STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN
(NATIONAL OCCUPATIONAL SKILLS STANDARD)

CELLULAR PHONE REPAIR
LEVEL 2

JPK

Jabatan Pembangunan Kemahiran
Kementerian Sumber Manusia, Malaysia

STANDARD PRACTICE

NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR;
CELLULAR PHONE REPAIR
LEVEL 2

1. INTRODUCTION

This is a new NOSS developed for Cellular Phone Repair under the sector of Electrical & Electronic, Telecommunication. Base on the 3rd Industrial Master Plan and The Tenth Malaysia Plan direction, the need for skilled personnel from the Telecommunication Industry is in great demand.

The Telecommunication Industry is expanding rapidly with the introduction of the latest services and technology. This development has become a catalyst for the growth of the nation's commercial and industrial sectors. The integration of the telecommunication and computer industries also resulted in the rapid growth of sophisticated technology which ushers in a new Information Technology and Multimedia. In addition, the telecommunication sector as an industry in its own right has gone through rapid growth too and contributed much to the nation's economic development.

The Malaysia Communications and Multimedia Commission (MCMC) is the regulator for the converging communications and multimedia industry responsible for the technical regulation, which includes efficient frequency spectrum assignment, the development and enforcement of technical codes and standard, and the administration of numbering and electronic addressing. At the time it was created its key role was the regulation of the communication and multimedia industry based on the powers provided for in the Malaysian Communications and Multimedia Commission Act (1998). Pursuant to these Acts the role of the MCMC is to implement and promote the Government's nation policy objectives for the communications and multimedia sector. The MCMC are also charged with overseeing the new regulatory framework for the converging industry of telecommunications, broadband, broadcasting and on line activities.

Cellular Phone Repair skills career provides repairing knowledge in mobile phone hardware and mobile phones software. Mobile phone and smart phones are repaired using standard operation procedure. Cellular Phone Repairing covers the job scope of maintenance, repair and operation for various models of mobile phone.

This NOSS document shows the structured, equipment and skill career path of Cellular Phone Repair personnel. It provides structured set of activities that enables a person who aspires to achieve competency in this particular occupation, ultimately enhancing him or her on a career in telecommunication industry.

Standard Practice and Standard Content are part of NOSS document. This Job Areas being develop are based on the Occupational Analysis. This document covered the competency standard of Cellular Phone Repairing skill that are currently is the priority in this industry and the panel of experts had concluded that these job areas in this industry due to most of the task are performed in a variety of contexts, most of which are complex. To produce skilled workers in this industry, the needs for structured training are essential. Therefore this NOSS is developed focusing on the Cellular Phone Core Repairing activities. A telecommunication expertise works to

ensure that all mobile phone systems are set up correctly and operating as required.

The experts in this industry can also pursue careers in other industries in Malaysia or international. They also can be exported to the international market due to the increasing need of experts in the field. Hence, the development of this NOSS is essential for the industry to certain guidelines and standards based on the level of competencies that have been set by the industrial experts in this field.

Based on the workshop findings, it was decided that the entry level for Cellular Phone Repair personnel career is at Level 2. The justification is based on the nature of work that requires competency in performing in variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of other is often required. Generally they work following instructions and project schedule that has been prepared on project basis as per term of reference.

This NOSS provides first-hand information to the workers regarding the telecommunication industry working environment. This NOSS also provides a career path and employment development for those involved in this industry.

Pre-requisite

- Nil

2. OCCUPATIONAL STRUCTURE

Cellular Phone Repair (Level 2) personnel come under the sub-sector of Telecommunication. Figure 1.0 and figure 1.1 shows the structured career path and area as below;

SECTOR	ELECTRICAL &ELECTRONIC, TELECOMMUNICATION & BROADCASTING INDUSTRY			
SUB SECTOR	TELECOMMUNICATION			
AREA	Cellular phone	Radio Access Network	Radio Frequency Network	Transmission Network
LEVEL 5	Cellular Phone Technical Advisor	Radio Access Network Technical Executive	-	-
LEVEL 4	Cellular Phone Assistant Technical Advisor	Radio Access Network Assistant Technical Executive	-	-
LEVEL 3	Cellular Phone Senior Technician	Radio Access Network Senior Technician	Radio Frequency Network Senior Technician	Transmission Network Senior Technician
LEVEL 2	Cellular Phone Technician	Radio Access Network Technician	Radio Frequency Network Technician	Transmission Network Technician
LEVEL 1	(No Level)	(No Level)	Mobile Telecommunication Junior Technician	

Fig. 1.0 Occupational Structure for Cellular Phone Repair (Level 2) Personnel

SECTOR	ELECTRICAL & ELECTRONIC, TELECOMMUNICATION & BROADCASTING INDUSTRY			
SUB SECTOR	TELECOMMUNICATION			
AREA	Cellular phone	Radio Access Network	Radio Frequency Network	Transmission Network
LEVEL 5	Cellular Phone Technical Advisor	Radio Access Network Technical Executive	-	-
LEVEL 4	Cellular Phone Assistant Technical Advisor	Radio Access Network Assistant Technical Executive	-	-
LEVEL 3	Advance Cellular Phone Repair	Radio Access Network Senior Technician	Radio Frequency Network Senior Technician	Transmission Network Senior Technician
LEVEL 2	Cellular Phone Repair	Radio Access Network Technician	Radio Frequency Network Technician	Transmission Network Technician
LEVEL 1	(No Level)	(No Level)	Mobile Telecommunication Junior Technician	

Fig. 1.1 Occupational Area Structure for Cellular Phone Repair (Level 2) Personnel

3. DEFINITION OF COMPETENCY LEVEL

The NOSS is developed for various occupational areas. Candidates for certification must be assessed and trained at certain levels to substantiate competencies. Below is a guideline of each NOSS Level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia.

Malaysia Skills Certificate Level 1	Competent in performing a range of varied work activities, most of which are routine and predictable.
Malaysia Skills Certificate Level 2	Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and required individual responsibility and autonomy.
Malaysia Skills Certificate Level 3	Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.
Malaysia Skills Diploma Level 4	Competent in performing a broad range of complex technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present.
Malaysia Skills Advanced Diploma Level 5	Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources features strongly, as do personal accountabilities for analysis, diagnosis, planning, execution and evaluation.

4. MALAYSIAN SKILLS CERTIFICATION

Candidates after being assessed and verified and fulfilled Malaysian Skills Certification requirements shall be awarded with Sijil Kemahiran Malaysia (SKM) for Level 2.

5. JOB COMPETENCIES

The Cellular Phone Repair (Level 2) personnel are competent in performing the following core competencies:

- Basic Cellular Phone Hardware Repair
- Basic Cellular Phone Software Repair
- Workshop Practice

Optionally, Cellular Phone Repair (Level 2) personnel are competent in performing the following elective competency:-

- Customer Support Service

6. WORKING CONDITIONS

The cellular phone repair personnel should be able to concentrate on detailed work for long periods and be able to sit, bent down and consume for long hour operation. They may work indoors, and not require special wear however they must wear special protective equipment. They must be able to produce goods according to customer demands and Standard Operation Procedure.

7. EMPLOYMENT PROSPECTS

As Malaysia had identified in the 3rd Industrial Master Plan and started in the Tenth Malaysia Plan, telecommunication will be an important enabler for Malaysia to position itself at the international level. Employment growth in the telecommunication industry is signification and is always in demand.

Other related occupation with respect to employment opportunities are:
- Mobile Phone Software Engineering
- Data Devices Specialist Engineering

Other related industrial with respect to employment opportunities are:
- Information Sector
- Education Sector
- Manufacturing Sector
- Business Service Sector
- Government Sector

8. TRAINING, INDUSTRIAL/PROFESSIONAL RECOGNITION, OTHER QUALIFICATIONS AND ADVANCEMENT

As for career advancement, most competent learn their craft on the job. They usually begin as qualified and gradually learn their new skills as they gain experience. Further certification may increase their chances of career advancement.

9. SOURCES OF ADDITIONAL INFORMATION

9.1 Local

Malaysia Communication and Multimedia Commission (MCMC)
Persiaran Multimedia
63000 Cyberjaya
Selangor DarulEhsan
Tel   : 03-86888000
Fax   : 03-86881880
Email: admin@cmc.gov.my

D LAN GROUP
799, Jalan Sultan Mahmud
20400 Kuala Terengganu
Terengganu
Web : www.dlangroup.com
Tel   : 09-6315364
Email: admin@dlangroup.com

TRANSTEL TECHNOLOGIES
62c, Jalan Mega Mendung
5th Miles JalanKlang Lama
58200 Kuala Lumpur
Email: myphonehub@yahoo.com

INSTITUT KEMAHIRAN MARA PERLIS
02400 Jalan Kaki Bukit
Beseri Perlis
Email:z.adisharman@gmail.com
Email:9w2msj@gmail.com
Tel   :04-93480231
Fax   : 04-9348023

HH ERA COMMUNICATION
4820 JalanPantai
Taman Selat
12000 Butterworth
Pulau Pinang
Email: hheracom@gmail.com
Web : www.hhera.net
Telefax: 04-3332959

GLOBAL FIX GENERATION
No 116, Bilik JKR 4501
KemKementah,Jalan Padang Tembak
50634 Kuala Lumpur
Email: gfg.proteam@gmail.com
Tel   : 012-3671659

DX CELLULAR COMMUNICATIONS
Lot 11 JalanPersiaranPermai
Taman PuchongPermai
47100 Puchong New Village
Selangor
Email: acid-burn@singapore.com
Tel   : 012-2462749

MOBILE SOLUTION
No 2 Blok 5
Seksyen 16/2
40200 Shah Alam
Email:doctorphone007@yahoo.com
Tel   : 014-7368760

LCWIRA ENTERPRISE
No 24A Jalan 63
Pandamaran Jaya
42000 PelabuhanKlang
Selangor
Email: tri_hsinhsan@yahoo.com
Tel   : 012-6460908

WANSA PRIMA RESOURCES SDN BHD
NO 14 Jalan CU 1
Taman Chembong Utama
71300 Rembau
Negeri Sembilan
Email: afs_chembong@yahoo.com
Tel   : 06-6851633

.

9.2 International

NOKIA
Nokia Corporation
P.O. Box 226,
FIN - 00045 Nokia group
Finland
Fax   : +3587 1803 4496
Web : www.nokia.com

SAMSUNG
1320-10,Seocho 2-dong,
Seocho-gu, Seoul 137-857,
South Korea
Web :www.samsung.com

ERICSSON LTD
Unit 4, Midleton Gate
GuidfordBusinesss Park
Guidford
GU2 8SG
United Kingdom
Tel   : +441483303666

APPLE INC.
1 Infinite Loop
Cupertino, CA 95014
Tel   : 408-996-1010
Web : www.apple.com/

BLACKBERRY
Research In Motion
295 Phillip Street
Waterloo, Ontario
Canada N2L 3W8
Tel   : (519) 888-7465
Fax   : (519) 888-7884
Web : us.blackberry.com/

MOTOROLA MOBILITY, Inc.
600 North U.S. Highway 45
Libertyville, Illinois 60048 USA
Tel   : +18475235000
Web : www.motorola.com/us/consumers/home

10.   ACKNOWLEDGEMENT

The Director General of DSD would like to extend his gratitude to the organisations and individuals who have been involved in developing this standard.

11. COMMITTEE MEMBERS FOR DEVELOPMENT OF STANDARD PRACTICE (SP) COMPETENCY PROFILE CHART (CPC)

CELLULAR PHONE REPAIR
LEVEL 2

PANEL EXPERTS		
1.	En. Mohd Hasbullah bin Mohd Mokhtar	Manager Transtel Technologies
2.	En. Keow Seong Huat	Manager Transtel Technologies
3.	En. Nor Ardilan Syah bin Abdullah	Manager DLAN GROUP
4.	En. Che Ku Shaharonizam bin Che Ku Mat	Manager DLAN GROUP
5.	En. Adisharman bin Haji Rahmat	Vocational Instructor (PPLV) InstitutKemahiran Mara, Beseri (IKM)
6.	En. Mohamed Sofi bin Jamaluddin	Vocational Instructor (PPLV) InstitutKemahiran Mara, Beseri (IKM)
7.	En. Amil bin Md Isa	Manager HH Era Communication
8.	En. MohamadRidhwan bin Mohd	Manager Wan Buz Enterprise
9.	En. Nazri Nisham bin Samsudin	Manager Nazfida Communication

FACILITATORS		
1.	Tn. Hj. Zaharudin bin Abdul Latif	JPK, Cyberjaya, Selangor

CO – FACILITATORS		
1.	En. Jefrizain bin Abdul Rasid	JPK, Cyberjaya, Selangor
2.	En. Faizal bin Abd Majid	JPK, Cyberjaya, Selangor
3.	En. Abdul Aziz bin Abdul Wahab	JPK, Cyberjaya, Selangor

12. COMMITTEE MEMBERS FOR DEVELOPMENT OF COMPETENCY PROFILE (CP)

CELLULAR PHONE REPAIR
LEVEL 2

	PANEL EXPERTS	
1.	En. Mohd Hasbullah bin Mohd Mokhtar	Manager Transtel Technologies
2.	En. Keow Seong Huat	Manager Transtel Technologies
3.	En. Nor Ardilan Syah bin Abdullah	Manager DLAN GROUP
4.	En. Che Ku Shaharonizam bin Che Ku Mat	Manager DLAN GROUP
5.	En. Adisharman bin Haji Rahmat	Vocational Instructor (PPLV) InstitutKemahiran Mara, Beseri (IKM)
6.	En. Mohamed Sofi bin Jamaluddin	Vocational Instructor (PPLV) InstitutKemahiran Mara, Beseri (IKM)
7.	En. Amil bin Md Isa	Manager HH Era Communication
8.	En. Mohamad Ridhwan bin Mohd	Manager Wan Buz Enterprise
9.	En. Nazri Nisham bin Samsudin	Manager Nazfida Communication

	FACILITATORS	
1.	Tn. Hj. Zaharudin bin Abdul Latif	JPK, Cyberjaya, Selangor

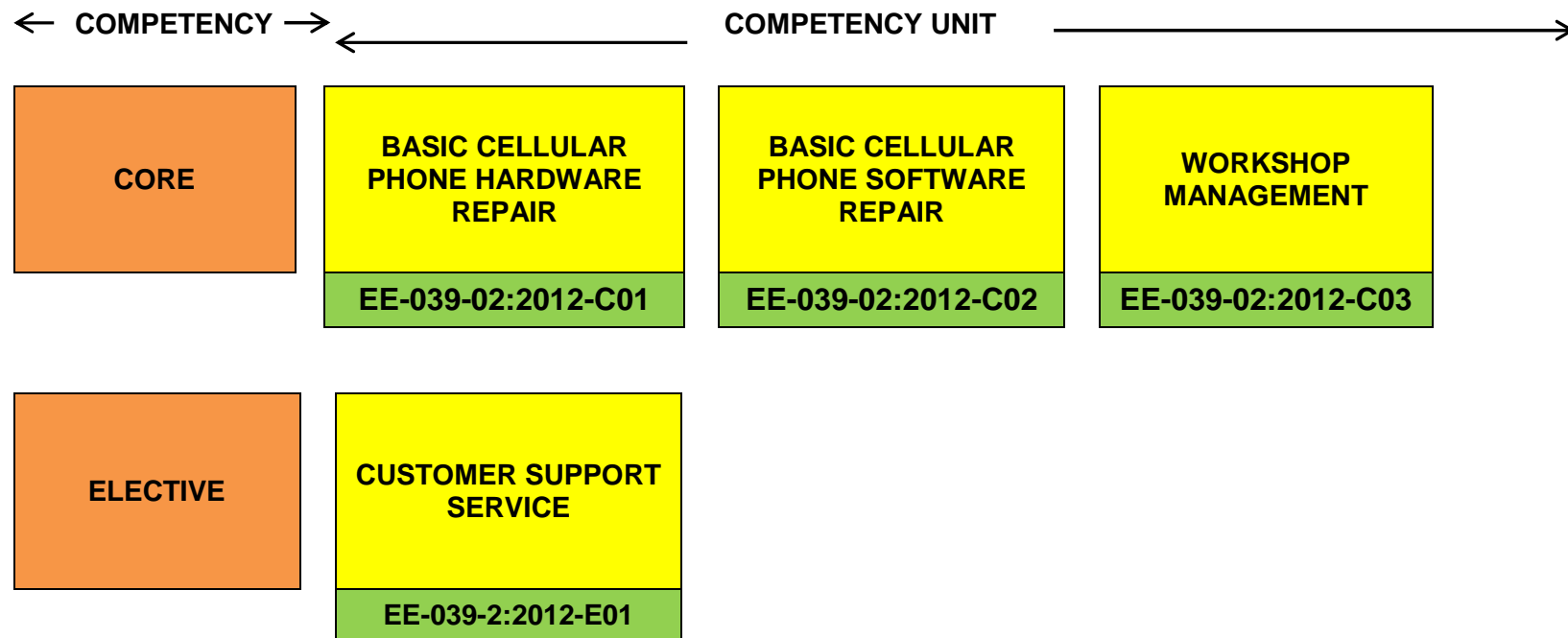|	CO – FACILITATORS	
1.	En. Jefrizain bin Abdul Rasid	JPK, Cyberjaya, Selangor
2.	En. Faizal bin Abd Majid	JPK, Cyberjaya, Selangor
3.	En. Abdul Aziz bin Abdul Wahab	JPK, Cyberjaya, Selangor

13. COMMITTEE MEMBERS FOR DEVELOPMENT OF CURRICULUM OF COMPETENCY UNIT (CoCU)

CELLULAR PHONE REPAIR
LEVEL 2

PANEL EXPERTS		
1.	En. Nor Ardilan Syah bin Abdullah	Manager DLAN GROUP
2.	En. Amil bin Md Isa	Manager HH Era Communication
3.	En. Mohamad Hisham Bin Hashim	Managing Director Wansa Prima Resources
4.	Pn. Junaina Bt. Md Karim	Manager Wansa Prima Resources
5.	En. Afandi Bin Amir	Manager Global Fix Generation
6.	En. Mohd Hilmizan Bin Mohd Saidi	Manager FW Mobile Solution
7.	En. Muhamad Fadzil Ariff Bin Mohd Sahir	Manager DX Cellular Communication
8.	En. Mohd Fauzi Bin Muhamad Sjarif	Managing Director DX Cellular Communication
9.	En. Muhammad Al Arqam Bin Ismail	Managing Director DX Cellular Communication
10.	En. Mohd Faisal Bin Amirudin	Manager Mobile Solution
11.	E. Hussin Bin Hassan	Technical Advisor LC Wira Enterprise
12.	En. Hazrul Ermey bin Raya	Marketing & sales Manager Global Fix Generation
13.	En. Mohd Azrin Bin Rajuni	Advisor Mobile Solution
FACILITATORS		
1.	Tn. Hj. Zaharudin bin Abdul Latif	JPK, Cyberjaya, Selangor
CO – FACILITATORS		
1.	En. Jefrizain bin Abdul Rasid	JPK, Cyberjaya, Selangor
2.	En. Faizal bin Abd Majid	JPK, Cyberjaya, Selangor
3.	En. Abdul Aziz bin Abdul Wahab	JPK, Cyberjaya, Selangor

COMPETENCY PROFILE CHART (CPC)

SECTOR	ELECTRICAL & ELECTRONIC, TELECOMMUNICATION AND BROADCASTING INDUSTRY		
SUB SECTOR	TELECOMMUNICATION		
JOB AREA	CELLULAR PHONE REPAIR		
JOB LEVEL	TWO (2)	JOB AREA CODE	EE-039-02:2012

← COMPETENCY → COMPETENCY UNIT

CORE	BASIC CELLULAR PHONE HARDWARE REPAIR EE-039-02:2012-C01	BASIC CELLULAR PHONE SOFTWARE REPAIR EE-039-02:2012-C02	WORKSHOP MANAGEMENT EE-039-02:2012-C03

ELECTIVE	CUSTOMER SUPPORT SERVICE EE-039-2:2012-E01

1

COMPETENCY PROFILE (CP)

Sub Sector	TELECOMMUNICATION
Job Area	CELLULAR PHONE REPAIR
Level	TWO (2)

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
1. BASIC CELLULAR PHONE HARDWARE REPAIR	EE-039-02:2012-C01	The CU title describes the competencies in Basic Phone Hardware Repair. He or She will troubleshoot, identify fault, repair, test and commission faulty phone for proper functioning. The person who is competent in this CU shall be able to troubleshoot basic hardware fault, change hand phone component and hand phone testing and commissioning according to specification and meet client requirement. The outcome of this competency is cellularphone problem identified, solve and repaired as per manuals to ensure client satisfaction guaranteed and prompt action taken	1. Troubleshoot Basic Hardware Fault 2. Change Cellular Phone Component 3. Test and Commission repaired Cellular Phone	1.1 Schematic diagram interpreted. 1.2 Cellular phone function navigated. 1.3 Troubleshooting techniques applied. 1.4 Fault is identified and verified according to SOP 2.1 Faulty component for replacement are identified 2.2 Component replaced and changed as per user manual 2.3 Phone component is function as per SOP 3.1 Hand phone are tested as per manuals 3.2 Hand phone are commissioned according to factory specifications. 3.3 Cellular Phone functioning as per SOP

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
2. BASIC CELLULAR PHONE SOFTWARE REPAIR	EE-039-02:2012-C02	The CU title describes the competencies in Basic Phone Software Repair. He or She will identify fault, diagnose, repair, testing and commission faulty phone for proper functioning. The person who is competent in this CU shall be able to troubleshoot handphone software fault, flashing hand phone software, test and commission handphone according to specification and meet client requirement. The outcome of this competency is cellular software problem identified, solve and repaired as per user manuals to ensure client satisfaction.	1. Troubleshoot Cellular Phone Software Fault 2. Flash Cellular Phone Software 3. Test and Commission Repaired Cellular Phone	1.1 Basic computer application applied. 1.2 PC communication set-up 1.3 Phone model differentiated 1.4 Software tools complied 1.5 Fault is identified and verified according to SOP 4.1 Type of model cellular phone identified 4.2 Type of data cable identified 4.3 Type of file selected 4.4 Flashing technique applied as per flashing manual 4.5 Operating System are restored to manufacturer's specification. 3.1 Testing and Commissioning procedure and techniques applied 3.2 Test and commissioning equipment followed checklist 3.3 Repaired Hand phone tested as per SOP. 3.4 Software function according to factory specifications.

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
3. WORKSHOP MANAGEMENT	EE-039-02:2012-C03	The CU title describes the competencies in workshop management. He or She will handle and manage all workshop work activities relating to manpower, machine, money, material to ensure smooth workshop operation as per SOP.. The person who is competent in this CU shall be able to handle stock inventory , update stock control , perform work scheduling and perform continuous improvement according to the standard operating procedures The outcome of this competency is excellent service to customer are delivered and workshop manage smoothly to ensure conducive working environment and client satisfaction.	1. Handle Stock inventory 2. Update Stock Control 3. Perform Work Scheduling 4. Perform Sevice Operations Continuous Improvement .	1.1 Inventory list is checked 1.2 Update item quantity 1.3 Storing of items are arranged 1.4 5S procedure applied 2.1 Stock order arranged as per SOP. 2.2 Items delivered are received 2.3 Quality of Items verified 2.4 Spare parts types and requirement identified. 2.5 Stock purchasing procedures complied 2.6 Project sales foreccasted 3.1 Timeline and work scheduling are prepared.. 3.2 Gantt Chart are prepared 3.3 5M resource requirement identified 3.4 Management planning executed 4.1 All issues related to O&M are communicated to relevant customer and supplier 4.2 Reception handling activities identified 4.3 Customer complaint records prepared 4.4 Customer satisfaction assessed 4.5 Operation and maintenance guideline is improved continuously

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
4. PERFORM CUSTOMER SUPPORT SERVICE	EE-039-02:2012-C04	The CU title describes the competencies in Customer Support Service. He or She will perform Client Consultancy, Marketing and Promotion, Public Relation, After Sales Service and Front Desk Support. The person who is competent in this CU shall be able to provide customer service, perform marketing and promotions activities and perform public relations activities as per SOP. The outcome of this competency is customer support service activities are enhanced to customer satisfaction and operations improved as per company requirements.	1. Provide Customer service 2. Perform Marketing and Promotions activities 3. Perform Public Relation Activities	1.1 Incoming customer greeted 1.2 Customer complaint recorded 1.3 Effective Communication applied 1.4 Interpersonnel skills applied 1.5 Problem solving skills applied 2.1 Marketing strategies developed 2.2 SWOT analysis executed 2.3 Shop decoration applied 2.4 Unique selling proposition identified 2.5 Company's sales Revenue identified 3.1 Potential business networking identified 3.2 Potential new client identified 3.3 Product advertised in media, flyers, banners etc 3.4 Advertisement updated

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	TELECOMMUNICATION						
Job Area	CELLULAR PHONE REPAIR						
Competency Unit Title	BASIC CELLULAR PHONE HARDWARE REPAIR						
Learning Outcome	The person who is competent in this CU shall be able to identify, solve and repair cellularphone problem as per manuals to ensure client satisfaction guaranteed and prompt action taken Upon completion of this competency unit trainees will be able to:- 1. Troubleshoot Basic Hardware fault 2. Change Cellular Phone Component 3. Test and Commission Repaired Cellular Phone						
Competency Unit ID	EE-039-2:2012-C01	**Level**	2	**Training Duration**	220 Hours	**Credit Hours**	22.0

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Troubleshoot Basic Hardware fault	i. Basic Electronic • Component • Schematic diagram ii. Type and function tool and equipment iii. Cellular phone manual iv. Troubleshooting Techniques and procedure. v. Type of hardware fault			20 hours	Lecture	i. Basic electronic concepts are explained. ii. Type and function of tool and equipment are explained. iii. Cellular phone

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Apply Basic Electronic concept. ii. Identify cellular phone Component iii. Interpret Schematic diagram. iv. Use cellular phone tools equipment. v. Navigate function ofcellular phone. vi. Apply troubleshooting Techniques and procedures.	*Attitude:* i. Meticulous in hardware problem Safety i. Adhere to cellular phone current, voltage and temperature. ii. Wear PPE.	60 hours	Demonstration & Observation	manual interpreted.. iv. Technique and procedure troubleshooting are described. v. Type of hardware fault identified. vi. Cellular phone component are identified. vii. Schematic diagram are interpret. viii. Cellularphone tools equipment are used. ix. Functions of cellular phone are navigated. x. Troubleshooting technique and procedures are applied. xi. PPE are adhered.

7

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2 Change Cellular Phone Component	i. Function of cellular phone component ii. Technique in changing phone component iii. Type and tools usage iv. Procedure in handling tool v. Users Manual			20 hours	Lecture	i. Cellular phone component function are described. ii. Technique in changing phone component applied iii. Type and tools usage identified. iv. Faulty component checked v. Test and commissioning confirmed. vi. Good housekeeping maintained.
		i. Identify faulty component. ii. Confirm and replace the component. iii. Test and commissioning. iv. Apply technique in changing. v. Use tools. vi. Follow user manual.	_Attitude:_ i. Meticulous in hardware problem. ii. Maintain good housekeeping Safety i. Comply to cellular phone Current, voltage and temperature	50 hours	Demonstration & Observation	

8

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Test and Commission Repaired Cellular Phone	i. Testing and commissioning procedure ii. Testing and commissioning technique iii. Testing and commissioning concept iv. Testing and commissioning tools and equipment. • Multi tester • Oscilloscope v. Function and objective of testing			20 hours		i. Testing and commissioning procedure and technique explained. ii. Testing and commissioning procedure applied iii. Function cellular phone describe. iv. Testing in commissioning equipment identified. v. Function and objective of testing stated. vi. PPE are adhered vii. Safety rules regulation complied
		i. Apply testing and commissioning procedure ii. Perform testing and commissioning technique iii. Apply testing and commissioning equipment iv. Carry out testing and commissioning concept		50 hours	Demonstration & Observation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Meticulous in hardware problem ii. Follow test procedure *Safety:* i. Adhere to safety requirement. ii. Wear PPE *iii.* Comply to safety rules and regulation			

Employability Skills

Core Abilities
01.04 Analyze information
01.05 Utilize the internet to locate and gather information
01.06 Utilize word processor to process information
02.06 Write memos and letters
02.07 Utilize Local Area Network (LAN)/Internet to exchange information
02.08 Prepare pictorial and graphic information
03.08 Develop and maintain a cooperation within work group
04.01 Organize own work activities
04.02 Set and revise own objectives and goals
04.03 Organize and maintain own workplace
04.04 Apply problem solving strategies
04.05 Demonstrate initiative and flexibility
06.05 Analyse technical systems
06.06 Monitor and correct performance of systems

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Blower	1:1
2. Solder Iron	1:1
3. Flux	1:1
4. Power Supply	1:5
5. Solder Wire	1:1
6. Solder Paste	1:1
7. Ultra Sonic Cleaner	1:30
8. Solder Wick	1:1
9. Tools Set (Tweezers, Blade, Spatula, BGA Plate, Tooth Pick, Housing Opener, Cutter)	1:1
10. Cellular Phone Set (various model)	2:1
11. Contact Cleaner	1:30
12. PCB Cleaner	1:1
13. Brush	1:1
14. Microscope	1:10

REFERENCES

1. Fundamental Electrical and Electronic Principles ; Taylor & Francis ; May 2012 - ISBN: 978-0-7506-8737-9

2. Schaum's Outlines Of Electronic Device And Circuits, Second Edition; McGraw-Hill;Feb 2012-10-14 - ISBN: 978-0-0713-9830-5

3. An Introduction To Electronic and Ionic Material; World Scientific ;Jan 1999.

4. Introduction To Communication Electronic Warfare Systems; artech House ; Feb 2002 - ISBN: 978-1-5805-3344-7

5. A Practical Introduction To Analog And Digital Circuits; Daniel M. Kaplan ; Chistopher G. White. - ISBN: 978-0-5218-9351-0

6. Electronics ; B.Y Narayana Rao ; Kusum Anand ; Himalaya Publishing House - ISBN: 978-9-3504-3166-5

7. Understand Electronics ; Owen Bishop : Elsevier Science - ISBN: 978-0-7506-5319-0

8. Analog Electronic ; Ian Hickman; Elsevier Science ; June 1999 - ISBN: 0-7506-4416-8

9. Audio Electronics ; John Linsley Hood ; Elsevier Science ; Nov 1998 - ISBN: 978-0-7506-4332-0

10. Practical Electronics handbook ; Ian Sinclair ; John Dunton ; Elsevier Science ; Jan 2007 - ISBN: 978-0-7506-8071-4

11. Electronic Business; Geoffrey Sampson; British Informatics Society Limited; June 2008 - ISBN: 978-1-9025-0589-3

12. Electronic Markets; Craig Standing; Palgrave Macmillan Ltd; October 2009 - ISBN: 978-0-2302-7423-5

13. The Electronic Financial Markets Of The Future; Lauren Liebenberg; Palgrave Macmillan Ltd; July 2002 - ISBN: 978-0-2305-6605-7

14. Chase, Richard B., Aquilano, Nicholas J., Jacobs, F. Robert (1998) Production and Operations, Manufacturing and Services; Eight Edition, Irwin McGraw-Hill.- ISBN:978-0-2562-2556-3

15. Hirano, H. (1995) 5S for Operators-5 Pillar of the visual workplace. New York: Productivity Press. - ISBN: 978-1-5632-7123-6

16. Slack, N., Chambers, S. And Johnston, R. (2010) Operations Management. Six edition, England. Pearson Education Limited. - ISBN: 978-0-273-73046-0

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	TELECOMMUNICATION
Job Area	CELLULAR PHONE REPAIR
Competency Unit Title	BASIC CELLULAR PHONE SOFTWARE REPAIR
Learning Outcome	The person who is competent in this CU shall be able to identify, solve and repair cellular software faulty problem as per user manuals to ensure client satisfaction, prompt action taken.. Upon completion of this competency unit trainees will be able to:- 1. Troubleshoot Cellular Phone Software Fault 2. Flash Cellular Phone Software 3. Test and Commission Cellular Phone

Competency Unit ID	EE-039-2:2012-C02	**Level**	2	**Training Duration**	220 Hours	**Credit Hours**	20.00

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria

1. Troubleshoot Cellular Phone software fault	i. Basic computer
	ii. Personal Computer (PC) communication
	iii. Phone model
	  - Type
	  - Version
	iv. Software tools
	  - Usage
	  - Function
	  - Type
	v. Troubleshooting process and procedures
	vi. SOP & User manuals
				20 hours	Lecture	i. Basic phone explained.
						ii. PC communication identified
						iii. PC communication applied
						iv. PC communication setup according to specification
						v. Software tool determine and used
						vi. Phone model differentiate

13

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
						vii. Software fault identified viii. Troubleshooting process and procedures are followed
		i. Apply basic computer ii. Set up PC communication iii. Differentiate phone model iv. Comply software tools v. Follow troubleshooting process and procedures vi. Follow SOP and User Manuals	*Attitude:* i. Meticulous in software problem Safety i. Adhere to cellular phone current, voltage and temperature.	60 hours	Demonstration & Observation	ix. SOP and User manuals are followed

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Flash Cellular Phone Software	i. Type of model cellular phone ii. Type of data cable iii. Type of file iv. Flashing technique and procedure v. Flashing manual			20 hours	Lecture	i. Type of model cellular phone identified ii. Type of data cable determined iii. Type of file selected iv. Flashing technique and procedure applied v. Flashing manual followed vi. Flashing program according to specification updated
		i. Identify type of model cellular phone ii. Determine type of data cable iii. Select Type of file iv. Apply flashing technique and procedure v. Follow Flashing manual	_Attitude:_ i. Meticulous in software problem Safety ii. Good attitude practices.	50 hours	Demonstration & Observation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Test and Commission Repaired Cellular Phone	i. Types of cellular handphone ii. Testing and commissioning procedure iii. Testing and commissioning technique iv. Testing and commissioning concept v. Testing and commissioning equipment vi. Function and objective of testing vii. SOP and manual			20 hours		i. Types of cellular handphone identified ii. Testing and commissioning procedure applied iii. Testing and commissioning technique applied according to SOP. iv. Testing and commissioning equipment used according to SOP. v. Testing and commissioning process applied. vi. SOP and manual complied. vii. Safety rule and regulation are complied.
		i. Identify types of cellular handphone ii. Apply testing and commissioning procedure iii. Apply testing and commissioning technique iv. Use testing and commissioning equipment v. Apply testing and commissioning process		50 hours	Demonstration & Observation	

16

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		vi. Comply SOP and manual	*Attitude:* i. Meticulous in software problem. ii. Follow test procedure. Safety iii. Apply to safety rule and regulation.			

Employability Skills

Core Abilities
01.04 Analyze information 01.05 Utilize the internet to locate and gather information 01.06 Utilize word processor to process information 02.06 Write memos and letters 02.07 Utilize Local Area Network (LAN)/Internet to exchange information 02.08 Prepare pictorial and graphic information 03.08 Develop and maintain a cooperation within work group 04.01 Organize own work activities 04.02 Set and revise own objectives and goals 04.03 Organize and maintain own workplace 04.04 Apply problem solving strategies

Core Abilities

04.05 demonstrate initiative and flexibility
06.05 Analyse technical systems
06.06 Monitor and correct performance of systems

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Flasher Boxes (various model)	1:1
2. Flashing Cables	1:1
3. Computer	1:1
4. Internet Connection	1:1
5. Tools Set	1:1
6. Cellular Phone Set (various model)	2:1

REFERENCES

1. Fundamental Electrical and Electronic Principles ; Taylor & Francis ; May 2012 - ISBN: 978-0-7506-8737-9

2. Schaum's Outlines Of Electronic Device And Circuits, Second Edition; McGraw-Hill;Feb 2012-10-14 - ISBN: 978-0-0713-9830-5

3. An Introduction To Electronic and Ionic Material; World Scientific ;Jan 1999.

4. Introduction To Communication Electronic Warfare Systems; artech House ; Feb 2002 - ISBN: 978-1-5805-3344-7

5. A Practical Introduction To Analog And Digital Circuits; Daniel M. Kaplan ; Chistopher G. White. - ISBN: 978-0-5218-9351-0

6. Electronics ; B.Y Narayana Rao ; Kusum Anand ; Himalaya Publishing House - ISBN: 978-9-3504-3166-5

7. Understand Electronics ; Owen Bishop : Elsevier Science - ISBN: 978-0-7506-5319-0

8. Analog Electronic ; lan Hickman; Elsevier Science ; June 1999 - ISBN: 0-7506-4416-8

9. Audio Electronics ; John Linsley Hood ; Elsevier Science ; Nov 1998 - ISBN: 978-0-7506-4332-0

10. Practical Electronics handbook ; lan Sinclair ; John Dunton ; Elsevier Science ; Jan 2007 - ISBN: 978-0-7506-8071-4

11. Electronic Business; Geoffrey Sampson; British Informatics Society Limited; June 2008 - ISBN: 978-1-9025-0589-3

12. Electronic Markets; Craig Standing; Palgrave Macmillan Ltd; October 2009 - ISBN: 978-0-2302-7423-5

13. The Electronic Financial Markets Of The Future; Lauren Liebenberg; Palgrave Macmillan Ltd; July 2002 - ISBN: 978-0-2305-6605-7

14. Chase, Richard B., Aquilano, Nicholas J., Jacobs, F. Robert (1998) Production and Operations, Manufacturing and Services; Eight Edition, Irwin McGraw-Hill.- ISBN:978-0-2562-2556-3

15. Hirano, H. (1995) 5S for Operators-5 Pillar of the visual workplace. New York: Productivity Press. - ISBN: 978-1-5632-7123-6

16. Slack, N., Chambers, S. And Johnston, R. (2010) Operations Management. Six edition, England. Pearson Education Limited. - ISBN: 978-0-273-73046-0

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	TELECOMMUNICATION
Job Area	CELLULAR PHONE REPAIR
Competency Unit Title	WORKSHOP MANAGEMENT
Learning Outcome	The person who is competent in this CU shall be able to provide and deliver excellent service to customer and manage workshop smoothly to ensure conducive working environment and client satisfaction. Upon completion of this competency unit trainees will be able to:- 1. Handle Stock inventory 2. Update Stock Inventory 3. Perform Work Scheduling 4. Perform Service Operations Continuous Improvement

Competency Unit ID	EE-039-02:2012-C03	**Level**	2	**Training Duration**	105 Hours	**Credit Hours**	10.5

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Handle Stock inventory	i. Inventoring process and procedures ii. SOP iii. Inventory list iv. Quality item v. Quantity item vi. Store inventory vii. 5s procedures			5 hours	Lecture	i. Inventory list to manage stock updated. ii. Quality item checked iii. Quantity item updated. iv. Store inventorying process and

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Create store inventory ii. Update inventory list to manage stock. iii. Follow up with related customer request. iv. Update item quantity v. Arrange store vi. Follow 5S procedure vii. Follow SOP.	_Attitude:_ i. Meticulous in identifying reception activities handling complied ii. Complied 5S requirement	20 hours	Demonstration & Observation	procedures followed v. Customer request follow up. vi. 5S procedure followed vii. SOP followed. iii. Store arrange as per SOP
2. Update Stock Inventory	i. Type of spare part stock. • Stock updating procedure ii. Stock purchasing process and procedure • Time of logistic iii. Sales forecast and projection • Stock inventory iv. Stock arrangement procedure v. Stock delivery verification process and procedure vi. Stockmaintainance procedure			5 hours	Lecture	i. Acceptance and delivery of the goods and keep record arranged and controlled. ii. Stock record, confirms goods production, estimate need, and make young stock demand maintained. iii. Tool, spare part or various equipment and maintain kept

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
						and produced iv. Stock arranged. v. Control stock and delivery accepted vi. Maintain stock recorded,
		i. Identify type of spare part stock ii. Arrange stock order iii. Verify stock delivery iv. Maintain Stock record v. Confirm quality goods products vi. Estimate spare part needed vii. Prepare stock demand. viii. Maintain. spare part of various equipment vii. Apply stock purchasing process and procedure viii. Forecast project sales		20 hours	Demonstration & Observation	vii. Goods production confirmed. viii. Spare part need estimated. ix. Young stock demand prepared. x. Type of spare part stock identified. xi. Stock purchasing process and procedure applied. xii. Project sales forecasted.

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Meticulous in identifying reception activities handling. ii. Complied 5S requirement Safety i. Prevent fire in store. ii. Avoid sleeper y floor iii. Avoid using flammable product.			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Perform Work Scheduling	i. Work scheduling ii. Gantt Chart iii. Scope of work iv. Management planning v. Resource requirement vi. Budget management vii. Arrow On Node			10 hours	Lecture Demonstration & Observation	i. Management planning explained. ii. Scope of work and timeline determined iii. Resource requirement analyzed. iv. Budget requirement estimated. v. Gantt Chart prepared vi. Work Scheduling prepared vii. Duration, start, and finish dates on the schedule identified
		i. Prepared timeline and work schedule. ii. Identify scope of work iii. Prepare Gantt Chart iv. Perform management planning v. Analyse resource requirement vi. Mark the duration, start, and finish dates	*Attitude:* i. Complied 5S requirement Safety i. Prevent fire in store. ii. Avoid sleeper y floor iii. Avoid using flammable product.	20 hours		

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
4. Perform service operations continuous Improvement	i. Reception activities handling ii. Customer request iii. Customer Complaint Records iv. Customer satisfaction form v. Operation guideline vi. SOP			5 hours	Lecture	i. Reception activities identified ii. Customer request entertained. iii. Customer Complaint Records prepared. iv. Operation procedure improved continuously v. Customer satisfaction assessed
		i. Identify reception activities handling ii. Entertain customer request iii. Prepare customer complaint records iv. Assess customer satisfaction v. Improve continuously Operation process	Attitude: i. Meticulous in ii. Complied 5S requirement Safety i. Prevent fire in store. ii. Avoid sleeper y floor iii. Avoid using flammable product.	20 hours	Demonstration & Observation	

Employability Skills

Core Abilities
01.04 Analyze information 01.05 Utilize the internet to locate and gather information 01.06 Utilize word processor to process information 02.06 Write memos and letters 02.07 Utilize Local Area Network (LAN)/Internet to exchange information 02.08 Prepare pictorial and graphic information 03.08 Develop and maintain a cooperation within work group 04.01 Organize own work activities 04.02 Set and revise own objectives and goals 04.03 Organize and maintain own workplace 04.04 Apply problem solving strategies 04.05 demonstrate initiative and flexibility 06.05 Analyse technical systems 06.06 Monitor and correct performance of systems

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Computer	1:1
2. Internet	1:1
3. LCD projector	1:20

REFERENCES

1. Fundamental Electrical and Electronic Principles ; Taylor & Francis ; May 2012 - ISBN: 978-0-7506-8737-9

2. Schaum's Outlines Of Electronic Device And Circuits, Second Edition; McGraw-Hill;Feb 2012-10-14 - ISBN: 978-0-0713-9830-5

3. An Introduction To Electronic and Ionic Material; World Scientific ;Jan 1999.

4. Introduction To Communication Electronic Warfare Systems; artech House ; Feb 2002 - ISBN: 978-1-5805-3344-7

5. A Practical Introduction To Analog And Digital Circuits; Daniel M. Kaplan ; Chistopher G. White. - ISBN: 978-0-5218-9351-0

6. Electronics ; B.Y Narayana Rao ; Kusum Anand ; Himalaya Publishing House - ISBN: 978-9-3504-3166-5

7. Understand Electronics ; Owen Bishop : Elsevier Science - ISBN: 978-0-7506-5319-0

8. Analog Electronic ; Ian Hickman; Elsevier Science ; June 1999 - ISBN: 0-7506-4416-8

9. Audio Electronics ; John Linsley Hood ; Elsevier Science ; Nov 1998 - ISBN: 978-0-7506-4332-0

10. Practical Electronics handbook ; Ian Sinclair ; John Dunton ; Elsevier Science ; Jan 2007 - ISBN: 978-0-7506-8071-4

11. Electronic Business; Geoffrey Sampson; British Informatics Society Limited; June 2008 - ISBN: 978-1-9025-0589-3

12. Electronic Markets; Craig Standing; Palgrave Macmillan Ltd; October 2009 - ISBN: 978-0-2302-7423-5

13. The Electronic Financial Markets Of The Future; Lauren Liebenberg; Palgrave Macmillan Ltd; July 2002 - ISBN: 978-0-2305-6605-7

14. Chase, Richard B., Aquilano, Nicholas J., Jacobs, F. Robert (1998) Production and Operations, Manufacturing and Services; Eight Edition, Irwin McGraw-Hill.- ISBN:978-0-2562-2556-3

15. Hirano, H. (1995) 5S for Operators-5 Pillar of the visual workplace. New York: Productivity Press. - ISBN: 978-1-5632-7123-6

16. Slack, N., Chambers, S. And Johnston, R. (2010) Operations Management. Six edition, England. Pearson Education Limited. - ISBN: 978-0-273-73046-0

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	TELECOMMUNICATION						
Job Area	CELLULAR PHONE REPAIR						
Competency Unit Title	PERFORM CUSTOMER SUPPORT SERVICES						
Learning Outcome	The person who is competent in this CU shall be able to enhance customer support service activities to customer satisfaction and improved company operations as per company requirements.. Upon completion of this competency unit trainees will be able to:- 1. Provide Customer Services 2. Perform Marketing And Promotion Activities 3. Perform Public Relation Activities						
Competency Unit ID	EE-039-2:2012-E01	**Level**	2	**Training Duration**	40 Hours	**Credit Hours**	4.00

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Provide customer services	i. Customer complaint ii. Purchasing activities procedures iii. Product knowledge • Type of fault • SOP iv. Problem solving technique v. Communication skill technique • Downward • Upward vi. Interpersonal skill technique			4 hours	Lecture	i. Customer complaint handled ii. Product knowledge enhance iii. Problem solving applied iv. Communication skill applied v. Interpersonal skill applied vi. Purchasing activities handle

28

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Handle customer complaint ii. Enhance product knowledge iii. Apply problem solving technique iv. Apply communication skill technique v. Apply Interpersonal skill technique *Attitude:* iii. Meticulous in identifying reception activities handling. iv. Complied 5S requirement v. Avoid arguing with customer vi. Trustworthy during purchasing activities		10 hours	Demonstration & Observation	in trustworthy element vii. Arguing with client is avoided

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Perform marketing and promotion activities	i. Marketing plan ii. Promotion strategies iii. Shop decoration iv. Market competitors v. Unique selling • Promoting a business at trade show and exhibition.			3 hours	Lecture	i. Marketing strategies developed ii. Market and competitors identified iii. Shop decoration applied iv. Unique selling promotion identified v. Hp business promoted as per SOP. vi. 5S requirement complied vii. Reception activities handle meticulously
		i. Develop a marketing strategies ii. Identify market and competitors iii. Apply shop decoration iv. Find a unique selling promotion v. Promote hp business at trade show and exhibition.	*Attitude:* i. Meticulous in identifying reception activities handling. ii. Complied 5S requirement iii. Avoid arguing with customer iv. Trustworthy during purchasing activities	10 hours	Demonstration & Observation	

30

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Perform Public Relation Activities	i. Interpersonal skill technique ii. Bussiness networking iii. Types of Advertisement Instrument • Electronic media • Newspaper • Flyers • Banner iii. Product knowledge			3 hours	Lecture	i. Interpersonal skill technique applied ii. Products advertised in media, flyers, banners as per SOP iii. Product knowledge enhanced iv. Potential business networking identified v. New client identified vi. Advertisement updated vii. Product knowledge updated
		i. Apply Interpersonal skill technique ii. Advertised product in electronic media, socialmedia, flyers, banner etc iii. Identify potential bussiness networking iv. Identify new client v. Update advertisement vi. Update product knoledge	*Attitude:* i. Meticulous in identifying reception activities handling. ii. Complied 5S requirement iii. Avoid arguing with customer iv. Trustworthy during purchasing activities	10 hours	Demonstration & Observation	

Employability Skills

Core Abilities
01.04 Analyze information 01.05 Utilize the internet to locate and gather information 01.06 Utilize word processor to process information 02.06 Write memos and letters 02.07 Utilize Local Area Network (LAN)/Internet to exchange information 02.08 Prepare pictorial and graphic information 03.08 Develop and maintain a cooperation within work group 04.01 Organize own work activities 04.02 Set and revise own objectives and goals 04.03 Organize and maintain own workplace 04.04 Apply problem solving strategies 04.05 demonstrate initiative and flexibility 06.05 Analyse technical systems 06.06 Monitor and correct performance of systems

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1.Computer 2.Internet 3.LCD projector	1:1 1:1 1:20

REFERENCES

1. Fundamental Electrical and Electronic Principles ; Taylor & Francis ; May 2012
2. Schaum's Outlines Of Electronic Device And Circuits, Second Edition; McGraw-Hill;Feb 2012-10-14
3. An Introduction To Electronic and Ionic Material; World Scientific ;Jan 1999.
4. Introduction To Communication Electronic Warfare Systems; artech House ; Feb 2002
5. A Practical Introduction To Analog And Digital Circuits; Daniel M. Kaplan ; Chistopher G. White.
6. Electronics ; B.Y Narayana Rao ; Kusum Anand ; Himalaya Publishing House
7. Understand Electronics ; Owen Bishop : Elsevier Science
8. Analog Electronic ; Ian Hickman; Elsevier Science ; June 1999
9. Audio Electronics ; John Linsley Hood ; Elsevier Science ; Nov 1998
10. Practical Electronics handbook ; Ian Sinclair ; John Dunton ; Elsevier Science ; Jan 2007
11. Electronic Business; Geoffrey Sampson; British Informatics Society Limited; June 2008
12. Electronic Markets; Craig Standing; Palgrave Macmillan Ltd; October 2009
13. The Electronic Financial Markets Of The Future; Lauren Liebenberg; Palgrave Macmillan Ltd; July 2002
14. Atkinson, P. (2004) Creating and implementing Lean Strategies Management Services.
15. Chase, Richard B., Aquilano, Nicholas J., Jacobs, F. Robert (1998) Production and Operations, Manufacturing and Services; Eight Edition, Irwin McGraw-Hill.
16. Hirano, H.(1995) 5S for Operators-5 Pillar of the visual workplace. New York: Productivity Press.
17. Slack, N., Chambers, S. And Johnston, R. (2010) Operations Management. Six edition, England. Pearson Education Limited.

CU ID	COMPETENCY UNIT TITLE	WORKS ACTIVITIES	RELATED KNOWLEDGE (A)	RELATED SKILLS (B)	HOURS (A+B)
CU 1	BASIC CELLULAR PHONE HARDWARE REPAIR	Troubleshoot Basic Hardware Fault	20	60	80
		Change Cellular Phone Component	20	50	70
		Test and Commission repaired Cellular Phone	20	50	70
CU 2	BASIC CELLULAR PHONE SOFTWARE REPAIR	Troubleshoot Cellular Phone Software Fault	20	60	80
		Flash Cellular Phone Software	20	50	70
		Test and Commission Repaired Cellular Phone	20	50	70
CU 3	WORKSHOP MANAGEMENT	Handle Stock inventory	5	20	25
		Update Stock Control	5	20	25
		Perform Work Scheduling	10	20	30
		Perform Sevice Operations Continuous Improvement	5	20	25
CU 4	CUSTOMER SUPPORT SERVICE (ELECTIVE)	Provide Customer service	4	10	14
		Perform Marketing and Promotions activities	3	10	13
		Perform Public Relation Activities	3	10	13
		TOTAL HOURS	165	400	565