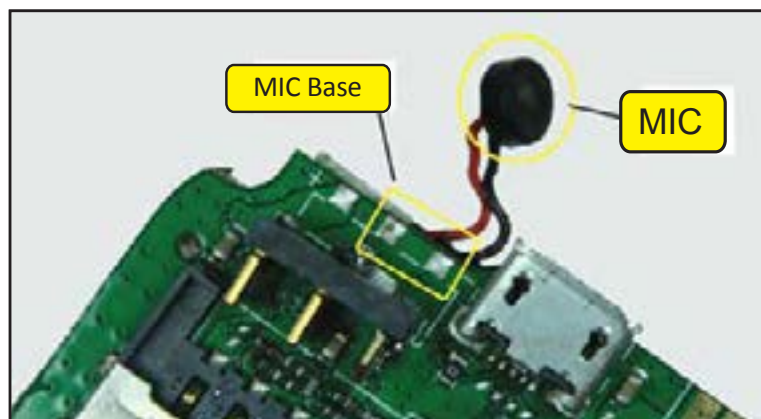
Step 27: Now we have to do soldering process for Vibrator and Ringer.

Step 28: Now we have to connect MIC. MIC is getting connected at front end module and for that we need to turn the motherboard and place it PCB holder.



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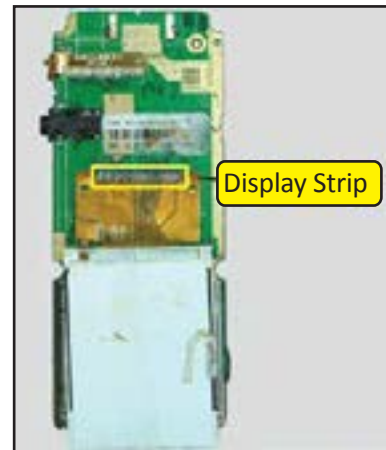
Step 29: This is the base of MIC and it is an universal MIC which can be connected in many types of mobile phone. First apply small amount of soldering paste on the base and then with the help of soldering gun connect the MIC with the board.



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Step 30: Now we have to connect display and for that first we apply soldering paste on the base and clean the base using soldering iron so that we can do the soldering without any difficulty. Now we have to apply soldering paste on motherboard display pins and clean it using solder gun.

Step 31: Now we will do the soldering process of display pins. Initially We need to do the soldering of first pin and then last pin and then after we have to do the soldering of all pin one by one. We will again do the soldering of first and last pin, if we are not getting better solder result then clean the pin and apply little bit solder wire so that soldering can be done easily. Now apply soldering paste on rest of the pins so that we can do the soldering easily in small time. Benefits of applying soldering paste is that it doesn't allow the pins to be soldered together thus before soldering it is must to apply soldering paste. Now with the help of solder gun we will do the fitting of display strip on motherboard.



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Step 32: Remove motherboard from holder. We have to now check whether post servicing and assembling this mobile is working properly or not and for that we will do the fitting of the middle keypad (Dom Sheet). Now connect battery in the mobile and try to switch it ON. As we can see the mobile is switched On this means we did the servicing of this mobile successfully. Now we will press the keypad button to make sure key pad buttons are working. Now this mobile is working properly.

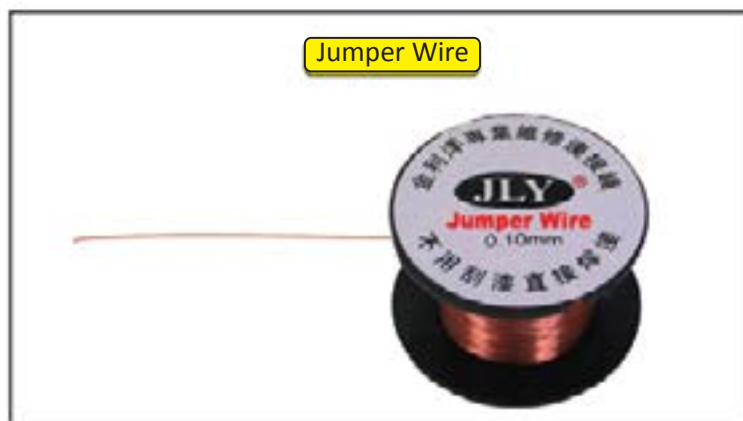
3.3.14: Jumping

Understand & learn the following:

3.3.14.1: Jumping Process

Step 1: During repair process of mobile phone we may need to do the jumping process. In this section we are going to learn how to do the jumping process.

When any track is broken in the mobile phone and need to connect it back, we need to do the jumping process to connect the track and it is called jumper wire track. We are going to learn the process to reconnect the track.



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Step 2: Now we are going to learn how to do the jumping process. As we have already discussed when any track in the mobile is broken and needs to be reconnected we need to do the jumping. The wire used in the jumping process is a copper wire and called Jumper wire. Now we are going to do the jumping process using copper wire.

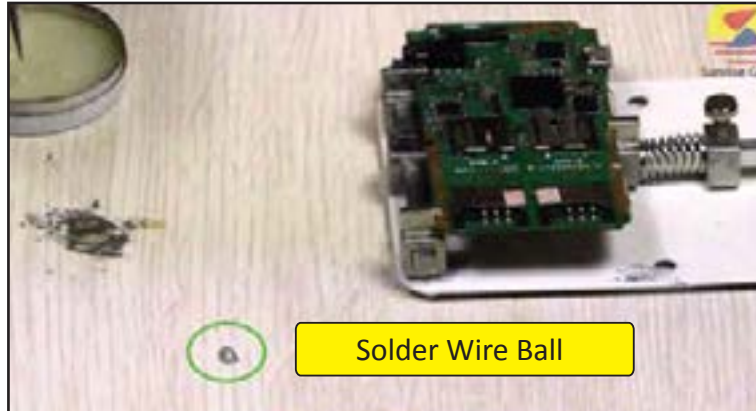


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First of all we have to make soldering ball using PPD paste. In case we do not have PPD paste we can also make soldering ball using soldering wire.

Now apply a little bit of flux on the jumper wire and also on the soldering ball we have made. Keep the jumper wire inside the soldering ball so that the plastic coating on the jumper wire will be removed and it will be coated with silver solder. Now we can see the silver coating on one end of the jumper wire.

Step 3: Now we will apply PPD paste on another corner of the jumper wire and after that apply flux. After that put it inside PPD paste ball and now we can see this corner of the solder wire is also coated with silver coating. Now this jumper wire is ready for the jumpering process.

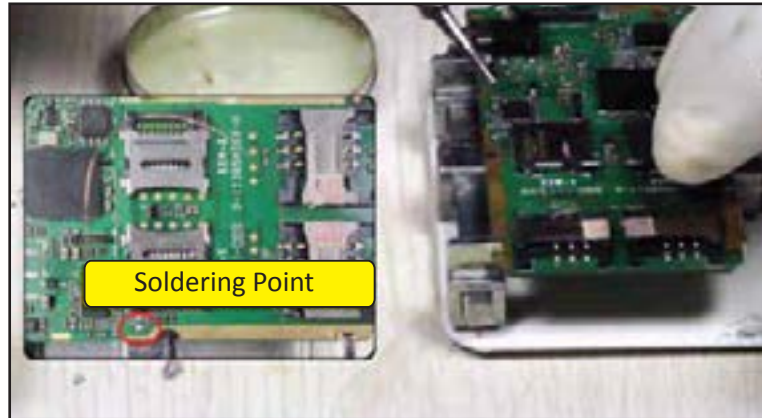


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Step 4: Apply flux on the location where jumpering is to be done on the motherboard. Now we will apply flux on SIM tray. Then with the help of solder gun apply flux on the base of SIM tray to achieve better soldering result. Now we will do the soldering of one end of jumper wire. Hold the wire using tweezers and do the soldering process. Hold the wire for few seconds on SIM tray base for better result and then leave it.



Step 5: Now we will use another end of jumpering wire to connect broken track. You can see silver base on this track. We will clean the base with the help of solder gun and then apply flux to do the soldering of another end of the jumpering wire. Here we can see we how we did the jumpering from SIM tray pin to base of track. This process is called jumpering

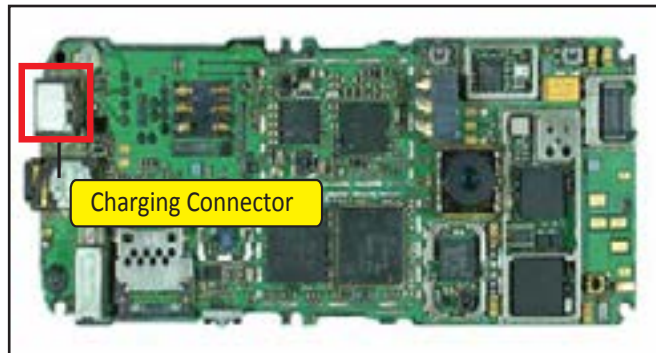


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Mobile phone may face various problems like Ringer, Speaker, Network, charging etc.. In these types of problem if the track is broken, we can connect it back using jumpering process and resolve the problem.

3.3.14.2: Charging Connector Jumpering

Step 1: We are now going to learn charging connector jumpering. Usually charging problem in mobile is similar to other problems like phone not charging, not showing charging, even after charging battery get discharged very fast. We will first check charging points. There are two types of charging ??tender. First type is plug which is having tips



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connected and another type is soldering which is using soldering process. Plug is having one (+) plus and another (-) minus point. We need to check the continuity of these points. To check it we need to use multimeter. Keep the black wire on ground and check with red wire. If this point is getting beep sound this means it is minus where as on another point it is showing reading that means it is plus point. If beep and reading both are observed that means charging connector is working fine.

Step 2: In case either of reading is not coming then for (-) minus part we can do the jumpering from any ground point. Minus (-) signs are visible on board at various locations but for plus point we need to search for its fuse first. Fuse is mainly located above the connector.



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This is fuse. This fuse helps to restrict electricity flow inside and also protects from high power flow inside. In-case of mobile blast, first its fuse gets blasted thus protecting us from any damage. First check the reading on fuse point, mostly we will find reading at this point. If we find reading then for (+) plus point we need to do the jumpering from fuse (+) plus point. Apply flux on tips and fuse point. Cut the jumpering wire as per requirements. Rub the tip of one side of the jumpering point and do the soldering at the (+) plus point of the fuse.

Step 3: Now check the reading from another end of jumpering wire, if it is showing reading then solder has been done properly. In case you will observe beep that means solder is not done properly. An we need to do proper soldering at this point. We have finished the soldering on fuse (+) plus point now do the soldering of another point of jumper wire at the tip of charging connector (+) plus point. Once the soldering is done test it out for proper connectivity.



By doing this process we can resolve mobile charging problem.

3.3.14.3: Jumpering of Speaker, Ringer and Mic

Step 1: In this section we are going to learn jumpering process of Speaker, Ringer and Mic. This is mobile ringer and you can see Mic on the lower side of the ringer.

First we will do the jumpering of the Ringer. This is (+) plus and (-) minus point of ringer. When we remove ringer and during removal process if track is broken or there is no supply on track, then we need to give supply on backward registration point. We have to search reading for (+) plus and beep for (-) minus. As we can see at this point it is showing reading and at this point it is showing beep thus we from here we can give connection to (+) plus and (-) minus.



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We need to apply flux on the point then cut the required length of the jumpering wire. Then do the soldering of one end at (+) Plus and another end at (-) minus point. As you can see we, finished the soldering of (+) plus.

Step 2: Now we are going to do the jumpering of (-) minus. Apply flux on (-) minus point cut the jumper wire as per required length. Connect one end of jumpering wire on (-) minus and another end on (-) minus point by proper soldering. Now we have given connection of (+) plus from (+) plus and (-) minus from (-) minus. Now place the ringer back to its designated location.



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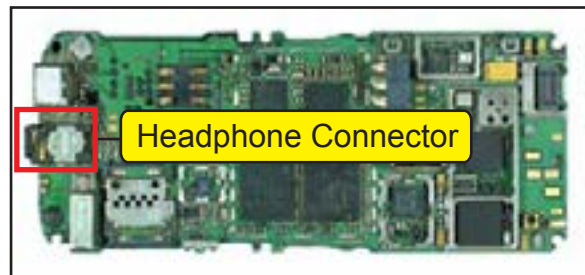
We can do the same process for Mic. As it is also having one (+) plus and (-) minus point. If we do not observe reading then we can give the connection of (+) plus and (-) minus from upward registration to get the reading.

For speaker also we have to do the same process as it is also having one (+) plus and one (-) minus point and we can give connection using same process from upward registration.

3.3.14.4: Headphone Connector Jumpering

In this section we are going to learn headphone connector jumpering process. Before doing the jumpering of headphone first we need to understand the problem.

Step 1: Headphone jack connector may be damaged – This problem can be resolved by replacing head phone jack. If even after changing the headphone jack in which headphone connector is getting connected is showing headphone sign but still not properly working then we need to do further testing to resolve the issue.



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Step 2: Headphone track is broken – If the track of headphone is broken then we need to do the jumpering of headphone connector.

Step 3: Even after removing headphone jack mobile stay back in headphone mode in such a situation we need to do the jumpering of headphone connector.

Step 4: Usually there are eight tracks of headphone connector, some headphones are having 6 tracks also. Out of these tracks there are two main tracks. We need to test this track using multimeter. While testing we need to observe reading on multimeter. This track is (+) plus and the track giving beep is (-) minus. This means in main track this is (+) plus and this is (-) minus.



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If even after changing headphone connector we are not getting (+) plus and (-) minus track then we need to connect these track together.

In this headphone jack we can see the reading. This point is showing reading, it means it is (+) plus and on this point it is showing beep this means it is (-) minus. If beep is not coming from (-) minus point then we can give supply to this point from any ground point available on the board.

This is a ground point, from this track top second and second from the bottom are ground points. All these First, second, third and forth points are (+) plus points. Without doing anything with ground we have to give supply to (+) plus. We have to give supply to (+) plus from these registrations. We need to search (+) plus point from this number 2 registration. This is registration (+) plus . We need to do jumpering from this registration (+) plus point.

Step 5: In order to do the jumpering first we need flux. Cut the jumper wire using cutter and rub the end to remove plastic coating now cut the jumper wire as per required length. This (+) plus point needs to be connected to number 2 point. This is the solution for the first problem.



Step 6: In-case even after changing headphone connector, left side and right side is not working or sometimes left side is working whereas sometimes right side is working in these situation we need to check these two tracks, 2nd from top and 2nd from bottom. If left or right side is not working then we need to check these tracks.



Scan image to view Mobile Video

Step 7: We are going to check these two tracks. From this point we can see the reading and also from number 2 we will see the reading. Now we need to give connection to these points. From the point of first register of charging IC to number 2 point and from registration first point to this number 2 point



Scan image to view Mobile Video

connection will be made through jumpering. Exactly the same way we need to give connection from this point to that point and again for this point to that point we need to do the jumpering for connectivity. This is the solution we can do if even after replacing headphone connector left side or right side is not working.

Now for the 3rd problem we need to connect these track with each other, this will resolve headphone mode marking from display and headphone will work properly.

3.3.15: Types of IC jumpering

Understand & learn the following:

3.3.15.1: Charging IC

This IC consist of 4 balls. Charging IC is always placed on top of charging connector. We cannot replace it but can do the jumpering process if required.

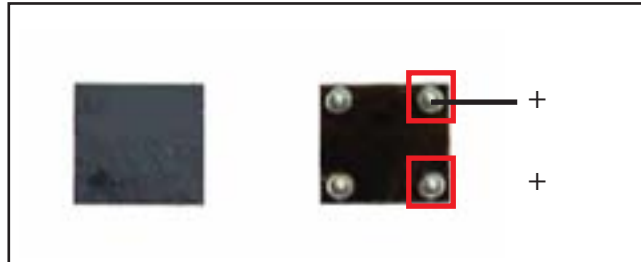


Fig: 3.3.15.1 Charging IC

3.3.15.2: Headphone IC

This IC is consist of 5 balls. Headphone IC is always placed on top of headphone connector. We cannot replace it but can do the jumpering process if required.



Fig: 3.3.15.2 Headphone IC

3.3.15.3: Light IC

This IC consist of 8 balls. IF there is no light in Display and Keypad, we need to change this IC as we can not do jumpering for this IC. This IC is located next to LED coil.

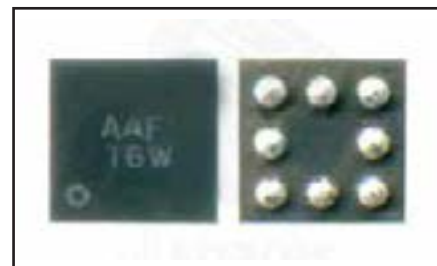


Fig: 3.3.15.3 Light IC

3.3.15.4: MIC IC

This IC consist of 8 balls. This can be changed and we can also do jumpering for this IC.

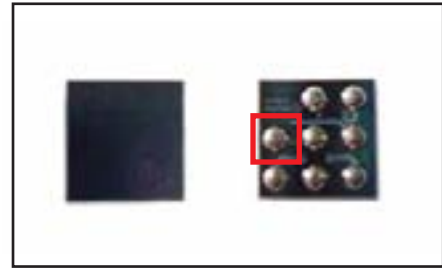


Fig: 3.3.15.4 Mic. IC

3.3.15.5: Ringer IC

This IC consist of 9 balls. This can be changed and we can also do jumpering for this IC. This IC is located on top of Ringer.

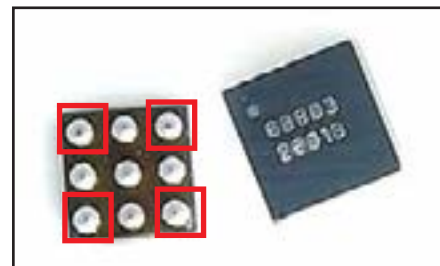


Fig: 3.3.15.5 Ringer IC

3.3.15.6: SIM IC

This IC consist of 8 balls. This can be changed and we can also do jumpering for this IC. This IC is located on top of SIM reader.

3.3.15.7: MMC IC

Types of MMC IC

Silver MMC IC

This IC consist of 11 balls. This is located next to SIM tray. This can be changed and we can also do jumpering for this IC.

Black MMC IC

This IC consist of 16 balls and located next to silver IC. This can be changed and we can also do jumpering for this IC.

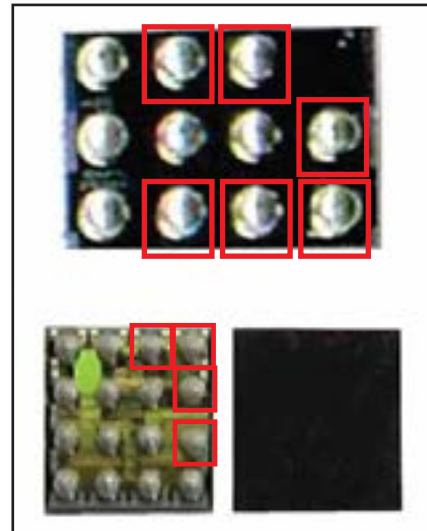


Fig: 3.3.15.7 MMC IC

3.3.15.8: Keypad IC

In case buttons are spoiled in a single line then this IC can give problem.

Normal Keypad IC

This IC consist of 24 balls and it is one of the basic component of mobile. This can be changed or we can also do jumpering for this IC

Regular Keypad IC

This IC consist of 24 balls. This can be changed or we can also do jumpering for this IC

Multimedia Keypad IC

This IC consist of 18 balls and this can be changed or we also can do the jumpering for this IC.



Fig: 3.3.15.8 Keypad IC

3.3.15.9: Display IC

Regular Display IC

This IC is normally available in old multimedia mobile phone. This IC consist of 24 balls and this can be changed or we can also do jumpering for this IC.

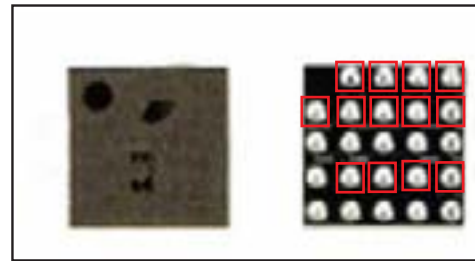


Fig: 3.3.15.9 Display IC

3.3.15.10: Certain Rules for Placing IC on Board



Step 1: We need to search the IC on mother-board and for that we can take help from any internet search engine. Search by model name and IC name and click on image result.

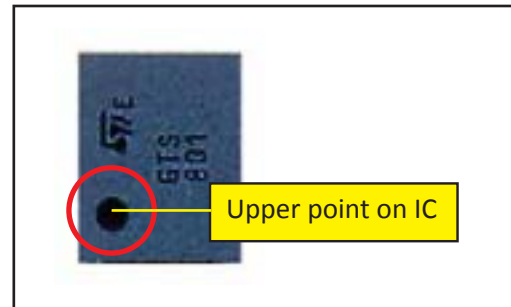


For E.g. If we have to search for SIM IC the go to internet search engine and in search bar type 3110 SIM IC type and search for the result.

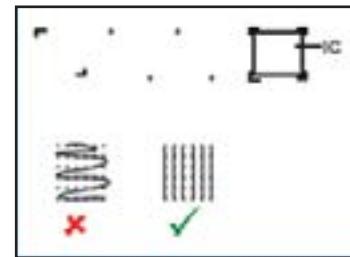


Step 2: Do not remove IC until and unless we understand the reason behind damage.

Step 3: Before removing IC, it is necessary to observe the upper point on IC as it will help to place it back.

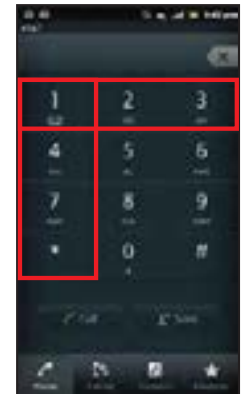


Step 4: During placing IC on board next to IC you will observe that identification marks are inside IC

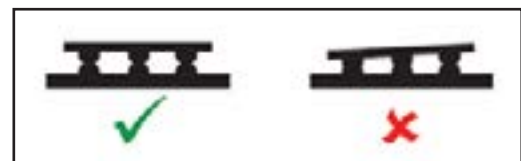


Step 5: If all buttons in the straight line are not working this means IC is faulty

Step 6: Make sure while removing IC surrounding components should not get damaged and to protect those components we can place thermal observant sheet on surrounding component



Step 7: Post removal of IC, we should clean the track of PCB board in one level otherwise IC may not work properly.



Step 8: While placing IC on board keep the heat / temperature of hot air gun at 350 degree Centigrade and to protect the IC from getting burnt, keep air off.

Step 9: If IC is not placed properly it may not work. Therefore before placing it we should clean it properly.

Step 10. While placing the iC give heat from hot air gun as per the requirements and also at right interval.

3.3.16: Types of Sensor

In this session we will be going to learn different types of sensors used in mobile phone.

Proximity Sensor – This sends infrared rays to identify whether mobile phone is with user or not.



Gesture Sensor – This type of sensor mainly reads the movement of body parts and works accordingly like Eyes, Hand etc...



Fig: 3.3.16.1 Gesture Sensor

RGB Light Sensor – This sensor measures the colour intensity of light like Red, Green, White etc... It is used in camera for light adjustment

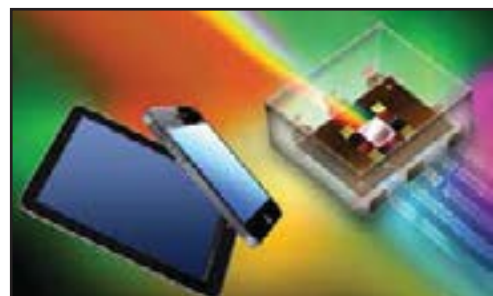


Fig: 3.3.16.2 RGB Light Sensor

Gyro Sensor – This sensor is used to sense the rotation of mobile in three different direction.



Fig: 3.3.16.3 Gyro Sensor

Accelerometer – This sensor helps in identifying orientation of mobile phone in three different angles. This sensor is widely used in most of the portable gadgets.



Fig: 3.3.16.4 Accelerometer

Geomagnetic Sensor - This sensor is used to identify magnetic field intensity in maps and search the direction.



Fig: 3.3.16.5 Geomagnetic Sensor

Temperature / Humidity sensor – This sensor is used to check temperature and humidity level.



Fig: 3.3.16.6 Temperature / Humidity sensor

Barometer – This sensor is used to check atmospheric pressure of users location.

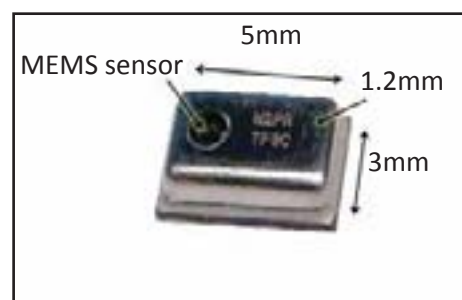


Fig: 3.3.16.7 Barometer

Hall Sensor – This sensor is used to identify whether cover is open or closed.

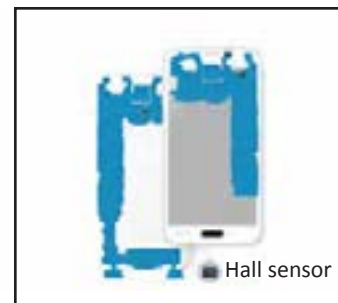


Fig: 3.3.16.8 Hall Sensor

Motion Sensor – This sensor check motion in phone specially in gaming and opening phone lock



Fig: 3.3.16.9 Motion Sensor

Ambient Light Sensor – This sensor is used to check light intensity in outer atmosphere and accordingly adjust brightness of display.



Fig: 3.3.16.10 Ambient Light Sensor

Gravity Sensor – This is a kind of accelerometer, having some weight or a tube inside. When the weight moves it tell us whether phone is moving to left or right or upwards or downwards. It is mainly used in gaming.

3.3.17: Call Setting

Understand & learn the following:

3.3.17.1: Blacklist

If you do not want to receive call from some-body then put that number in the blacklist (Unwanted Call)

Process –



Fig: 3.3.17.1.1 Call Setting Process-1

Note : - In-case blacklist is on and we have not added any number to the blacklist then in such case all incoming calls will be restricted.

Select Blocking mode



Fig: 3.3.17.1.2 Call Setting Process-2

Go to Add to blacklist and add contact for blocking



Fig: 3.3.17.1.3 Call Setting Process-3

3.3.17.2: White List

In case you want to receive call then turn that contact into white list
Select option “Add to White List”



Fig: 3.3.17.2 White list Contact

3.3.17.3: Hide ID

“Hide ID” option is used to restrict outgoing call

It gives following five types of errors : -

- 1) Call Failed
- 2) Check Operator Service
- 3) Check Network Setting
- 4) Show ID
- 5) Call Rejected

Process of opening “Hide ID” option

Got to : - Menu – Setting – Call Setting – Advance Setting

You will get three options

- Send by network
- Yes/On/Show ID
- No/Off/Hide ID

- 1) If first two options i.e. Send by network & Yes/On/Show ID are selected then outgoing call work properly
- 2) If No/Off/Hide ID option is selected then outgoing calls will be restricted.



Fig: 3.3.17.3 Hide ID Process

3.3.17.4: Call Conferencing

Call conferencing is used to connect call to multiple mobile simultaneously

How to do conference call

A. Call one of the participant in the conference call

Go to your contact list, or simply use the keypad to dial the number. When that call is established, tap Add Call. The first caller is placed on hold

B. Call the second Participant Again, you can use your contact list, or just dial the number to connect another participant

C. Tap on Merge Call

This will add second participant to the call



Fig: 3.3.17.4 Call Conferencing

3.3.17.5: Call Divert

Using this option we can divert incoming call to another number Procedure :-

Go to Menu – Setting – Call Setting – Call Divert

All Voice Calls

- A) Active
 - Add Voice Mail
 - Add Voice Numbe
- A) Cancel
- B) Check Status
 - Active
 - Deactive



Fig: 3.3.17.5 Call Divert

When call will get diverted

1. If Busy
2. If Not answer
3. If Not reach
4. If not available
5. Cancel all Divert Calls

- 1) If Busy – In this option, if phone is busy then call will be diverted to another number
- 2) If not Answer – In this option if incoming call will not be responded then call will be diverted to another number
- 3) If not Reach – In this option if phone is outside of network coverage area then call will be diverted to another number.
- 4) If Not Available – In this option if phone is switched Off then call will be diverted to another number.
- 5) Cancel all Divert Calls – In this option all diverted call will be canceled

3.3.17.6: Call Barring

Call barring feature allows user to block certain incoming or outgoing calls

When Call barring is required ?

- Use barring if your employees are making too many personal calls
- To prevent employees from making international calls during regular business hours.
- After a case in which someone was harassed by an ex lover or friend with phone calls or visits, police typically recommend call barring that person to help diffuse the situation.



Fig: 3.3.17.6 Call Barring

3.3.17.7: Call Barring Steps

Step 1: Go to Call settings



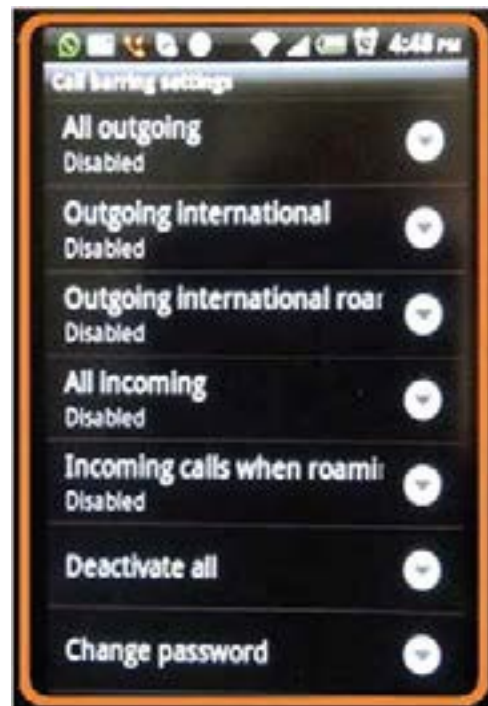
Step 2: Go to Additional Settings



Step 3: Go to Call Barring Settings



Step 4: Now choose option



3.3.17.8: Call Barring using Blocking Mode

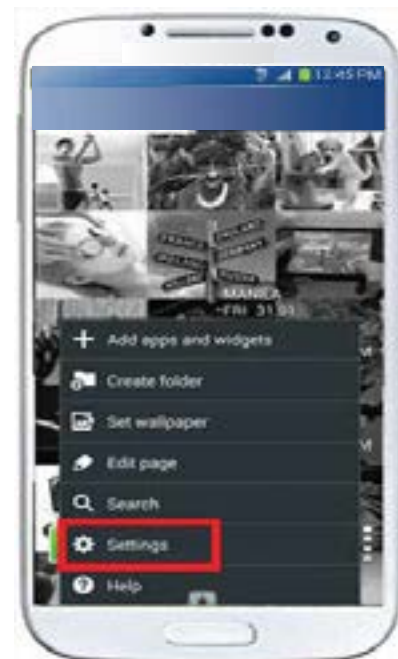
Step 1



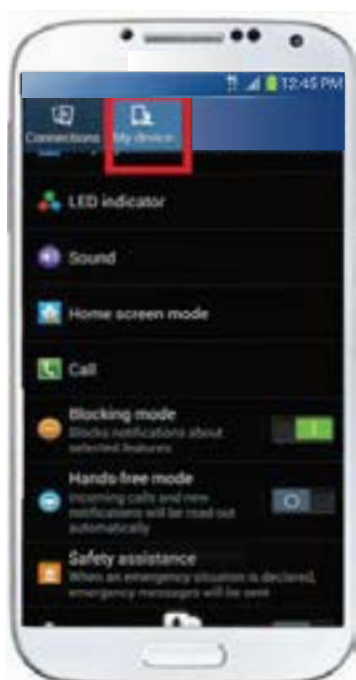
Step 2



Step 3



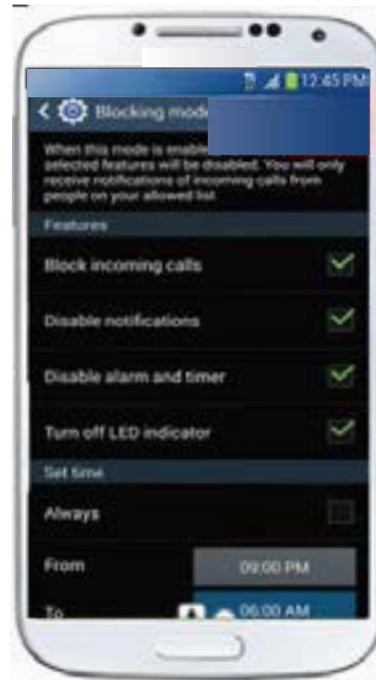
Step 4



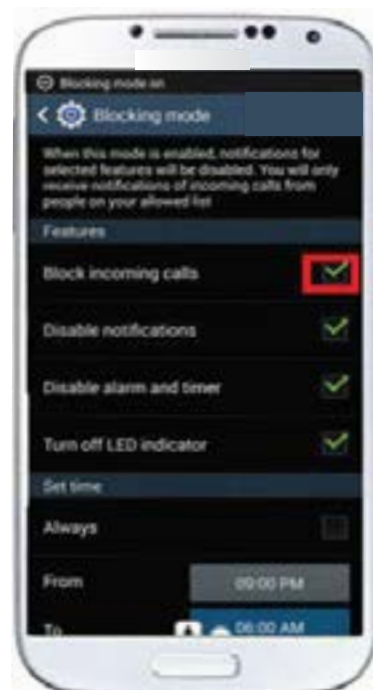
Step 5



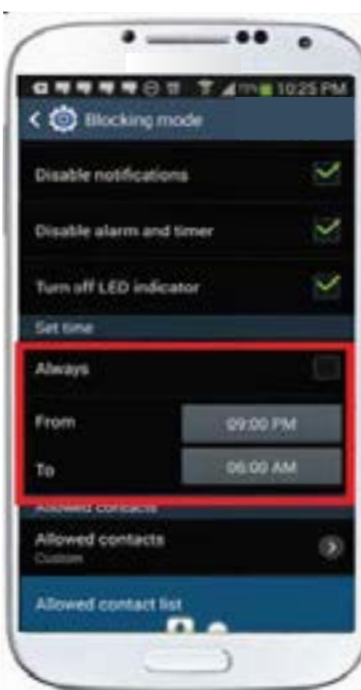
Step 6



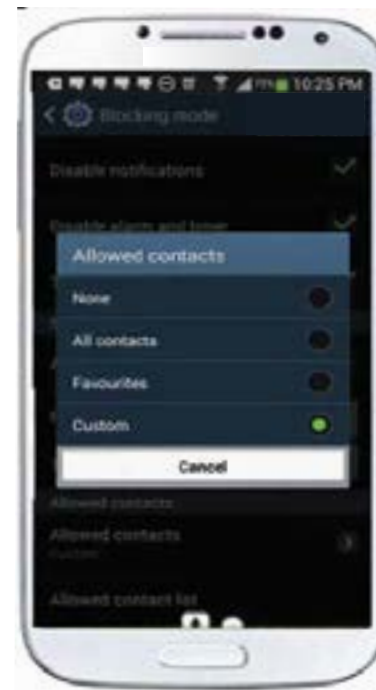
Step 7

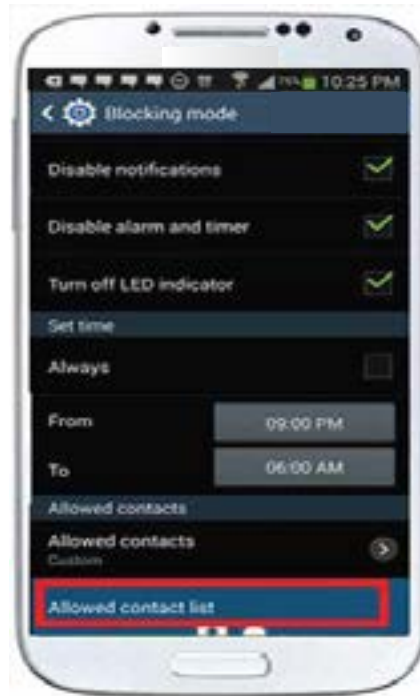


Step 8



Step 9



Step 10**3.3.17.9: No Screening Call**

- It means that when the person you put in the screened list will make a call to you You won't get any alerts from that number
- You can see the incoming number on display but you can't hear the ringtone or vibration for that number

How to add Number in Screen List

- Menu
- Phonebook
- Contact list
- Choose contact Settings
- Screened option

3.3.18: Lock Setting

Understand & learn the following:

3.3.18.1: Phone Lock

This lock is used for protecting mobile phone and also to avoid misuse of our mobile phone
How to set Password?

For Android Phone – Menu – Setting – Security – Change Screen Lock

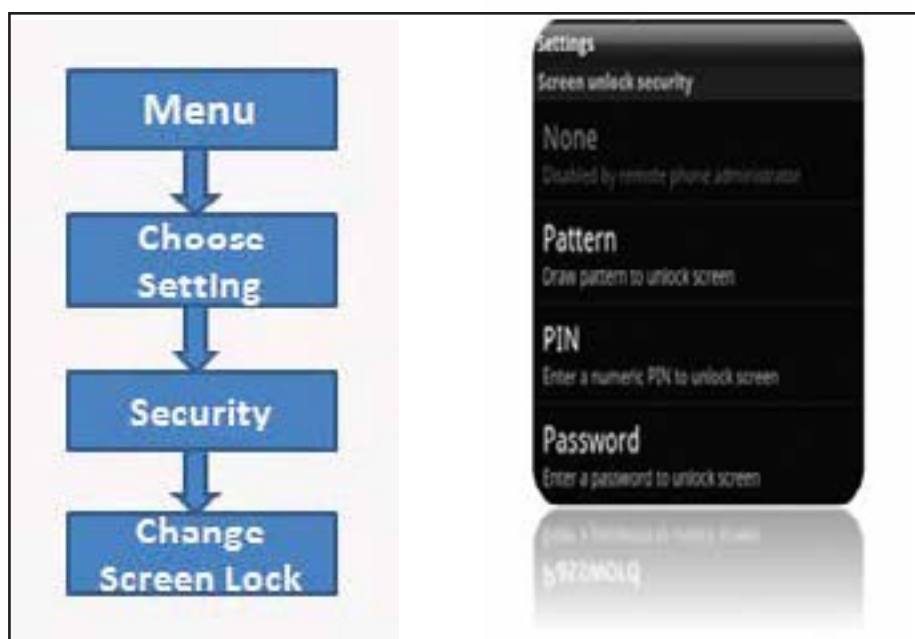


Fig: 3.3.18.1.1 Lock Setting for Android

For iPhone – Menu – Setting – Change Passcode – Set Passcode

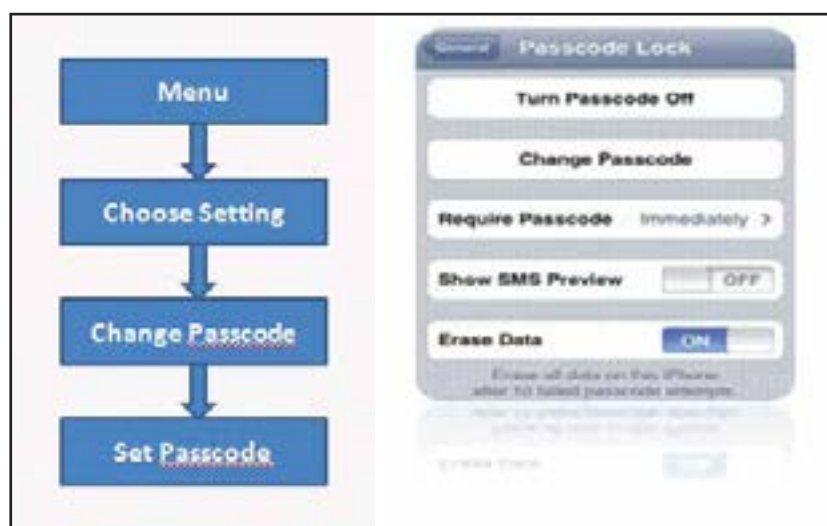


Fig: 3.3.18.1.2 Lock Setting for iPhone

3.3.18.2: SIM Lock

This lock is used for protection of SIM card.

After applying SIM lock ,If you put this SIM card in another mobile then this SIM card does not work until and unless you put the SIM pin on which it was locked. Pin is nothing but the password.

Procedure of SIM Lock

Go to Settings

Tap Security option

Tap Set up SIM card lock

Tap Lock SIM card

Enter the SIM PIN to lock the SIM card

Tap OK

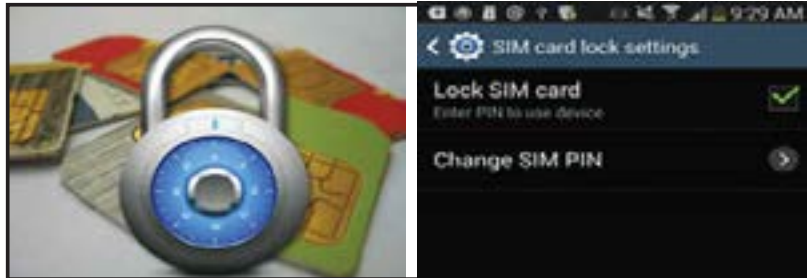


Fig: 3.3.18.2 SIM Lock

3.3.18.3: Privacy Lock

This lock is used to lock private menu like SIM, Call history, Image, Video

3.3.18.4: PUK (Pin Unlock Key)

This lock is used to lock private menu like SIM, Call history, Image, Video

This lock is used to protect SIM owner. If the lock is ON then

incoming and outgoing calls are stops or on display it displays PUK code

Procedure of setting PUK

Go to – Menu – Setting – Security – PIN



Fig: 3.3.18.4 Pin Unlock Key

3.3.18.5: Security Lock

Security lock is for the safety and security of mobile phone. If security lock is activated in the security settings, the phone will ask it while booting it every time or when the phone is locked and needs to unlock the keypad.

Default security code for various brand and model of Cell phones : -

0000 / 00 00 00 / 00 00 00 00

12345

0000 / 1234

1122 / 0000 / 1234 / 4321

3.3.18.6: Pattern Lock

This lock is used to protect the mobile from any other person except the owner of mobile.

Procedure of Pattern Lock

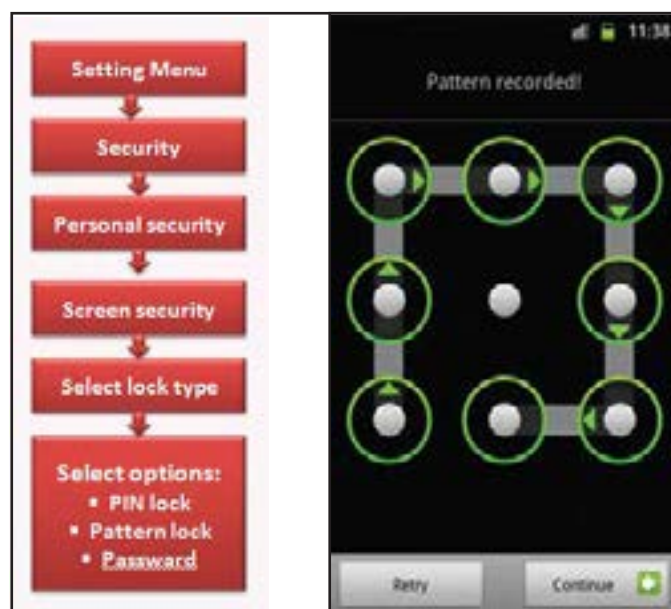


Fig: 3.3.18.6 Pattern Lock Process

3.3.18.7: Finger Lock for iPhone

How to set figure lock ?

Tap Settings

Touch ID & Passcode,

Enter your passcode.

Tap Add a Fingerprint and hold your device as you normally do when touching the Home button. Touch your finger to the Home button—but don't press. Hold it there until you feel a quick vibration, or until you're asked to lift your finger.

3.3.18.8: Mobile Tracker

Mobile tracker is a software used in mobile phone to locate the location of mobile phone

If mobile is lost then this software helps in locating mobile phone

How to activate Mobile Tracer Software in Mobile Phone ?

Menu	Add No. 1
Settings	Add No. 2
Mobile Tracker	Message
Enter Password	Save
Open Form	Close
On/Off	

Why Mobile Tracker ?

Once the mobile tracker is active on mobile phone and then if someone put another SIM card in it then because of mobile tracker you get to know that who is using your mobile phone.

3.3.19: Hard Reset (Only Android)

What is Hard Reset ?

A hard reset, also known as a factory reset or master reset, is the restoration of a device to the state it was in when it left the factory without opening the mobile phone or connecting to computer. All settings, applications and data added by the user are removed during hard reset.

When to do Hard Reset ?

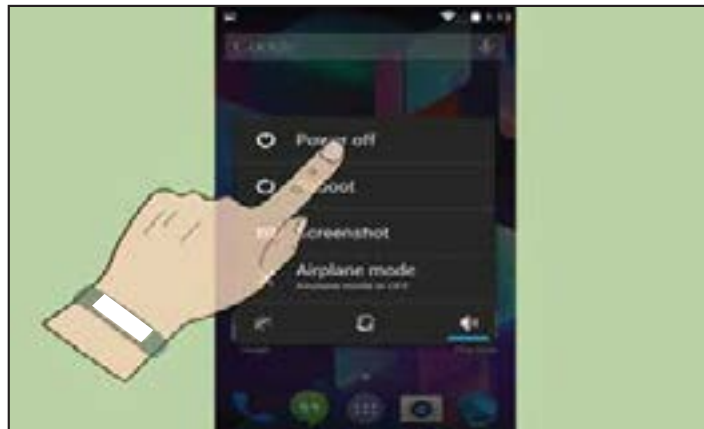
- When mobile takes more time to open any apps on mobile
- Mobile gets hang very frequently
- Mobile not working properly
- Mobile is infected by the Virus
- Mobile restarts automatically.
- Stops at Logo
- To break Phone Lock, Privacy Lock, mobile tracker, Pattern Lock
- To delete phone memory

3.3.19.1: How to do Hard Reset in Android Phone



Step 1: Power down your device

(If device is frozen, you can pull the battery out to turn it off.)

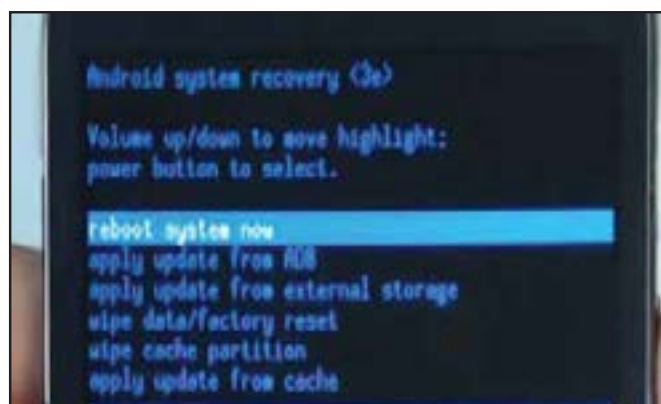


Step 2: Press the combination buttons simultaneously. For different brand and model it differs

Volume Up + Home + Power

Volume Down + Power

Home + Power

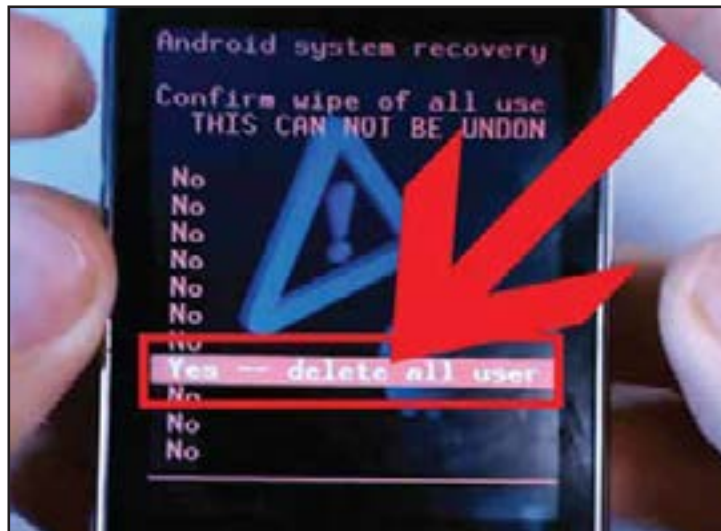


Step 3: Select Factory reset

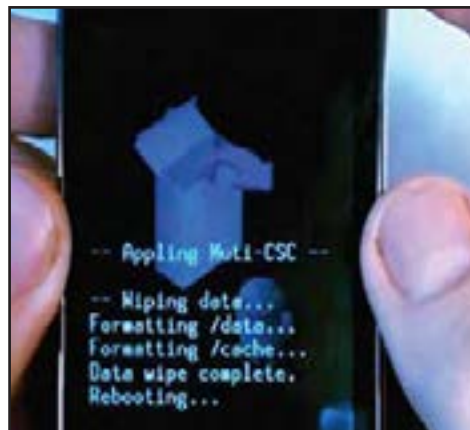
(use up/down button to select factory reset)



Step 4: You will be asked for the confirmation to do the factory reset



Step 5: Once confirmed you will get this screen



Wait for the restore process to complete

Now your hard reset process is over and you can power On the mobile

3.3.19.2: How to do Hard Reset for Windows Phone

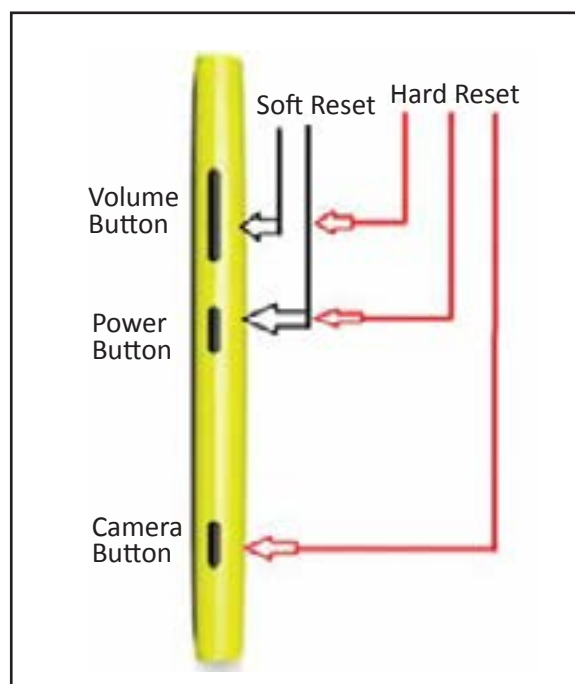
Step 1: Before doing the hard reset make sure you phone battery is fully charged



Step 2: Turn off the phone by pressing the power button and holding it for a few seconds then scroll down



Step 3: Press the Volume Down Key + Power Key to turn on the unit



Step 4: Wait for the startup screen booting with an exclamation mark " ! " then release the volume down key



Step 5: Press the following buttons in the following order:

1. Press the volume up (high volume key)
2. Press volume key down (low volume key)
3. Press the power key
4. Press volume down key.
5. Wait a moment and look at the screen, a message such as loading new software will start the hard reset process.

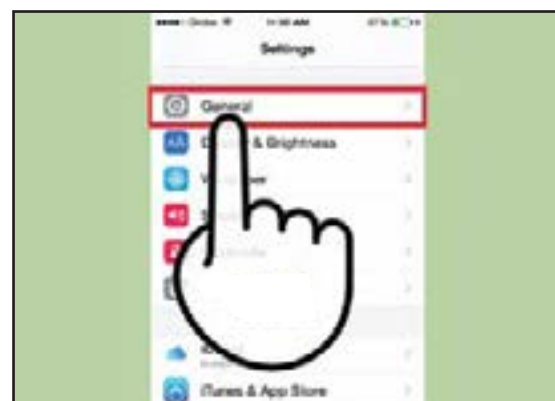


3.3.19.3: How to do hard Reset of iPhone

Step 1: Go to setting



Step 2: Select General



Step 3: Scroll down and select Reset

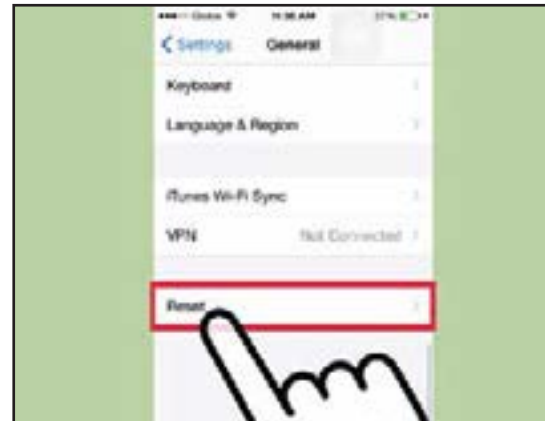
Step 4: Here you will get various options like

Reset all settings

Reset Network settings

Erase all content and settings

Step 5: Select Option - Erase all content and settings

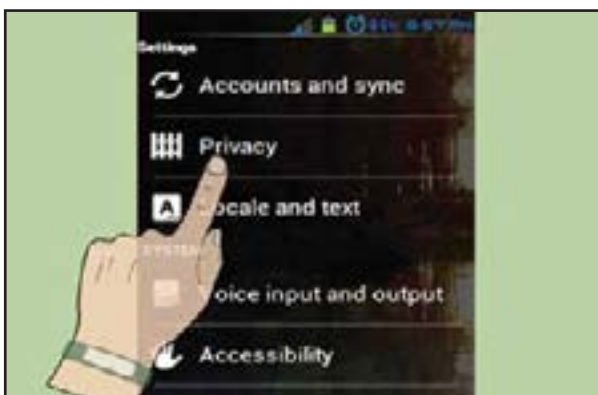


3.3.19.4: How to do Soft Reset of Android Phone

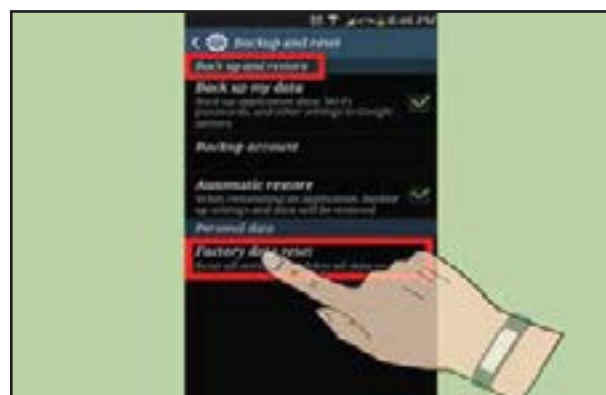
Step 1: Go to the setting option of Mobile



Step 2: Select Backup and Reset in Personal Section

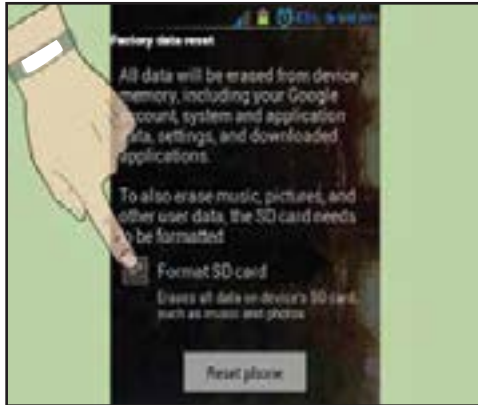


Step 3: Select Factory Data Reset

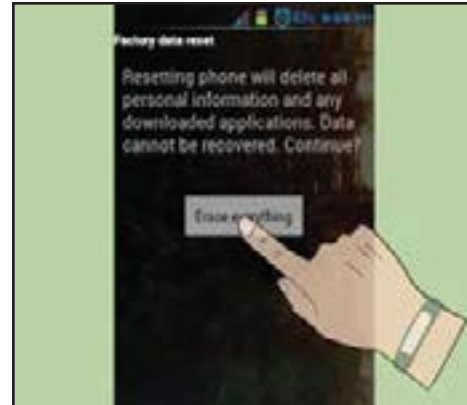


Step 4: Select Reset Phone to delete all data and restore your device factory settings

Step 5: Now tick on the “format SD card” and then reset phone



Step 6: Confirm the process by selecting “Erase everything”



3.3.19.5: How to do Soft Reset of Windows Phone

Step 1: Open the terminal (removing the box as necessary)

Step 2: Remove the battery to let the phone without power

Step 3: Wait a few seconds for the phone fully discharged

Step 4: Replace the battery and the corresponding case

Step 5: Boot the phone normally

3.3.19.6: How to do Soft Reset of iPhone

Step 1: Press and hold the home button(big circle below the screen)and the sleep/wake(on the top of the i-phone)simultaneously.



Step 2: Continue holding both buttons until the iphone shuts off and begins to restart



Step 3: You may let go when you see the silver apple logo.

Step 4: Now you have completed soft reset successfully.



3.3.20: Security Code (Secret Code)

What is security code:

1. This is a type of code which are used to solve many types of problem related to mobile
2. When we use secret code there is no requirement to connect mobile to computer

Why we use security Code ?

1. Mobile Hang
2. Virus comes
3. Automatically get restart When go in any menu
4. To break Phone Lock, SIM Lock, Privacy Lock, Mobile Tracker, Pattern Lock
5. Hang at Logo during startup.??
6. To delete Phone Memory

3.3.20.1: International Mobile Equipment Identity Code (IMEI Code)

- a. This number is unique for each mobile.
- b. This number is of 15 digits.
- c. It is usually found printed on the phones back panel under the battery.
- d. This number starts with 35 or 91.
- e. If there are 15 zero's or blank spaces appear then the IMEI number of that mobile is either lost or there is no IMEI number in the mobile phone

How to see IMEI number of Mobile Phone

Dial *#06# to see IMEI number



Fig: 3.3.20.1 IMEI Code

3.3.21: USB debugging

The primary function of USB debugging mode is to facilitate a connection between an Android device and a computer with Android SDK (Software Development Kit). USB Debugging Mode, in some versions of Android, is also called Developer Mode.

USB debugging required while rooting, backing-up, custom ROM installation, taking screenshot from computer using ADB.

It is best for you to keep USB Debugging Mode disabled and only enable it when you really need it. Leaving it enabled all the time is kind of a security risk for that this mode grants you high-level access to your device.

3.3.21.1: How to Enable USB debugging Mode in Android

a. Android 2.0 – 2.3 X

Setting – Applications – Development – USB Debugging

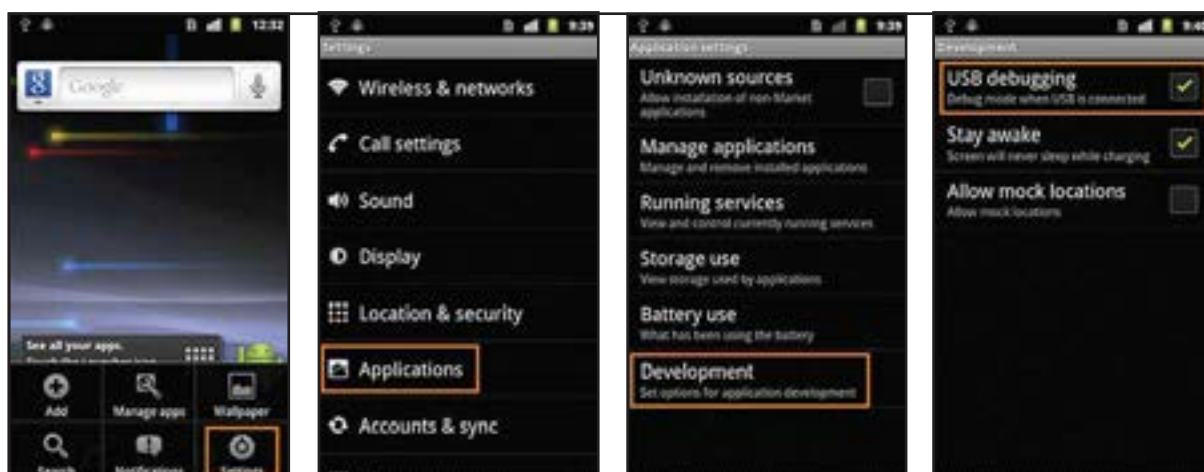


Fig: 3.3.21.1.1 USB Debugging Mode -Android 2.0 - 2.3X

b. Android 3.0 – 4.1 X

Setting – Development – USB Debugging

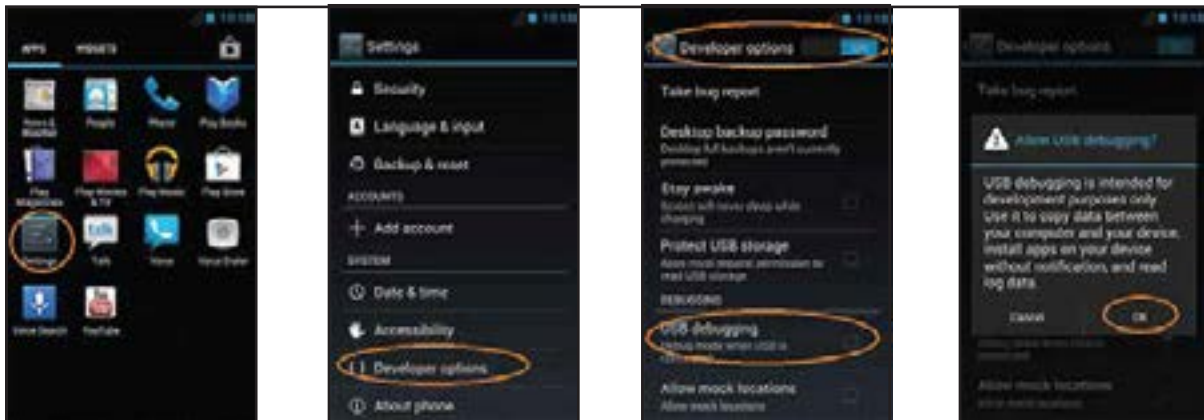


Fig: 3.3.21.1.2 USB Debugging Mode -Android 3.0 - 4.1 X

c. Android 4.2 X and higher

Setting – Development – USB Debugging

In Android 4.2 and higher versions, the Developer Options menu and USB Debugging option have been hidden. In former 4.X versions of Android, USB Debugging option is under Developer Options menu.

First, you need to enable "Developer Options Menu".



Fig: 3.3.21.1.3 USB Debugging Mode -Android 4.2

- Go to "Settings".
- Scroll down to the bottom and tap "About phone" or "About tablet",
- Scroll down to the bottom of the "About phone" and locate the "Build Number" field.
- Tap the Build number field seven times to enable Developer Options. Tap a few times and you'll see a countdown that reads "You are now 3 steps away from being a developer."
- When you are done, you'll see the message "You are now a developer!".
- Tap the Back button and you'll see the Developer options menu under System on your Settings screen

Now, you can enable USB Debugging mode.

- Go to Settings>Developer Options>USB Debugging. Tap the USB Debugging checkbox.

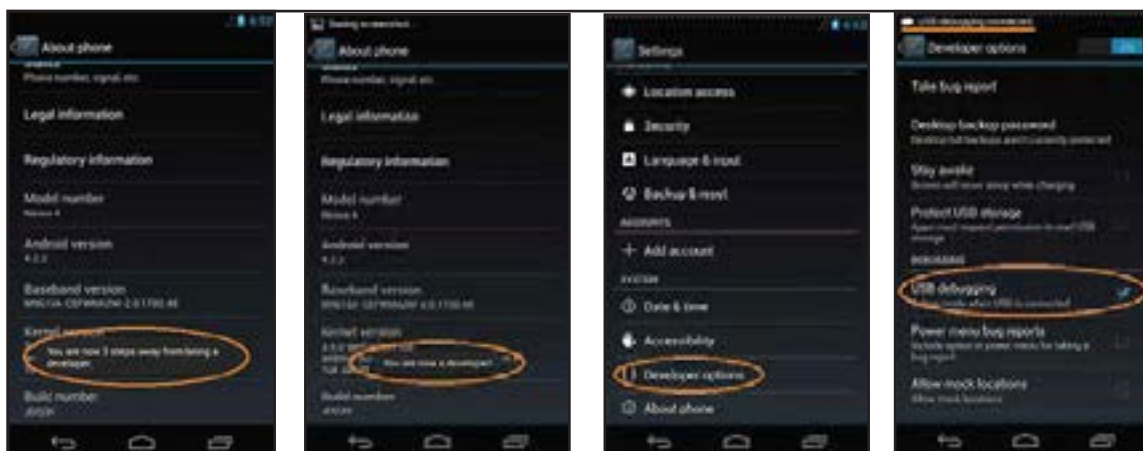


Fig: 3.3.21.1.4 USB Debugging Mode -Android 3.0 - 4.1 X

d. Android 5.0 Lollipop

To enable USB Debugging on Android 5.0 Lollipop is the same as Android 4.2.x.

1. Settings > About Phone > Build number > Tap it 7 times to become developer

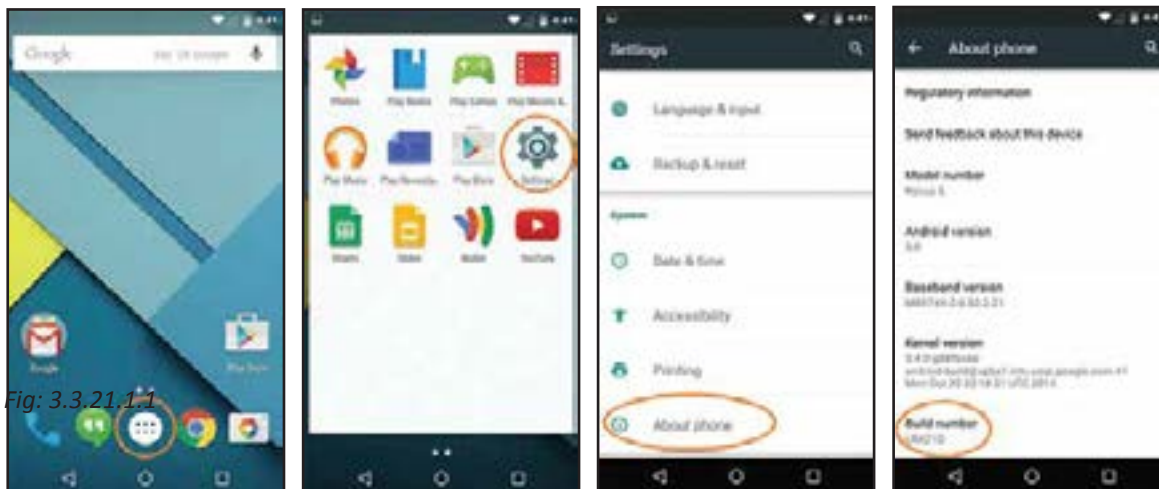


Fig: 3.3.21.1.5 USB Debugging Mode -Android Lollipop

2. Settings > Developer Options > USB Debugging

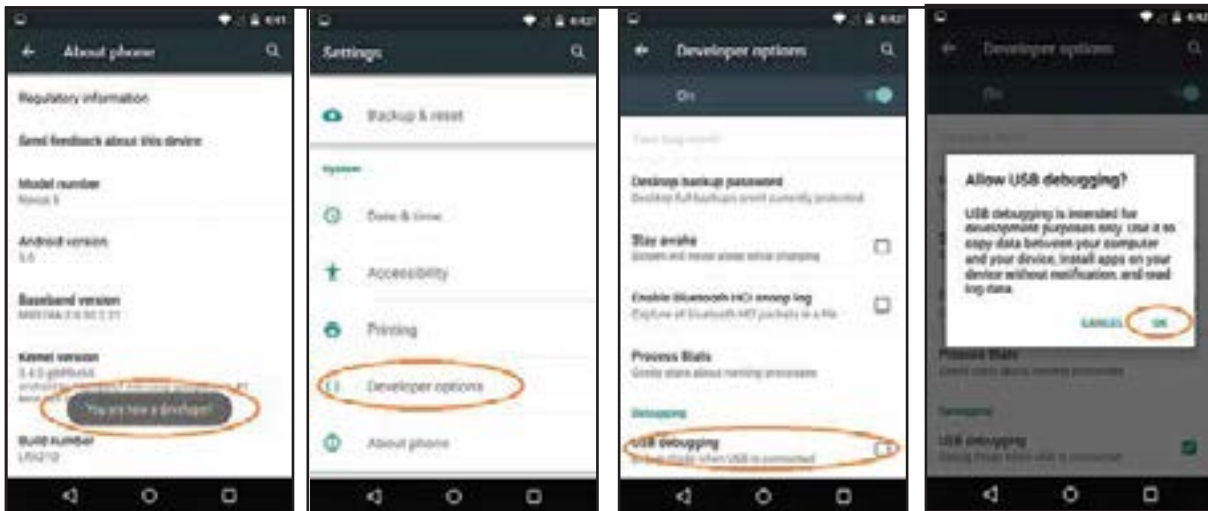


Fig: 3.3.21.1.6 USB Debugging

Before touching motherboard or any component of Mobile phone make sure you have grounded yourself for ESD and have also take necessary action for ESD like use of Antistatic Mat / Hand Gloves / Wrist Strap to prevent any damage to components of mobile phone.

3.3.22: BGA Rework Stations

BGA is a ball grid array type of surface-mount packaging (a chip carrier) used for integrated circuits. BGA packages are used to permanently mount devices such as microprocessors. Rework stations are designed for quick BGA repairs.

3.3.22.1: Electrostatic Discharge (ESD) and Preventive Measures

Electrostatic discharge (ESD) is the sudden flow of electricity between two electrically charged objects caused by contact, an electrical short, or dielectric breakdown.

a. Why ESD occurs?

b. ESD Voltage range classification :

The ESD occurs when differently-charged objects are brought close together or when the dielectric between them breaks down, often creating a visible spark

ESD IMMUNITY CLASSIFICATION FOR HBM	
Class	Voltage Range
Class 0	<250 V (fails for ESD pulse of 250 V)
Class 1A	250 V to <500 V (passes 250 V and fails 500 V)
Class 1B	500 V to <1000 V (passes 500 V and fails 1000 V)
Class 1C	1000 V to <2000 V (passes 1000 V and fails 2000 V)
Class 2	2000 V to <4000 V (passes 3000 V and fails 4000 V)
Class 3A	4000 V to <8000 V (passes 4000 V and fails 8000 V)
Class 3B	≥8000 V (passes 8000 V or above)

Tab: 3.3.22.1 ESD Immunity Classification for HBM

(N. B. HBM stands for Human Body Model)

Many electronic components, especially microchips, can be damaged by ESD.

c. How to minimize ESD?

Sensitive components need to be protected during and after manufacture, during shipping and device assembly, and in the finished device.

Grounding is especially important for effective ESD control. It should be clearly defined, and regularly evaluated.

Sensitive devices need to be protected during shipping, handling, and storage. The buildup and discharge of static can be minimized by controlling the surface resistance and volume resistivity of packaging materials.

3.3.22.2: Documentation of the Repairs

All the repair works should be clearly documented as per the company's procedures.

The following points are important and should be noted carefully :

- New product specifications and their spares and repair details
- Document the spares movement note and capture activity performed
- Handling procedure of display systems in mobile phone (LCD and LED)
- Terminologies and procedures mentioned in repair manual
- Software and operating system related to mobile phone
- Applications including games that can be installed in mobile phone and the authentic source to download them
- Licensed versions of software and application, its terms and conditions associated with it
- Estimate cost of repair and verify Beyond Economic Repair (BER) value
- Service level agreement (SLA) and conditions associated with it
- Documentation procedure to record customer, mobile phone and repair details
- Check and test various electronic components on their functionality

3.3.22.3: 5S

Strictly implement 5 S principles for improved work practices.



Fig: 3.3.23.3 5S

UNIT 3.4: Skills (Optional)

Unit Objectives

At the end of this unit, students will be able to:

1. Prepare job card having information of customer, mobile phone brand & model and repair requirement
2. Prepare document for the action taken based on the complain registered in the job card

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits, Different Mobile Handsets for experiments
- Repair tools & equipment
- Quality components for replacing the defective ones

Do

- Explain the core / generic skills involved in the repair operations.
- Explain the technical skills required for repairing & replacing the defective components
- Let them practice some important skills required in repair operations during practical exercises.

Demonstrate

- The practical skills operations during exercises.
- Call a volunteer and let him explain the repair actions.
- Demonstrate the skills for repairs.

Say

- Explain the difference between knowledge & skills

3.4.1: Core Skills / Generic Skills

The following core / generic skills are important for repair operations

3.4.1.1: Reading & Writing Skills

Understand & learn the following skills:

- Read the standard operating or repair procedure manual for different equipment
- Note the process done for diagnose
- Document the completed work

3.4.1.2: Teamwork & Multitasking Skills

Understand & learn the following skills:

- Share work load as required
- Achieve the target

3.4.2: Professional Skills

This lock is used to lock private menu like SIM, Call history, Image, Video

3.4.2.1: Computer & Hardware Operating Skills

Understand & learn the following skills:

- Operate computer and laptop
- Operate the different software related to mobile phone
- Download software and applications from company's website and from cloud appropriately

3.4.2.2: Using Tools & Machines Skills

Understand & learn the following skills:

- Operate tools such as manual and electric screw drivers for disassembling and assembling of equipment
- Use hot air blower / gun for de-soldering
- Use semi-automated or automated BGA work station
- Use other specific devices for repairs such as soldering iron, multimeter, POST cards
- Use metal or plastic ply to open the panel of mobile phone
- Use antistatic device such as ESD wrist strips

3.4.2.3: Reflective Thinking Skills

Understand & learn the following skills:

- Improve work processes
- Reduce errors and correct themselves with the experienced mistakes

Understand & learn the following skills:

- Improve work processes
- Reduce errors and correct themselves with the experienced mistakes

3.4.2.4: Critical Thinking Skills

Understand & learn the following skills:

- Spot process disruptions and delays
- Report on any issues faced to superiors without delay

Understand & learn the following skills:

- Spot process disruptions and delays
- Report on any issues faced to superiors without delay

This image shows a template for a piece of lined paper. At the top left, there is a header area with the word "Notes" in a bold, orange font. To the right of the text is a small orange icon of a clipboard with a checklist. The rest of the page is filled with horizontal black lines, providing space for writing notes.



Exercise-1: Fill in the Blanks

1. Open the outer panel of the smart phone using opening tools
A. Screw driver B. Metal / plastic case. C. Hot air gun
2. Use hot air gun to remove the
A. LCD screen B. Outer Panel C. Inner Panel
3. From 1973 to 1993 system was used to control the operation of mobile phones
A. Hardware B. Embedded C. Operating
4. In first mobile phone "IBM Simon" was launched
A. 1994 B. 1995 C. 1996 D. 1997
5. Google launched Android 5.0 Lollipop
A. 2012 B. 2014 C. 2015 D. 2011
6. Solder the component on the PCB using.....
A. Soldering Stations B. Hot Air Gun C. Soldering iron
7. Mobile network operates on..... waves
A. 300 MHz to 1.6 GHz B. 900 MHz to 3.6 GHz C. 700 MHz to 2.6 GHz.
8. In Apple launched iPhone with iOS
A. 2004 B. 2007 C. 2008
9. In..... Windows launched its mobile phone with windows OS
A. 2010 B. 2012 C. 2009
10. InGoogle launched Android KitKat 4.4
A. 2012 B. 2013 C. 2011

Exercise-2: Fill in the Blanks

1. IMEI stand for

- A. International Mobile Equipment Identity B. Non-Internal Mobile Equipment Identity
C. Indian Mobile Equipment Identity

2. PCB stand for.....

- A. Phone Circuit Board B. Personal Circuit Board C. Printed Circuit Board

3. Soldering Gun works onVolt Dc

- A. 10 B. 12 C. 14

4. device used to measure voltage, Ohms, battery, continuity

- A. Multi Meter B. Micro Meter C. Alti Meter

5. Connector is used to connect mobile phone with external power source.

- A. Battery Connector B. Charging Connector C. Display Connector

6.connector is used to connect display unit of mobile phone with PCB board

- A. Battery Connector B. Charging Connector C. Display Connector

7. Ringer resistance range isOhm

- A. 8-10 B. 4-8 C. 12-14

8. In-case it shows readingohm it means vibration motor is not working

- A. 15 B. 0 C. 6

9. Wire used in jumpering process is awire

- A. Silver B. copper C. aluminum

10. Charging IC consist ofballs

- A. 8 B. 5 C. 4

Exercise-3: Fill in the Blanks

1. Head phone IC consist ofballs
A. 8 B . 5 C. 4

2. Ringer IC consist ofballs
A. 8 B . 9 C. 4

3. Silver MMC IC consist ofballs
A. 8 B . 5 C. 11

4. Black MMC IC consist ofballs
A. 16 B . 5 C. 4

5. Normal Keypad IC consist ofballs
A. 18 B . 15 C. 24

6.Sensor is used to identify magnetic field intensity in maps and search the direction
A. Gyro Sensor B . Geomagnetic C. Accelerometer

7. PUK stand for.....
A. Phone Unlock key B . Password Unlock key C. Pin Unlock Key

8. SIM is acronym of.....
A. Subscriber identity module
B. System identity module
C. Subscriber information module

9. Soldering paste gives good while soldering
A. Connectivity B. Finishing C. Clearnity

10. ESD is hardlyto the human body
A. Visible B. Noticeable C. Harm

Exercise-2: Answer the Following Questions

1. How to use soldering Gun?

2. What is multimeter and explain the different type of multimeter ?

3. How to Use BGA Reballing Kit?

4. Define the process of soldering and de-soldering Battery Connector?

5. Explain the mobile strips and type of strips ?

6. How to test component using multimeter ?

7. Define type of IC ?



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GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
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N · S · D · C
National
Skill Development
Corporation

Transforming the skill landscape

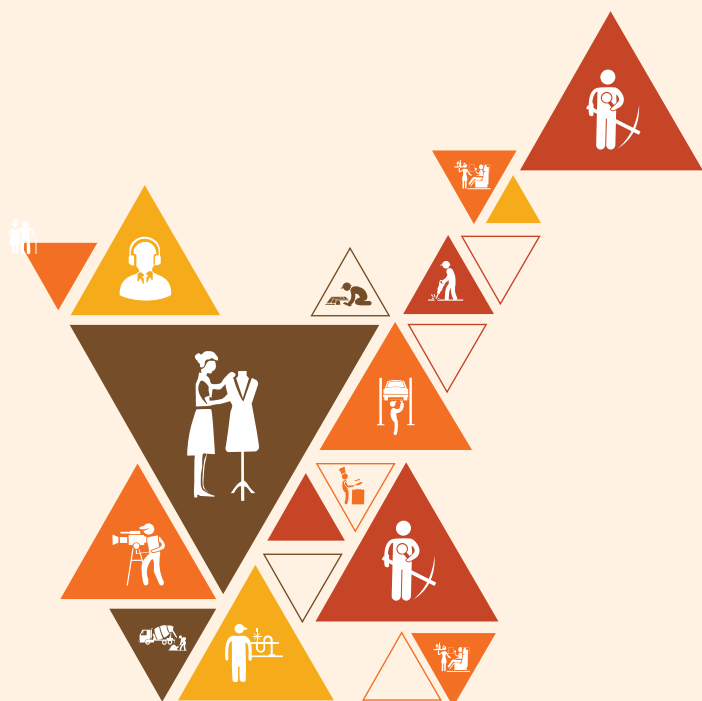


4. Coordinate with Colleagues

Unit 4.1 – Performance Criteria for Working Effectively as Team

Unit 4.2 – Knowledge & Understanding: Working Effectively as Team

Unit 4.3 – Skills: Working Effectively as Team



ELE/ N 9905

Key Learning Outcomes

At the end of this module, you will be able to:

1. Interact & communicate effectively with colleagues including member in the own group as well as other groups
2. Use all forms of verbal and non-verbal communication to communicate clearly and effectively with your colleagues, supervisors, customers and other stakeholders
3. Demonstrate communication skills
4. Judge your customers' body language and accordingly use an appropriate approach to deal with them
5. Apply the best practices for grooming to look presentable and make good impression on your custom-ers
6. Use proper personal etiquettes at workplace
7. Acquire knowledge and understanding required for team working

UNIT 4.1: Performance Criteria for Working Effectively as Team

Unit Objectives

Understand the performance criteria for Working effectively as team:

1. Interact & communicate effectively with colleagues including member in the own group as well as other groups

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits for Team building exercises

Do

- Let the participants play some Team Building Exercises.
 - For example let the participants in teams of 2, maneuver through a difficult path, with one of their legs tied together.
 - Let the participants assemble some difficult artifacts from its broken pieces.
- The winner of the game should be recognized & rewarded.

Say

- Tell them what makes a good team member & a good team leader.
- Thank the participants for their involvement.
- Enthuse the participants by telling them, what is planned next.

Notes for Facilitation

- You could ask the participants to describe the attributes of successful teams.

4.1.1: Learn To

Writing Skills

- Maintain clear communication with colleagues (by all means including face-to-face, telephonic as well as written)
- Work with colleagues to integrate work
- Pass on information to colleagues in line with organizational requirements both through verbal as well as non-verbal means
- Work in ways that show respect for colleagues
- Carry out commitments made to colleagues
- Let colleagues know in good time if cannot carry out commitments, explaining the reasons
- Identify problems in working with colleagues and take the initiative to solve these problems
- Follow the organization's policies and procedures for working with colleagues

UNIT 4.2: Knowledge & Understanding - Working Effectively as Team

Unit Objectives

Understand the performance criteria for Working effectively as team:

- Use all forms of verbal and non-verbal communication to communicate clearly and effectively with your colleagues, supervisors, customers and other stakeholders
- Discuss the importance of communication skills
- Judge your customers' body language and accordingly use an appropriate approach to deal with them
- Apply the best practices for grooming to look presentable and make good impression on your customers
- Use proper personal etiquettes at workplace

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits for Team building exercises

Do

- Let the participants play some Team Building Exercises.
- For example let participants in teams of 2, maneuver through a difficult path, with one of them blind folded.
- The winner of the game should be recognized & rewarded.

Say

- Let them describe attributes of a good team member & a good team leader.
- Thank the participants for their involvement.
- Enthuse the participants by telling them, what is planned next.

Demonstrate

- Traits of a good team leader during role play exercises.
- Traits of a good team member during role play exercises.
- Let the participants demonstrate their skills during the practical exercises.

Notes for Facilitation

- Seek the participants' feedback on their learning gains.

4.2.1: Communication Skills

Why Communication Skills?

Formal education is not a guarantee for achieving success in your life. Without special qualifications also people can become successful in their respective fields.

Many famous personalities, such as our Prime Minister Narendra Modi, had basic educational qualification, yet they became famous because of their amazing communication skills. This emphasizes the importance of communication skills in achieving your goal to work effectively with:

- External parties such as customers, vendors, etc
- Internal stakeholders such as your peers and supervisors



Fig: 4.2.1.1 Communication Skills Matter



Fig: 4.2.1.2 Why Communication Skills?

4.2.2: Technical Knowledge

Different types of information that colleagues might need and the importance of providing this information when it is required

- Importance of helping colleagues with problems, in order to meet quality and time standards as a team

4.2.1.1: What is Communication?

Communication is the process of exchanging information from one person to another using a medium. People exchange information by speaking, writing or using body signals or languages.



Fig: 4.2.1.1 What is Communication?

4.2.1.2: Process of Communication?

The major elements of communication process are sender, message, receiver and feedback.

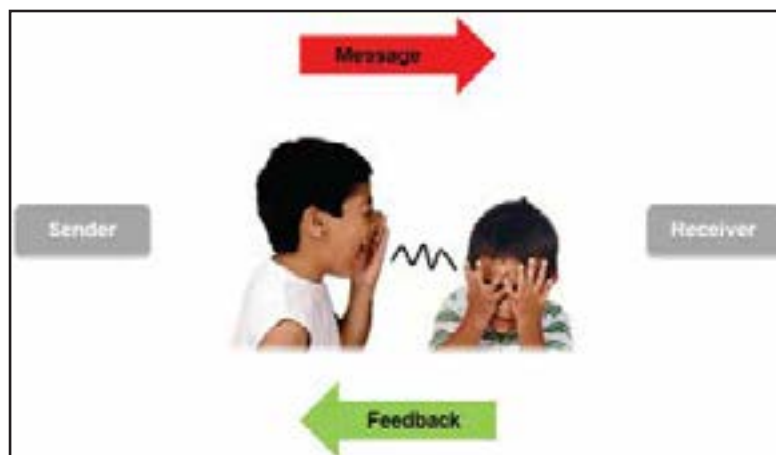


Fig: 4.2.1.2 Process of Communication

(1) Sender:

The person who intends to convey the message with the intention of passing information and ideas to others is known as sender or communicator.

(2) Message:

This is the ideas or information of the communication.

(3) Receiver:

Receiver is the person who receives the message or for whom the message is meant for. It is the receiver who tries to understand the message in the best possible manner in achieving the desired objectives.

(4) Feedback:

Feedback is the process of ensuring that the receiver has received the message and understood in the same sense as sender meant it.

4.2.1.3: Components of Effective Communication

Various researches have shown that an effective communication consists of:

- 93% Non-Verbal Communication or How You Say
 - 55% Body Language
 - 38% Voice
- 7% Verbal Communication or What You Say

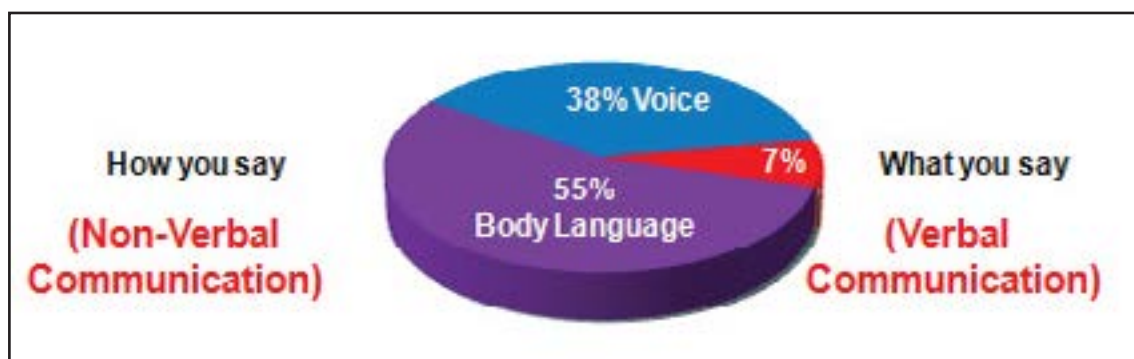


Fig: 4.2.1.3 Process of Communication

4.2.2: Verbal Communication

Importance of Verbal Communication :

Do you agree that whenever we start a conversation with someone, we are more focused towards what we say? But, words account for 7% importance in a conversation.

Our Dealership Executives are not that educated and hence have poor vocabulary.

Because of this our Dealership Executives feel inferior and lack confidence. But, they should understand that words account for only 7% in conversations and do not matter that much. Instead by improving their voice and body language, they can do a better job of communicating.

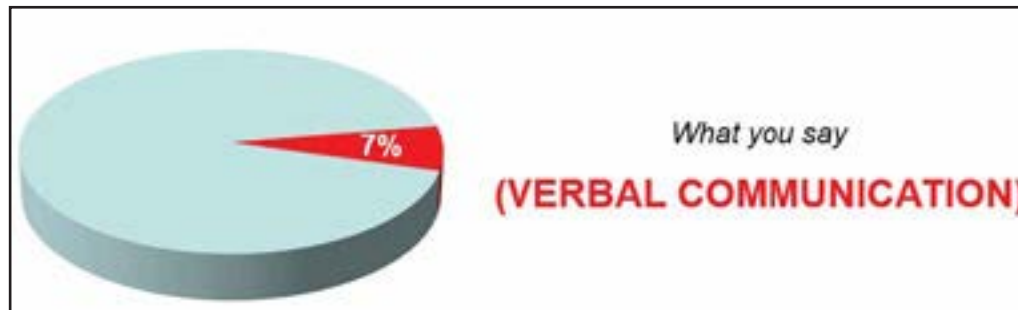


Fig: 4.2.2 Importance of Verbal Communication

Words :

Verbal communication consists of sharing thoughts through the meaning of words.

Words are a set of alphabets, to express our feelings or emotions. Verbal communications are of two types: written and oral communication.

4.2.2.1: How to Improve Verbal Communication

Some of the ways through which you can improve your verbal communication are:

- Read newspapers/magazines, etc.
- Practice using 10-15 new words everyday
- Avoid using slangs
- Think before you speak

While communicating always try to think about how someone else will understand what you are trying to communicate.

4.2.3: Non-verbal Communication

Components of Non-verbal Communication :

How you say (Non-verbal Communication) includes:

- Voice
- Body language



Fig: 4.2.3.1 Voice



Fig: 4.2.3.2 Body Language

4.2.3.1: Voice

Components of Non-verbal Communication:Voice :

Speech requires the presence of a voice that can be modulated. Vocal features that contribute to our interpretation of spoken language such as voiced pauses or intonation plays an important part to help us understand what is said to us. For instance, if the volume of your friend's speech is decidedly low, then there's a good chance he's sad over something. Likewise, if your teacher ends a sentence with a raise in pitch, or an upward inflection, then she's most likely asking a question.

What is Voice?

It is a specified quality, pitch and tone of vocal sound.

Relevance of Voice :

For an effective communication, voice has 38% importance. So, "The way you say" matters a lot.

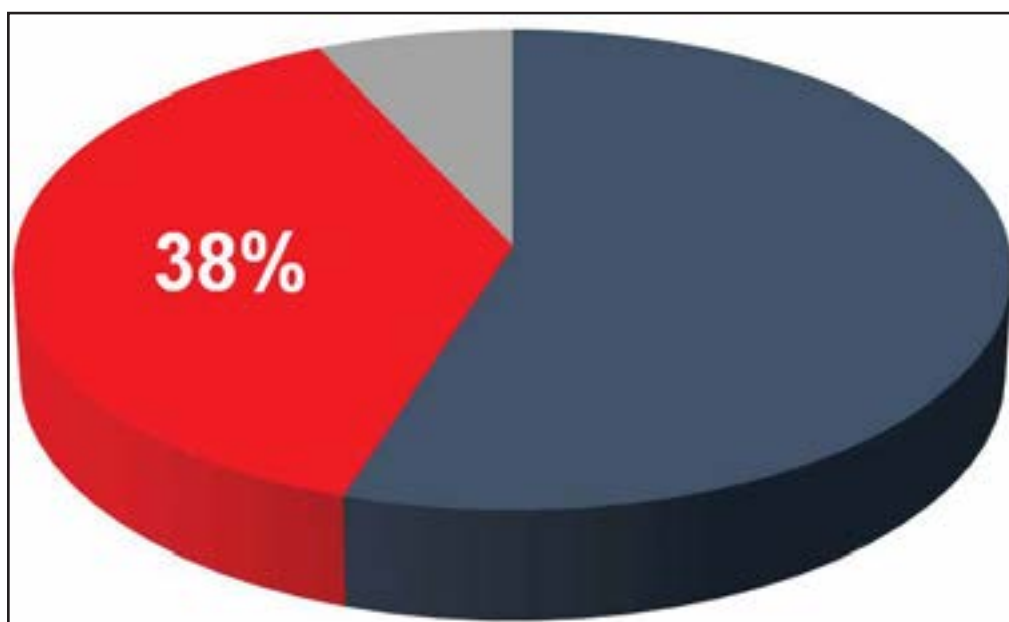
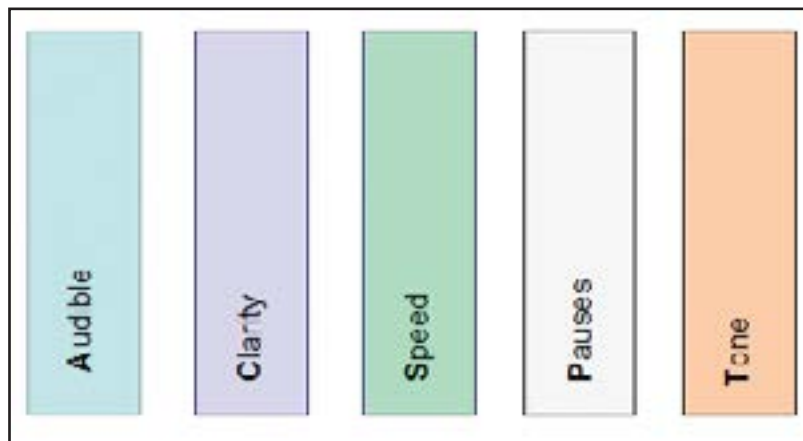


Fig: 4.2.3.1.1 Relevance of Voice

Characteristics of a Good Voice :*Fig: 4.2.3.1.2 Characteristics of a Good Voice*

Keep the following principles in mind using voice for your communication:

- Audible: To be heard
- Clarity: To convey the right message
- Speed: To be understood
- Pauses: To gain attention before an important message
- Tone: To convey the information with as much vocal energy and enthusiasm as possible

4.2.3.2: Body Language

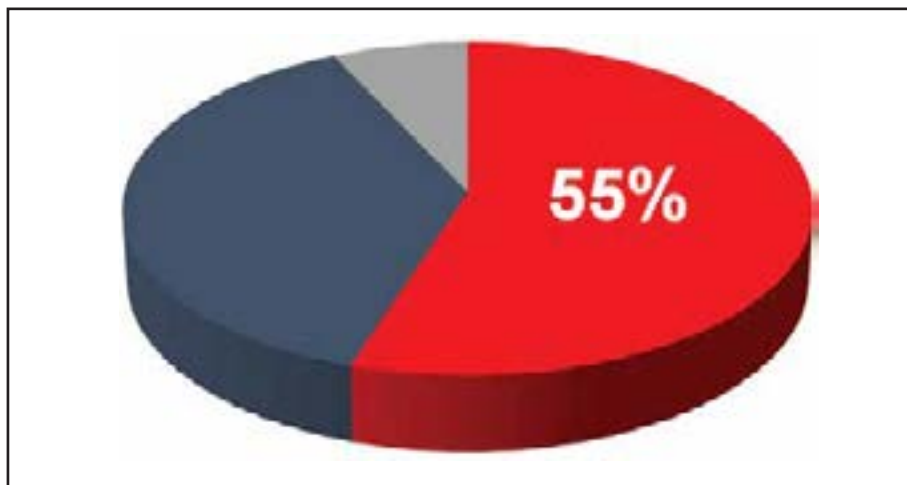
Components of Non-verbal Communication: Body Language :

Some estimates suggest that speech only makes up small part of communication. The rest of the information is conveyed non-verbally, by tone of voice, facial expressions, eye-contact and gestures, how we stand, and so on. Body movements can be used to reinforce or emphasis what a person is saying and also offer information about the emotions and attitudes of a person. However, it is also possible for body movements to conflict with what is said. A skilled observer may be able to detect such discrepancies in behaviour and use them as a clue to what someone is really feeling and thinking.

The human face is capable of all manner of articulations and distortions, and each of them can be interpreted in a unique way depending on the situation. For example, a smirk could convey a sense of self-satisfaction or could be a shy response to an embarrassing question. A smirk could convey a sense of self satisfaction or could be a shy response to an embarrassing question.

Let's explore the second component of the non-verbal communication—body language.

For an effective communication, Body Language has 55% importance.

Importance of Body Language :*Fig: 4.2.3.2.1 Importance of Body Language*

A lot of our communication happens without speaking through our body language, it is important that you adopt a proper body language in your communication.

Components of Body Language :

The key components of body language are:

- Body Posture
- Gestures
- Facial Expressions
- Eye Movements

Do's of Body Language :

Always follow these do's of body language in your communication:

*Fig: 4.2.3.2.2 Shake hands firmly**Fig: 4.2.3.2.3 Smile**Fig: 4.2.3.2.4 Make eye contact**Fig: 4.2.3.2.5 Pay attention**Fig: 4.2.3.2.6 Stand straight*

Don'ts of Body Language :

Avoid these don'ts of body language in your communication:



Fig: 4.2.3.2.7 Do not avoid the customer's gaze



Fig: 4.2.3.2.8 Do not hide your hands and palms



Fig: 4.2.3.2.9 Do not look at your watch



Fig: 4.2.3.2.10 Do not stare

Observe Your Customer's Body Language :

During your interactions with customers, you should understand their body language by observing:

- How they sit
- How they stand
- How they use their hands and legs
- What they do while talking to you

Customers touching their hair or yawning while interacting, for instance, can indicate boredom. By understanding the customer's feelings through their body language, you can change the manner in which you interact with them.

You can use mirroring technique to help the customer into his comfort zone. For example, if the customer's arms are crossed, you too should cross your arms to mimic the customer's action. You will then come across as friendly and helpful to your customers.

4.2.4: Listening Skill

Listening :

Active listening is an important skill and yet, as communicators, people tend to spend far more energy considering what they are going to say rather than listening to what the other person is trying to say. Listening is the ability to accurately receive and interpret messages in the communication process. Listening is key to all effective communication, without the ability to listen effectively messages are easily misunderstood – communication breaks down and the sender of the message can easily become frustrated or irritated.

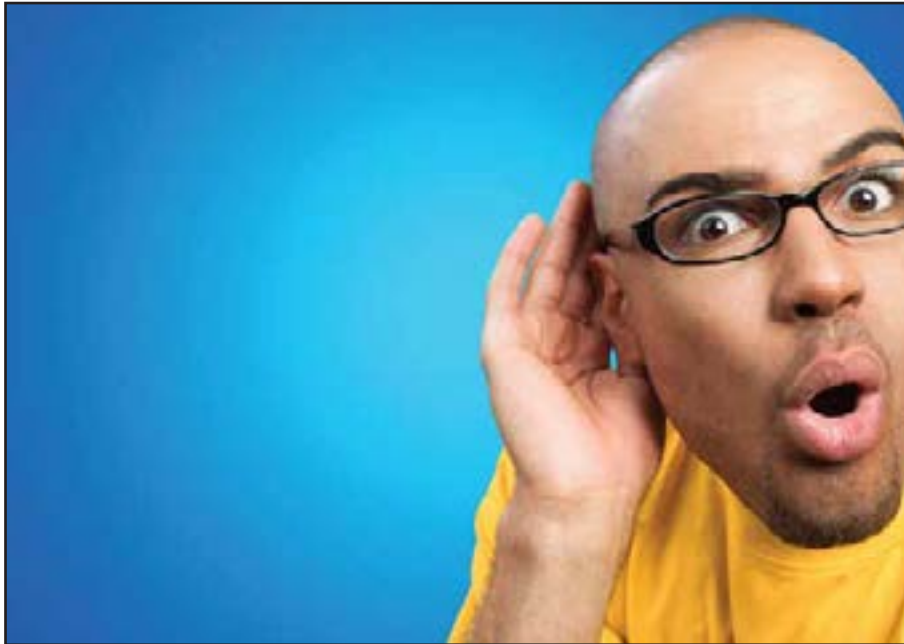


Fig: 4.2.4.1 Listening

Let's now learn to use effectively each of these for successful interactions with others. Let's start the discussion by exploring about listening skills.

Overview :

Listening is basically the ability to accurately receive and interpret messages.

Adults spend an average of 70% of their time engaged in some sort of communication, of this an average of 45% is spent listening compared to 30% speaking, 16% reading and 9% writing. (Adler, R. et al. 2001)



Fig: 4.2.4.2 Overview of Listening

Most of us do not listen, which leads to a communication gap. You should wait for your turn to speak rather than interrupt in between!

If you interrupt before your speakers have finished their sentences, then the focus has shifted to you from the speakers. Also, you are communicating to the speakers that your ideas are more important. Besides, it's rude to interrupt.

Tips for Listening :

Follow these tips to become an attentive listener:

- Focus on the speaker. Pay attention to what the speaker is saying. Look directly in the eye of your speaker.
- Take notes: This will help you stay alert.
- Reconfirm and ask questions: Always reconfirm your understanding by repeating the information that was shared with you. Ask questions to understand the message better. These tips will ensure that you heard what was said.
- Remove Distractions: Focus on what is being said. Don't use mobile phone, shuffle papers, look out the window, pick your fingernails or similar. These behaviours disrupt the listening process and send messages to the speaker that you are bored or distracted.

Remember, if we were to talk more than we listen, we would have two tongues and one ear.

4.2.5: Writing Skill

Writing :

This is an important part of communication. Good writing skills allow you to communicate your message with clarity and ease to a far larger audience than through face-to-face or telephone conversations. Writing is a medium of human communication that represents language and emotion through the inscription or recording of signs and symbols. In most languages, writing is a complement to speech or spoken language.

Overview :

Written Communication is a medium through which the message of the sender is conveyed with the help of written words.

You need to use written communications mainly for these activities:



Fig: 4.2.5 Overview of Writing

Do's and Don'ts of Written Communication :

Use the following do's and don'ts for written communication:

- Use simple language
- Highlight important words
- Use appropriate salutation and greeting
- Keep your sentences short and to the point
- Proof read the text before sharing

Here are the additional tips that you may consider for your written communication:

- Do write with the reader in mind. If you're writing about a technical subject for a non-technical reader, avoid using technical jargon and acronyms they may not know. If possible, explain concepts in a way that your reader can relate to.
- Be clear about what you are actually trying to communicate. Use short words and sentences to get across your point. It can be useful to use a list of bullet points rather than paragraph to make it easier to read and understand the information.
- Use salutation – Sir/Ma'am, Mr./Mrs./Ms., etc. – and Greeting – Good Morning, Hi, etc.
- Choose an appropriate font and size for your writing. Wingdings and Comic Sans are obviously out and anything less than 8-point will give your readers a headache.

4.2.6: Grooming

Outward appearance is the window of your personality to the world. You not only dress for others but for yourself too. External appearance is important because that gives the first impression to others about your personality.

Overview :

Grooming is basically the state, condition, manner or style in which a person appears.

Good personal grooming can make you look good. Looking good usually improves your self-esteem and confidence.

Importance of Grooming :

Do you know 4 seconds are enough to make the first Impression! This means we need to act quickly in order to make a brilliant first impression on our customers.



Fig: 4.2.6.1 Importance of Grooming

Dressing :

Dressing is also an important part of personal grooming. Clothes should be clean and free of stains, holes, and wrinkles. Properly fitting clothes look best. Wearing clothing that is too big or small in size can make a person look untidy.

For lady sales executive, dress code would be Salwar kurta/Saree/T-Shirt with Jeans.

Let's now learn about tips for using correctly different parts of your dressing.

T-shirt

- Wear well-ironed T-shirt
- Make sure the collars are clean
- Tuck the shirt in the pant
- Wear normal fit, fit shouldn't be too loose or too tight

Trousers/J Jeans

- Wear well-ironed trousers/jeans
- Make sure it's not low waist
- Avoid boot cut styles
- Avoid stuffing the pockets

Shoes

- Make sure they are neat and clean
- Ensure they are not too colourful
- Wear clean socks

- Ensure your shoes fit well, neither too tight or too loose

Belt

- Wear a Black color belt
- Ensure it's made of good leather
- Ensure it's not too long and not too short
- Avoid belts with flashy buckles

Watch

- Wear a good quality watch
- Ensure it's simple with straight or classy lines
- Make sure it's not flashy

Personal Hygiene :

Always follow these do's and dont's for maintaining personal hygiene:



Fig: 4.2.6.2 Take Shower Everyday



Fig: 4.2.6.3 Shave your facial hair regularly



Fig: 4.2.6.4 No Smoking



Fig: 4.2.6.5 Apply deodorant to prevent body odour



Fig: 4.2.6.6 Brush your teeth twice everyday



Fig: 4.2.6.7 Rinse every time after eating

Maintaining Yourself :

You can look presentable at all times by following these tips:



Fig: 4.2.6.8 Take care of your skin



Fig: 4.2.6.9 Stand Upright



Fig: 4.2.6.10 Wear well fitted clothes

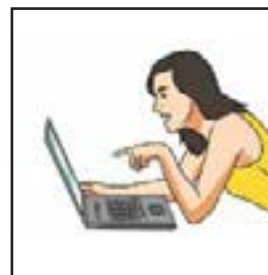


Fig: 4.2.6.11 Keep yourself updated



Fig: 4.2.6.12 Exercise regularly

4.2.7: Etiquette

How you present yourself to others in the business world speaks volumes. People often form first impressions about others within seconds of first meeting them therefore it is crucial to ensure you are properly prepared to present yourself as a professional.

Overview :

Office etiquette is important because bad manners at work can be bad for business by negatively affecting employee morale and productivity.

Etiquette is basically polite behavior and courtesy, a person is expected to follow.

Tips for Personal Etiquette :

Follow these do's and don'ts for personal etiquettes at workplace:



Fig: 4.2.7.1 Do's and Don'ts Personal Etiquettes

Follow these tips to practice proper professional etiquettes at workplace.



Fig: 4.2.7.2 Practice Proper Professional Etiquettes at workplace

Additionally,

- Always show up on time for meetings.
- Keep meetings to the scheduled amount of time.
- Pay attention during meetings and avoid multi-tasking, such as scrolling through emails on your smart phone or computer.
- Do respect people's personal space while on the phone. A 'safe cell distance' is considered to be 10 feet.
- Don't hold meetings in your cubicle and distract those sitting nearby. For meetings with three or more people, go to a conference room or a break area.
- Eat lunch in the cafeteria or break room. Avoid eating smelly food at your desk.
- Be aware of how loud you speak on the telephone if you work in a cubicle environment.
- Respect your co-worker's property.
- Don't yell and scream at others.

4.2.8: Rapport Building

Overview :

By improving your overall communication skills, you can build rapport with people at your work. Rapport is basically “Getting along well with others”.

Rapport building helps us:

- Establish feelings of Harmony, Goodwill and Trust
- Know more about the prospect’s mood, attitude, style, needs, values and interests
- Get the prospect talking
- Promote open communication, develop trust and improve the probability of deal closure



Fig: 4.2.8 Overview of Rapport Building

Barriers to Rapport Building :

The key barriers to rapport building are:

- Lack of interest
- Lack of understanding
- Hesitation

To overcome these barriers and to build rapport, you need to understand the different types of customers, which brings us to our next topic “Customer Types”.

4.2.9: Working in Team

Overview :

In this topic, you will get an overview of why team work is important, what are the important behaviours in effective teams and how you can help build up an effective team.



Fig: 4.2.9.1 Overview of Working in Team

Lessons from the Geese :

Teams are much more effective than individuals for work. Let's look at an example from Mother Nature to learn how an effective team works.

The geese actually fly in a group on their long flight of migration.



Fig: 4.2.9.2 Lessons from Geese

The flapping of the geese that are in front of the formation creates a draft for the geese at the rear reducing air resistance. This indicates their true sense of responsibility towards the fellow beings.

When the leader of the formation of the geese is tired, it goes back and another goose then comes in the front to lead the group of Geese. So, these Geese have no fixed leadership or hierarchy.

No goose likes to fly out of formation because it would get tired easily. Even if it does fly out of formation, it quickly comes back to its place. So, Geese have amazing team sense!

Geese also make a lot of noise while they fly. But it's interesting to note that the noise is not made by the geese leading the formation, but by the Geese in the back of the formation, which serve to support and keep everyone going. Isn't that the unique vocal support?

If one goose is ill and falls out of formation, a few of others stay with it, to be with it until it gets well or dies. Now, that's what we call team spirit!

Geese are unique as a team. The team behaves as a cohesive whole with a common goal of reaching a particular destination in mind. Team members help each other since they can collectively achieve much more than they can alone.



Fig: 4.2.9.3 Lessons from Swan

Just like the Geese the people who share a common direction and sense of community can get where they are going more quickly and easily because they are traveling on the thrust of one another.

If we have as much sense as a Goose, we will stay in formation with those headed where we want to go. We will also be willing to accept other's help and give our help to others.

It pays to take turns in doing the hard tasks and share the leadership. As with Geese, people are interdependent on each other's skills, capabilities and unique arrangements of gifts, talents and resources.

We need to make sure we are encouraging each other in the team. In teams where there is encouragement, the production is much higher.

If we have as much sense as Geese, we will stand by each other in difficult times as well as when we are strong. Now, what do you say to that!!!

Team Player Styles :

You need to be a good team player to work in a team.



Fig: 4.2.9.4 Team Player Styles

Contributors :

The first team player style is Contributors.

The following are the key characteristics of Contributors:

- Logical
- Efficient
- Organized
- Proficient
- Relevant
- Pragmatic
- Systematic
- Dependable
- Responsible

Contributors tend to be task-oriented. Their strengths lie in sharing information with the team and making sure every aspect of a work is taken care of. Contributors are thorough and detail-oriented.

Collaborators :

The second team player style is Collaborator.

The following are the key characteristics of Collaborators:

- Cooperative
- Flexible
- Confident
- Forward-looking
- Conceptual
- Accommodating
- Generous
- Open
- Visionary
- Imaginative

Collaborators are highly goal-oriented.

If you're the ones who make sure work stays on track, you're likely to be a Collaborator.

Communicator :

The third Team Player Style is Communicator.

Here are the key characteristics of Communicators:

- Tactful
- Helpful
- Friendly
- Patient

- Informal
- Relaxed
- Supportive
- Encouraging
- Considerate
- Spontaneous

The Communicator is a process-oriented member who is an effective listener.

If you focus on making sure the overall process goes smoothly, then you're likely to be a Communicator.

Challenger :

The fourth Team Player Style is Challenger.

The key characteristics of Challengers are:

- Candid
- Ethical
- Questioning
- Honest
- Truthful
- Outspoken
- Principled
- Adventurous
- Aboveboard
- Brave

The Challenger is a member who questions the goals, methods and even the ethics of the team. He is willing to disagree with the leader and encourages the team to take calculated risks.

If you're always looking at the bigger picture and questioning how and why things are done, then you may be a Challenger.

Commitment & Task Sharing Based on Individual's Skills :

A committed team treats the work like their own garden or pet – they obsess over it, they care for it, they own it. If a leader is trying to build a team who can give commitment to finish the assigned task, then it is important to align team member's personal visions to that of the organization.

4.2.10: Resolving Conflict

Conflict - a serious disagreement or argument. Conflict exists in every organization and to a certain extent indicates a healthy exchange of ideas and creativity. However, counter-productive conflict can result in employee dissatisfaction, reduced productivity, poor service to customers.

Importance of Resolving Conflict:

You must avoid conflict at the work place as it brings negativity all around.



Fig: 4.2.10 Importance of Resolving Conflict

By deciding not to say something that would make you sound aggressive or frustrated, you can avoid unnecessary conflicts.

Conflicts take place when people are rigid and are not willing to cooperate with each other.

Let's look at some ways through which you can prevent and resolve conflicts.

Best Practices Resolving Conflict:

To resolve conflicts in a team, you should use these steps:

- Examine what is causing trouble
- Discuss the issue with the conflicting party
- Clarify expectations and roles
- Find an option which benefits all
- Utilize constructive feedback
- Reach agreements

You should always maintain a positive relationship while trying to reach an agreement.

Depersonalizing Conflicts:

You should always depersonalize conflicts by adopting these steps:

- Focus on issues not personalities
- Encourage both sides to be objective
- Evaluate concerns of both sides
- Encourage people to listen to other's view
- Encourage points of agreement
- Don't dwell on anger

When individuals find it difficult to adjust with each other, the best way is to sit together and discuss among themselves to reach the middle path. Instead of fighting with each other, it is better to discuss things and come to a solution which benefits all. For example, when the boss sets the timeline for completing a given task and the team member finds it unachievable, the team member should negotiate with his boss to slightly extend the timeline to make it practically achievable. Through discussion they can then reach the timeline that suits all.

Resolving Complaints:

Use the following do's to resolve complaints:

- Be warm to the others
- Show empathy
- Acknowledge the other's feelings
- Listen actively
- Isolate the core problem
- Provide a satisfactory resolution and an alternative
- Follow-up after the resolution

Avoid the following don'ts to resolve complaints.

Don't:

- Take a confrontational attitude
- Make assumptions
- Use technical or professional jargon
- Pass the blame
- Make unrealistic commitments
- Exceed your authority
- Sacrifice your company's interest

Responding to a Transactional Crisis:

Use the following do's to respond to a Transactional Crisis:

- Tell the whole story:
 - Openly
 - Completely
 - Honestly
- Apologize, if you are at fault
- Show your concern with:
 - Words
 - Actions

Avoid the following don'ts to respond to a Transactional Crisis.

Don't:

- Blame others
- Speculate in public
- Refuse to answer questions
- Release confidential information without permission
- Use the crisis to promote yourself

Giving Feedback:

Follow these best practices for giving feedback effectively:

- Hold the discussion in private
- Remain calm
- Show empathy
- Discuss the most important issues only
- Support your argument with facts, figures and observed behaviour
- Try to reach an agreement
- Summarise your understanding

4.2.11 Coordinate with Co Workers

There are various employees working in a showroom. The previous chapter has already covered some glimpse of the same. The host/hostess has to be really good in interpersonal skills to ensure a good relationship with all the coworkers.

Hostess to keep monitoring & inform respective staff as & when required -

Store Manager- Everything should be placed in right places

House Keeping- All the display vehicle, floors etc. are neat & clean

Sales Staff- Sufficient product brochures are available in the showroom for customers

RTO Executive- Queries related to RC Book, Number plate etc.

Billing Executive- Escort the customer to complete billing process

Sales Consultant- For information on product in detail

Participating in daily briefings/meetings:

Attending & participation in daily meetings & briefings are very important for a Host/Hostess. Meetings are the platform where everybody can share their experience. This will also help the host/ hostess to understand the various issues and concerns at the same time will be able to learn how to address them. Some of the business figures are also brought into limelight which can be used as a promotion tool while talking to the customer.

Importance of attending the meeting:

- Meetings unify the team
- Employees keep each other updated
- Meeting generates suggestions from the employees
- Daily meetings set the agenda for the day, basis that Manager decides individual targets
- Better decision making with consent of all
- Complete resolutions of conflicts

UNIT 4.3: Skills - Working Effectively as Team

Unit Objectives

At the end of this unit, you will be able to:

- Explain knowledge and understanding required for Team Working
- Demonstrate professional requirement for Team Working

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits for Team building exercises

Do

- Explain the core / generic skills required for team success.
- Explain the professional skills required for team success.
- Take them through role play exercises.

Say

- Individuals can not work in isolation.
- Everybody has to be a team player in ensuring success.
- Bad team member could ruin the team efforts.

Demonstrate

- Successful teams during team exercises.
- Show some videos to demonstrate successful teams.
- Let the participants demonstrate their skills during the practical exercises.

Notes for Facilitation

- Seek the participants' feedback on their learning gains.
- Enthuse the participants by telling them what is going come next

4.3.1: Core Skills / Generic Skills

Learn to:

- **Writing Skills**

- Complete written work with attention to detail

- **Reading Skills**

- Read instructions, guidelines / procedures

- **Oral Communication (Listening and Speaking skills)**

- Listen effectively and orally communicate information
- Ask for clarification and advice from the concerned person while meeting commitments

4.3.2: Professional Skills

Decision Making

- Make decisions on a suitable course of action or response keeping inview resource utilization while meeting commitments
- Plan and Organize
- Plan and Organize work to achieve targets and deadlines
- Customer Centricity
- Check that the work meets customer requirements
- Deliver consistent and reliable service to customers
- Problem Solving
- Apply problem solving approaches in different situations
- Critical Thinking
- Apply balanced judgements to different situations

Notes



Lined area for taking notes, consisting of 30 horizontal lines.

Exercise-1: Answer the Following Questions:



1. Write are process of communication?

2. How to improve verbal communication?

3. What are the components of non-verbal communication?

4. What are the best practices to resolve conflict?



Transforming the skill landscape



Unit 5.2 – Knowledge & Understanding: Healthy, Safe & Secure Work Environment



Key Learning Outcomes

At the end of this module, you will be able to:

1. Perform as per the need of resources to maintain a safe, secure working environment
2. Maintain safe & secure workplace
3. Assess your responsibilities for workplace safety
4. Use best practices to remove potential hazards from your workplace and prevent accidents
5. Apply appropriate strategies to deal with emergencies at workplace

UNIT 5.1: Performance Criteria for Healthy, Safe & Secure Work Environment

Unit Objectives

Understand the performance criteria for Working effectively as team:

1. Perform as per the need of resources to maintain a safe, secure working environment

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits for Health & Safety exercises

Do

- Let the participants play some Safety Exercises like fire extinguishing.
- Ask participants to elaborate on the Health, Safety & Security precautions.
- Educate the participants about the safety signages.

Say

- Tell them "Safety First".
- Thank the participants for their involvement.
- Enthuse the participants by telling them, what is planned next.

Notes for Facilitation

- You could ask the participants some safety issues dealt by them.
- Emphasize the importance of Japanese techniques of "5S".

Performance Criterion:**Resources needed to maintain a safe, secure working environment Study and Learn to:**

- Comply with organization's current health, safety and security policies and procedures
- Report any identified breaches in health, safety, and security policies and procedures to the designated person
- Coordinate with other resources at the workplace to achieve the healthy, safe and secure environment for all, incorporating all government norms esp. for emergency situations like fires, earthquakes etc.
- Identify and correct any hazards like illness, accidents, fires or any other natural calamity safely and within the limits of individual's authority
- Report any hazards outside the individual's authority to the relevant person in line with organizational procedures and warn other people who may be affected
- Follow organization's emergency procedures for accidents, fires or any other natural calamity. Identify and recommend opportunities for improving health, safety, and security to the designated person
- Complete all health and safety records are updates and procedures well defined

UNIT 5.2: Knowledge & Understanding - Healthy, Safe & Secure Work Environment

Unit Objectives

At the end of this unit, you will be able to:

1. Maintain safe & secure workplace
2. Assess your responsibilities for workplace safety
3. Use best practices to remove potential hazards from your workplace and prevent accidents
4. Apply appropriate strategies to deal with emergencies at workplace

Resources to be Used

- Available objects such as a Black Board, Projector, Screen, Power point, duster, pen, notebook etc.
- Audio Visual Aids as applicable
- Exhibits for Health & Safety exercises

Do

- Let the participants play some Safety Exercises.
- Let them try doing “5S” on the area around them.
- The winner of the game should be recognized & rewarded.

Say

- Health, Safety & Security are the major concerns for any enterprise.
- Thank the participants for their involvement.
- Enthuse the participants by telling them, what is planned next.

Demonstrate

- Use of Safety Signages at appropriate locations.
- Some security lapse / risks in their area of work.
- Let the participants demonstrate their firefighting skills during the practical exercises.

Notes for Facilitation

- Seek the participants' feedback on their learning gains.
- Summarize their course gains
- Ask them how they will put their training gains in actual practice
- Guide them about way ahead

5.2.1: Importance of Safe & Secure Working Place

When you feel safe and secure, you can remain motivated and feel happy at your workplace. Workplace safety is important for the very reason of improved productivity. It is only when you feel safe at work that you can invest the fullest of your capacities and exploit the best of your potentials to work. A feeling of security and safety while working leads to positivism.

Therefore, measures should be taken to eliminate risks at work and ensure a safe and comfortable environment for the employees

5.2.1.1: Employer's Responsibilities

The responsibilities of the employers for maintaining safe workplace are:

- Provide a safe and healthy workplace
- Ensure that workers are adequately trained
- Keep written records of training (who, what and when)
- Establish and maintain a comprehensive occupational health and safety program, including a written health & safety policy and an incident investigation procedure
- Support supervisors, safety co-ordinators and workers in their health and safety activities
- Take action immediately when a worker or supervisor reports a potentially hazardous situation
- Initiate an immediate investigation into incidents
- Provide adequate first aid facilities and services
- Provide personal protective equipment where required

Worker training is usually carried out by the supervisor. However, the employer has the legal responsibility to ensure that every worker receives adequate training. The employer must follow up to see that the supervisor is carrying out all the required training. Employers should also work with supervisors to help foster positive worker attitudes to safety.

5.2.1.2: Supervisor's Responsibilities

The responsibilities of the supervisors for maintaining safe workplace are:

- Instruct workers in safe work procedures
- Train workers for all tasks assigned to them, and check that their work is being done safely
- Ensure that only authorized, adequately trained workers operate tools and equipment or use hazardous chemicals
- Ensure that equipment and materials are properly handled, stored and maintained
- Enforce health and safety requirements
- Correct unsafe acts and conditions
- Identify workers with problems that could affect safety at the worksite
- Develop health and safety rules and inspect the workplace for hazards

5.2.1.3: Worker's Responsibilities

The responsibilities of the workers for maintaining safe workplace are:

- Know and follow health and safety requirements affecting your job
- If you don't know how to do something safely, ask for training before you begin work
- Work safely, and encourage your co-workers to do the same
- Correct any unsafe conditions or immediately report them to your supervisor
- Immediately report any injury to a first aid attendant or supervisor
- Take the initiative. Make suggestions to improve health and safety



Fig: 5.2.1.3 Worker's Responsibilities

5.2.2: Workplace Hazards

A hazard is a situation that poses a level of threat to life, health, property or environment. Most hazards are dormant or potential, with only a theoretical risk of harm; however, once a hazard becomes “active”, it can create an emergency. A hazardous situation that has come to pass is called an incident. Hazard and possibility interact together to create risk.

Identification of hazard risks is the first step in performing a risk assessment.

5.2.2.1: Modes of Hazard

Hazards are sometimes classified into three modes:

- **Dormant:** The situation presents a potential hazard, but no people, property, or environment is currently affected. For instance, a hillside may be unstable, with the potential for a landslide, but there is nothing below or on the hillside that could be affected.
- **Armed:** People, property or environment is in potential harm's way.
- **Active:** A harmful incident involving the hazard has actually occurred. Often this is referred to not as an “active hazard”, but as an accident, emergency, incident or disaster

5.2.2.2: Types of Hazard

The common types of hazard are:

- **Physical hazards** are conditions or situations that can cause the body physical harm or intense stress. Physical hazards can be both natural and human made elements.
- **Chemical hazards** are substances that can cause harm or damage to the body, property or the environment. Chemical hazards can be both natural and human made origin.
- **Biological hazards** are biological agents that can cause harm to the human body. These biological agents can be viruses, parasites, bacteria, food, fungi and foreign toxins.
- **Psychological hazards** are created during work related stress or a stressful environment. A person can be a hazard when he/she has affected psychological disturbance through stress or shift patterns and when a person is under the influence of alcohol, illness and lack of training.
- **Electrical hazards** are dangerous condition where a worker can or does make electrical contact with equipment or a conductor. From that contact, the person may sustain an injury from shock, and there is a potential for the worker to receive burn or blast injury.

5.2.2.3: Reporting of any Hazard Incidents

Follow your organization structure to report any hazards/incident to the relevant person.

Structure could be different from organization to organization.

Warn/inform your co-workers about any hazardous incidents for extra safety measurements.

5.2.3: Organization's Emergency Procedures

Every workplace should have a plan for dealing with emergencies. You should be instructed in that plan within your first few days on the job and have refresher training from time to time.

5.2.3.1: Questions to be asked for Emergency Procedures

Once you have been trained, you should be able to answer these questions:

- Where the emergency phone numbers are posted?
- Where are the fire extinguishers and how and when should they be used?
- What other specialized equipment may be needed in an emergency, and how it is used?
- Where are the fire alarms and fire exits?
- What is the evacuation plan for the building?
- What should you do during an earthquake?
- In case of evacuation, where outside the building is the assembly point and who should you report to?

5.2.3.2: Emergency Preparedness

It is the discipline of dealing with and avoiding both natural and manmade disasters.

5.2.3.3: Emergency Service Number

Dial the service number of these departments in case of emergency:

- Fire Brigade Department
- Police Department
- Ambulance Department
- Women Safety Department
- Security Department
- Pest Control Department



Fig: 5.2.3.3 Emergency Service Number

5.2.3.4: Medical Emergency Procedures

You should follow these steps for medical emergency procedures:

- An emergency medical service should be available near to your dealership
- At least one person should be trained enough to handle any medical emergency
- First-aid supplies should be available at the dealership
- Check – Call – Care route should be followed

5.2.3.5: Fire Preparedness Procedures

You should follow these emergency instructions in case of fire:

- Activate the ALARM.
- Evacuate the area.
- Call the fire department.
- Fight the fire only if:
 - You know how.
 - The fire is small.
 - You are confined to the area where it started.
 - You have a way out.
 - You can work with your back to the exit.
 - You have the right type of extinguisher.
 - You feel confident that you can operate it effectively.
- DO NOT fight the fire if:
 - You have any doubts about fighting it.
 - It is spreading beyond the area where it started.
 - It could block your escape route.



Fig: 5.2.3.5 Emergency Service Number

EVACUATE THE BUILDING IMMEDIATELY

Confine a fire to the zone of origin, for a specified time, thereby preventing fire spread and leaving more time for safe evacuation of the building occupants.

If a fire breaks out, smoke containment systems prevent the movement of smoke and heat from one area to another.

5.2.3.6: Fire Prevention

Follow these steps for fire prevention:

- Don't allow trash and litter to accumulate unnecessarily
- Keep the workplace areas neat and clean
- Know where fire alarm boxes and extinguishers are located
- Make sure you know the different types of fire extinguishers and how to use them
- Store hazardous materials in designated areas
- Keep exits free of obstructions
- Know location of emergency exits and procedures
- Handle flammable liquids with caution

5.2.4: Evacuation Procedures in Emergency

Let's now learn about the for evacuation procedures for workers & visitors in case of emergency

As the first step a layout must be made of the building, including:

- Evacuation Routes
- Fire Extinguisher (locations)
- Fire Alarm Stations (locations)
- First Aid Kit (locations)

The second step for evacuation procedures for workers & visitors in case of emergency includes creating a map of the parking lot and surrounding buildings.

This must show the Rally Point. Rally Point must be a safe distance from the building. It must be easily accessible, out of the way of emergency services, and should not be beside the fire hydrant.

Both the layout and the Rally Point must be posted conspicuously throughout the facility and made available to all employees upon request.

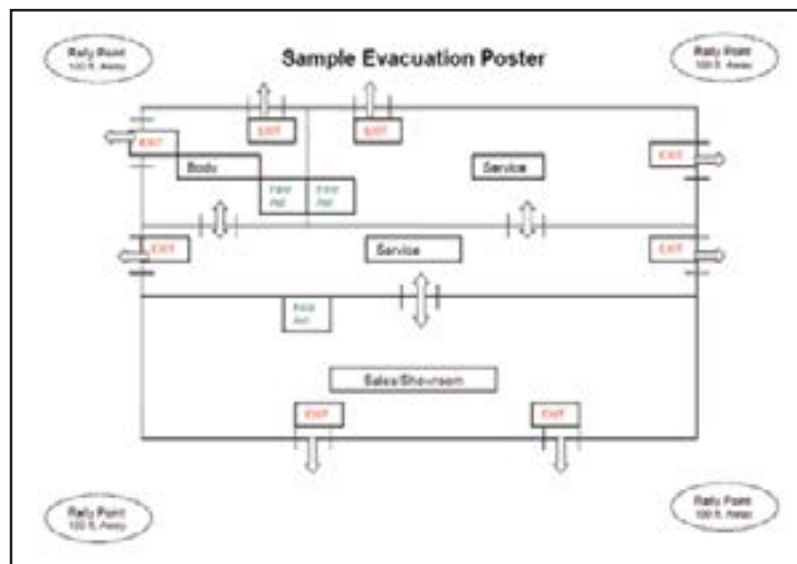


Fig: 5.2.4 Evacuation Procedures for Workers & Visitors

5.2.4.1: Roles of First Responder

A first responder is an employee of an emergency service who is likely to be among the first people to arrive and assist at the scene of an emergency, such as fire.

They should be aware of what the first aid for burns is, and should be able to use the same, immediately, at the site of the fire accident to the injured people.

They should try to put out the fire using fire extinguisher or other means.

They should rescue the victim from the burning premises.

They should have knowledge on different types of fires like chemical, electrical etc., and should take the appropriate measures to contain and put out these fires.

Notes



Lined area for taking notes, consisting of 30 horizontal lines.

Exercise-1: Answer the Following Questions:

1. Write are responsibilities of the workers for maintaining safe workplace?

2. Write are the types of hazard at workplace?

3. Write are the questions to be asked for emergency procedure?

6. Employability and Entrepreneurship Skills



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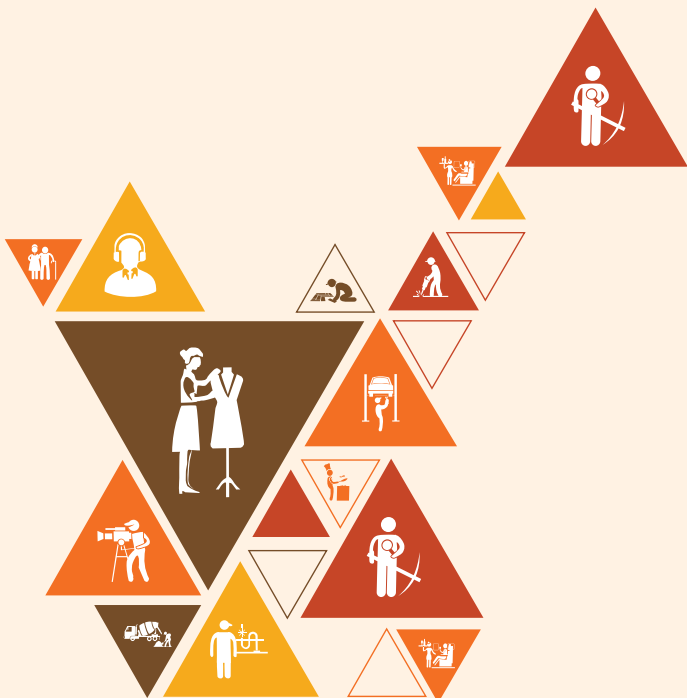




7. Annexures

Annexure I – Training Delivery Plan

Annexure II – Assessment Criteria



Annexure I

Training Delivery Plan

Training Delivery Plan	
Program Name	Mobile phone Hardware Repair Technician Level 4
Qualification Pack Name & Ref. ID	Mobile phone Hardware Repair Technician Level 4 : ELE/Q8104
Version No.	3.0
Pre-requisites to Training (if any)	8th Grade Pass + NTC (2 years after 8th) + 2 Year NAC/relevant Experience) OR 10th Grade pass + 2 Year NTC/NAC/ relevant experience OR Certificate-NSQF (Level-3 in Maintenance Technician) with 2 Years of relevant Experience OR 12th Class and 18 Years
Training Outcomes	By the end of this program, the participants would have achieved the following competencies: 1 Receiving procedure of the faulty Mobile Phone: Understanding the Procedure to receive the faulty Mobile Handsets from the Customer 2 Diagnose the Problem of the Faulty Mobile Phone: Understanding the possible problems talking with the Customer and using diagnostic tools 3 Arrangement of Tools and Necessary Parts to Repair the Mobile Phone: Understanding the Tools and Parts Required to Repair the Faulty Mobile Phone 4 Repair the Hardware of the Faulty Mobile Phone: Understanding the Repairing Techniques of the Faulty Mobile Phone using tools and equipments 5 Repair the Software of the Faulty Mobile Phone: Understanding the Repairing Techniques of the Faulty Mobile Phone using various Software 6 Testing the Repaired Mobile phone: Understanding the procedure to test the Repaired Mobile Phone 7 Co-ordinating with Colleagues: Understanding the procedures to Co-ordinate with colleagues based on the Company Policy 8 Safety Procedures: Understanding to maintain the safety Procedures to Maintain the safe working environment as per the standard

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/Aids	Duration
1.1	Mobile Phone Hardware Repair Technician: Introduction	Introduction to the Qualifications Pack Session 1.a	Understand • Broad outline of the training program • The NSDC framework • Requirements of QP & NOS	ELE/N8106, Introduction	Classroom theory sessions, Participative Interactions	Black / Glass Board, ppt, Video	30 hrs
1.1	Interact with customer and perform front end repair	Introduction to the Qualifications Pack Session 1.b	Understand • Broad outline of the training program • The NSDC framework • Requirements of QP & NOS	ELE/N8106, Introduction	Classroom theory sessions, Participative Interactions	Black / Glass Board, ppt, Video	30 hrs
2.1	Interact with customer and perform front end repair	Engaging with customers Session 1.a	Understand • How to receive customers and greet them as per company's norms • Behavioural etiquettes while interacting with customers • How to ensure customers comfort	ELE/N8106	Classroom theory sessions, Participative Interactions	Classroom theory sessions, Participative Interactions	18 hrs
2.1	Interact with customer and perform front end repair	Engaging with customers Session 1.b	Understand • How to Communicate with the customer • Profile of the customers and offer service • How to inform about repair charges and warranty applicable	ELE/N8106	Classroom theory sessions, Participative Interactions	Classroom theory sessions, Participative Interactions	18 hrs
2.2	Interact with customer and perform front end repair	Understanding the complaint Session 2.a	Understand : • How to Interact with customers to • understand the customer's purpose of visit • Customer level complaint • How Interrogate the customers to assess the cause of problem	ELE/N8106	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	18 hrs

2.2	Interact with customer and perform front end repair	Understanding the complaint Session 2.b	Understand : • How to decide on the action to be performed • How to inform customers about the time taken and estimated cost • Document required for the customers to collect the device after repair	ELE/N8106	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	18 hrs
2.3	Interact with customer and perform front end repair	Documenting on computer Session 3.a	Understand : • Use of system to identify the warranty coverage of the • Mobile Phone and other terms and conditions • Customer relationship management policy of the mobile brand	ELE/N8106	Workshop Practical, On the job training,	Black / Glass Board, ppt, Video, Image Recognition tools & exercises, master samples, exhibits	18 hrs
2.3	Interact with customer and perform front end repair	Documenting on computer Session 3.b	• Use of interactive ERP system of the company • Use the system to prepare invoice, stock management, order placement, accessories availability, etc	ELE/N8106	Workshop Practical, On the job training,	Black / Glass Board, ppt, Video, Image Recognition tools & exercises, master samples, exhibits	18 hrs
2.4	Interact with customer and perform front end repair	Performing front end repair Session 4.a	• Identify problem and decide the action to be taken • Upload licensed and brand approved • Applications as per customer requirement using system application and software compatibility with the Mobile Phone • Check the accessories and perform a demo with the customer	ELE/N8106	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	18 hrs

2.4	Interact with customer and perform front end repair	Performing front end repair Session 4.b	- Identify problem and decide the action to be taken - Upload licensed and brand approved - applications as per customer requirement using system application and software compatibility with the Mobile Phone - Check the accessories and perform a demo with the customer	ELE/N8106	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	18 hrs
2.4	Interact with customer and perform front end repair	Performing front end repair Session 4.c	- Opening Mobile Phone panel - Replace the parts such as battery and clean the inner parts of the phone - Educate customers on effective usage of Mobile Phone	ELE/N8106	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	18 hrs
2.5	Interact with customer and perform front end repair	Interacting with superior and meeting target Session 5.a	- Understand the work requirement from superior - Documenting the work completed on the company ERP software for tracking	ELE/N8106	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	18 hrs
3.1	Repair and rectify the faults in Mobile Phone	Following standard repair Procedure Session 1.a	Following standard repair procedure	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	20 hrs

3.1	Repair and rectify the faults in Mobile Phone	Following standard repair Procedure Session 1.b	Following standard repair procedure	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	30 hrs
3.2	Repair and rectify the faults in Mobile Phone	Assembling and disassembling the Mobile Phone Session 2.a	Assembling and disassembling the Mobile Phone	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	30 hrs
3.2	Repair and rectify the faults in Mobile Phone	Assembling and disassembling the Mobile Phone Session 2.b	Assembling and disassembling the Mobile Phone of various brand and models	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	30 hrs
3.2	Repair and rectify the faults in Mobile Phone	Assembling and disassembling the Mobile Phone Session 2.c	Assembling and disassembling the Mobile Phone	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	20 hrs
3.2	Repair and rectify the faults in Mobile Phone	Assembling and disassembling the Mobile Phone Session 2.d	Assembling and disassembling the Mobile Phone of various brand and models	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	30 hrs
3.2	Repair and rectify the faults in Mobile Phone	Assembling and disassembling the Mobile Phone Session 2.e	Assembling and disassembling the Mobile Phone of various brand and models	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	30 hrs

3.2	Repair and rectify the faults in Mobile Phone	Assembling and disassembling the Mobile Phone Session 2.f	Assembling and disassembling the Mobile Phone of various brand and models	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	30 hrs
3.2	Repair and rectify the faults in Mobile Phone	Assembling and disassembling the Mobile Phone Session 2.g	Assembling and disassembling the Mobile Phone of various brand and models	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	30 hrs
3.3	Repair and rectify the faults in Mobile Phone	Diagnosing the problem Session 3.a	Diagnosing various problem related to software and hardware of mobile	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	3 hrs
3.3	Repair and rectify the faults in Mobile Phone	Diagnosing the problem Session 3.b	Diagnosing various problem related to software and hardware of mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.3	Repair and rectify the faults in Mobile Phone	Diagnosing the problem Session 3.c	Diagnosing various problem related to software and hardware of mobile	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	2 hrs
3.3	Repair and rectify the faults in Mobile Phone	Diagnosing the problem Session 3.d	Diagnosing various problem related to software and hardware of mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs

3.3	Repair and rectify the faults in Mobile Phone	Diagnosing the problem Session 3.e	Diagnosing various problem related to software and hardware of mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.3	Repair and rectify the faults in Mobile Phone	Diagnosing the problem Session 3.f	Diagnosing various problem related to software and hardware of mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.3	Repair and rectify the faults in Mobile Phone	Diagnosing the problem Session 3.g	Diagnosing various problem related to software and hardware of mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.4	Repair and rectify the faults in Mobile Phone	Fixing the software Session 4.a	Fixing software related issues in mobile	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	3 hrs
3.4	Repair and rectify the faults in Mobile Phone	Fixing the software Session 4.b	Fixing software related issues in mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.4	Repair and rectify the faults in Mobile Phone	Fixing the software Session 4.c	Fixing software related issues in mobile	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	2 hrs

3.4	Repair and rectify the faults in Mobile Phone	Fixing the software Session 4.d	Fixing software related issues in mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.4	Repair and rectify the faults in Mobile Phone	Fixing the software Session 4.e	Fixing software related issues in mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.4	Repair and rectify the faults in Mobile Phone	Fixing the software Session 4.f	Fixing software related issues in mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.4	Repair and rectify the faults in Mobile Phone	Fixing the software Session 4.g	Fixing software related issues in mobile	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.5	Repair and rectify the faults in Mobile Phone	Repairing the component or Module Session 5.a	Repairing the component or Module in mobile hardware	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	3 hrs
3.5	Repair and rectify the faults in Mobile Phone	Repairing the component or Module Session 5.b	Repairing the component or Module in mobile hardware	ELE/N8107	Workshop Practical, On the job training	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs

3.5	Repair and rectify the faults in Mobile Phone	Repairing the component or Module Session 5.c	Repairing the component or Module in mobile hardware	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	2 hrs
3.5	Repair and rectify the faults in Mobile Phone	Repairing the component or Module Session 5.d	Repairing the component or Module in mobile hardware	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.5	Repair and rectify the faults in Mobile Phone	Repairing the component or Module Session 5.e	Repairing the component or Module in mobile hardware	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.5	Repair and rectify the faults in Mobile Phone	Repairing the component or Module Session 5.f	Repairing the component or Module in mobile hardware	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.5	Repair and rectify the faults in Mobile Phone	Repairing the component or Module Session 5.g	Repairing the component or Module in mobile hardware	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.6	Repair and rectify the faults in Mobile Phone	Replacing faulty component Session 6.a	Replacing faulty components in mobile	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	3 hrs

3.6	Repair and rectify the faults in Mobile Phone	Replacing faulty component Session 6.b	Replacing faulty components in mobile	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.6	Repair and rectify the faults in Mobile Phone	Replacing faulty component Session 6.c	Replacing faulty components in mobile	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	2 hrs
3.6	Repair and rectify the faults in Mobile Phone	Replacing faulty component Session 6.d	Replacing faulty components in mobile	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.6	Repair and rectify the faults in Mobile Phone	Replacing faulty component Session 6.e	Replacing faulty components in mobile	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.6	Repair and rectify the faults in Mobile Phone	Replacing faulty component Session 6.f	Replacing faulty components in mobile	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.6	Repair and rectify the faults in Mobile Phone	Replacing faulty component Session 6.g	Replacing faulty components in mobile	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs

3.8	Repair and rectify the faults in Mobile Phone	Seeking assistance on unresolved Faults Session 8.b	• Seek technical assistance from engineer on faults that cannot be fixed • Receive instruction from engineers on use of specific tools or new repair processes • Discuss with superior if the cost estimate is found to be Beyond Economic repair(BER) and take recommended action • Coordinate with superior for performing quality check on the	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs
3.9	Repair and rectify the faults in Mobile Phone	Reporting and achieving productivity target Session 9.a	• Report on the work load and completion status • Submit the appropriate documentation on completion of task assigned • Document the work completed on the company ERP software for tracking and future references	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	3 hrs
3.9	Repair and rectify the faults in Mobile Phone	Reporting and achieving productivity target Session 9.b	• Report on the work load and completion status • Submit the appropriate documentation on completion of task assigned • Document the work completed on the company ERP software for tracking and future references	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs

3.9	Repair and rectify the faults in Mobile Phone	Reporting and achieving productivity target Session 9.c	• Achieve 100% daily and weekly target of number of repairs • Meet the target of quality as per the Service Level Agreement (SLA) of the brand and avoid rework • Repair within the turnaround time (TAT) and deliver them	ELE/N8107	Classroom theory sessions, Participative Interactions, Group discussions, Workshop, On the job training	Black / Glass Board, ppt, Video, exercises, master samples, exhibits	3 hrs
3.9	Repair and rectify the faults in Mobile Phone	Reporting and achieving productivity target Session 9.d	• Achieve 100% daily and weekly target of number of repairs • Meet the target of quality as per the Service Level Agreement (SLA) of the brand and avoid rework • Repair within the turnaround time (TAT) and deliver them	ELE/N8107	Workshop Practical, On the job training,	Workshop tools, equipment, personal protective equipment, master samples, exhibits	3 hrs

4	ELE/N9905 Work effectively at the workplace T-15:00 P-15:00	1. Effective Communication and Coordination at Work	• State the importance of work ethics and workplace etiquette. • State the importance of effective communication and interpersonal skills. • Explain ways to maintain discipline in the workplace. • Describe interpersonal conflicts and ways of managing them.	ELE/N9905 PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC12, PC13, PC14, PC15, PC16, PC17 KU1, KU2, KU3, KU4, KU5, KU6, KU7, KU8, KU9	Facilitator-led session, Video presentation, Role play	Whiteboard and markers; chart paper and sketch pens; LCD Projector and Laptop for presentations.	T-05:00 P-05:00
		2. Working Effectively and Maintaining Discipline at Work	• Discuss the importance of following organizational guidelines. • Explain the importance of conveying information/instructions. • Describe the process of reporting grievances and unethical conduct. •	ELE/N9905 PC18, PC19, PC20, PC21, PC22, PC23, PC24, PC25 KU10, KU11, KU12, KU13, KU14, KU15			T-05:00 P-05:00

		3. Maintaining Social Diversity at Work	• Explain the concept and importance of gender sensitivity and equality. • Discuss ways to create sensitivity for different genders and Persons with Disabilities (PwD).	ELE/N9905 PC26, PC27, PC28, PC29, PC30 KU15, KU16, KU17, KU18			T-05:00 P-05:00
5	ELE/N1002 Apply health and safety practices at workplace T- 15:00 P- 15:00	1. Basic Health and Safety Practice	• Apply different approaches to maintain gender equality and increase inclusiveness for PwD. • Describe the importance of following the diversity policies • Identify stereotypes and prejudices associated with people with disabilities and the negative consequences of prejudice and stereotypes. • Discuss the importance of promoting, sharing, and implementing gender equality and PwD sensitivity guidelines at organization level.	ELE/N1002 PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC9 KU1, KU2, KU3, KU4, KU5, KU6, KU7, KU8, KU9, KU10, KU11, KU12, KU13, KU14, KU15, KU16, KU23, KU26, KU27, KU28, KU29, KU37, KU38, KU39	Facilitator-led session, online videos	Whiteboard and markers; chart paper and sketch pens; LCD Projector and Laptop for presentations. PPE kit	T-05:00 P-05:00
		2. Fire Safety	• Explain Fire Safety. • List the types of fire and fire extinguishers	ELE/N1002 PC10, PC11, PC12 KU17, KU18, KU19, KU20, KU21, KU22			T-05:00 P-05:00

		3. First Aid	• Explain the need of First aid at workplace. • Explain first aid treatments during various emergencies.	ELE/N1002 PC13, PC14, PC15, PC16 KU24, KU25			T-02:00 P-03:00
		4. Waste Management	• Explain the process of Waste Management. • Explain the importance of efficient utilisation of resources. • List the common sources of pollution and ways to minimize them.	ELE/N1002 PC17, PC18, P19, PC20, PC21 KU31, KU32, KU33, KU34, KU35, KU36			T-03:00 P-02:00
6	Employability Skills (60 hours)	1. Introduction to Employability Skills Duration	• Discuss the Employability Skills required for jobs in various industries • List different learning and employability related GOI and private portals and their usage	DGT/VSQ/ N0102	Team Activity: Interactive discussion	Whiteboard and Markers Chart paper and sketch pens LCD Projector, Laptop for Presentation, audio visual aids, note pad, paper, pen, computers etc.	T- 01:30
		2. Constitutional values - Citizenship Duration	• Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen • Show how to practice different environmentally sustainable practices.	DGT/VSQ/ N0102	Classroom lecture, discussion, demonstration, practical		T- 01:30

		3. Becoming a Professional in the 21st Century Duration • Discuss importance of relevant 21st century skills. • Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life. • Describe the benefits of continuous learning.	DGT/VSQ/ N0102			T- 02:30
		4. Basic English Skills Duration • Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone • Read and interpret text written in basic English • Write a short note/paragraph / letter/e -mail using basic English	DGT/VSQ/ N0102			T-10:00
		5. Career Development & Goal Setting Duration • Create a career development plan with well-defined short- and long-term goals	DGT/VSQ/ N0102			T- 02:00
		6. Communication Skills Duration • Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette. • Explain the importance of active listening for effective communication • Discuss the significance of working collaboratively with others in a team	DGT/VSQ/ N0102			T- 05:00

		7. Diversity & Inclusion Duration	• Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD • Discuss the significance of escalating sexual harassment issues as per POSH act.	DGT/VSQ/ N0102			T- 02:30
		8. Financial and Legal Literacy Duration	• Outline the importance of selecting the right financial institution, product, and service • Demonstrate how to carry out offline and online financial transactions, safely and securely • List the common components of salary and compute income, expenditure, taxes, investments etc. • Discuss the legal rights, laws, and aids	DGT/VSQ/ N0102			T- 05:00
		9. Essential Digital Skills Duration	• Describe the role of digital technology in today's life • Demonstrate how to operate digital devices and use the associated applications and features, safely and securely • Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely • Create sample word documents, excel sheets and presentations using basic features • utilize virtual collaboration tools to work effectively	DGT/VSQ/ N0102			T- 10:00

		10. Entrepreneurship Duration	• Explain the types of entrepreneurship and enterprises • Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan • Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement • Create a sample business plan, for the selected business opportunity	DGT/VSQ/ N0102			T- 07:00
		11. Customer Service Duration	• Describe the significance of analysing different types and needs of customers • Explain the significance of identifying customer needs and responding to them in a professional manner. • Discuss the significance of maintaining hygiene and dressing appropriately	DGT/VSQ/ N0102			T- 05:00
		12. Getting Ready for apprenticeship & Jobs Duration	• Create a professional Curriculum Vitae (CV) • Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively • Discuss the significance of maintaining hygiene and confidence during an interview • Perform a mock interview • List the steps for searching and registering for apprenticeship opportunities	DGT/VSQ/ N0102			T- 08:00
Total Duration							600:00

Annexure II

Assessment Criteria

Assessment Criteria for “Mobile phone Hardware Repair Technician”	
Job Role	Mobile phone Hardware Repair Technician
Qualification Pack :	ELE/Q8104, Version 3.0
Sector Skill Council : Electronics Sector Skill of India	Electronics Sector Skill of India

S.No	Guidelines for Assessment
1.	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2.	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3.	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4.	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5.	To pass the Qualification Pack , every trainee should score a minimum of 50% in every NOS
6.	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ELE/N8104.Interact with customer and perform front end repair	40	60	-	-	100	35
ELE/N8107.Repair and rectify the faults in mobile phone	40	60	-	-	100	40
ELE/N1002.Apply health and safety practices at the workplace	35	65	-	-	100	15
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	0	0	50	10
Total	135	215	0	0	350	100

ANNEXURE - QR Codes

Chapter No.	Unit No.	Topic Name	Page No.	QR code(s)	URL
1.Introduction and Fundamentals (Bridge Module)		Roles and Responsibilities	3		https://www.youtube.com/watch?v=SXi87kfaONM
1.2	1.2.6	Mobile Operating Systems OS	13		https://www.youtube.com/watch?v=MMYMB4zm9so
1.3	1.3.1	Mobile Phone Hardware Module	15		https://www.youtube.com/watch?v=fjU6kY4gTuc
1.3	1.3.2	Mobile Phone Accessories	20		https://www.youtube.com/watch?v=AcJe9M9Drhk
1.4	1.4.2	Solder Wire	23		https://www.youtube.com/watch?v=4SpXz7IKyKI
1.4	1.4.3	Soldering Paste	23		https://www.youtube.com/watch?v=rb57D-5VJmE
1.4	1.4.4	PCB Stand	24		https://www.youtube.com/watch?v=qDJPd9YOS0c
1.4	1.4.5	PCB Cleaner	24		https://www.youtube.com/watch?v=gehA_qMF5o4
1.4	1.4.6	Ultrasonic Cleaner	24		https://www.youtube.com/watch?v=kBtMCRsdpho
Employability and Entrepreneurship Skills		Employability and Entrepreneurship Skills			https://www.skillindiadigital.gov.in/content/list



Skill India

कौशल भारत - कुशल भारत



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



N.S.D.C.
National
Skill Development
Corporation

Transforming the skill landscape



Electronics Sector Skills Council of India (ESSCI)

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Price: ₹