Contents

What are Occupational Standards(OS)?

➢ OS describe what individuals need to do, know and understand in order to carry out a particular job role or function

➢ OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack- DAS Set-top Box Installer and Service Technician

SECTOR: ELECTRONICS

SUB-SECTOR: COMMUNICATION & BROADCASTING

OCCUPATION: AFTER SALES SERVICE

REFERENCE ID: ELE/Q8102

ALIGNED TO: NCO-2004/7243.45

DAS Set-top Box Installer and Service Technician: DAS Set-top box technician installs set-top boxes and provides after sales service for Digital Addressable System (DAS) type.

Brief Job Description: The individual at work installs the set-top box at customer's premises; addresses the field serviceable complaints and coordinates with the technical team for activation of new connections.

Personal Attributes: The individual must be willing to work in the field and travel through the day from one customer's premise to another. Punctuality, amenable behaviour, patience, good interpersonal relationship building, trustworthiness, integrity, and critical thinking are important attributes for this job.

| Qualifications Pack Code	ELE/Q8102		
Job Role	DAS Set-top-box Installer and Service Technician		
Credits(NVEQF/NVQF/NSQF) [OPTIONAL]	TBD	Version number	1.0
Sector	Electronics	Drafted on	19/07/13
Sub-sector	Communication & Broadcasting	Last reviewed on	24/03/14
Occupation	After Sales Service	Next review date	24/03/15

Job Role	DAS Set-top-box Installer and Service Technician
Role Description	Installing set-top box of DAS type at client's site, addressing complaints, providing field service, coordinating with technical team for activating new connections
NVEQF/NVQF level Minimum Educational Qualifications* Maximum Educational Qualifications*	4 8th passed ITI/Diploma (Electronics, Electrical)
Training	Not Applicable
Experience	2 years as helper for 8th/9th standard passed
Applicable National Occupational Standards (NOS)	Compulsory: 1. ELE/N8101 Install and repair DAS set-top box 2. ELE/N8102 Comprehend customer's requirement 3. ELE/N9951 Interact with other employees Optional: Not applicable
Performance Criteria	As described in the relevant OS units

National Occupational Standard
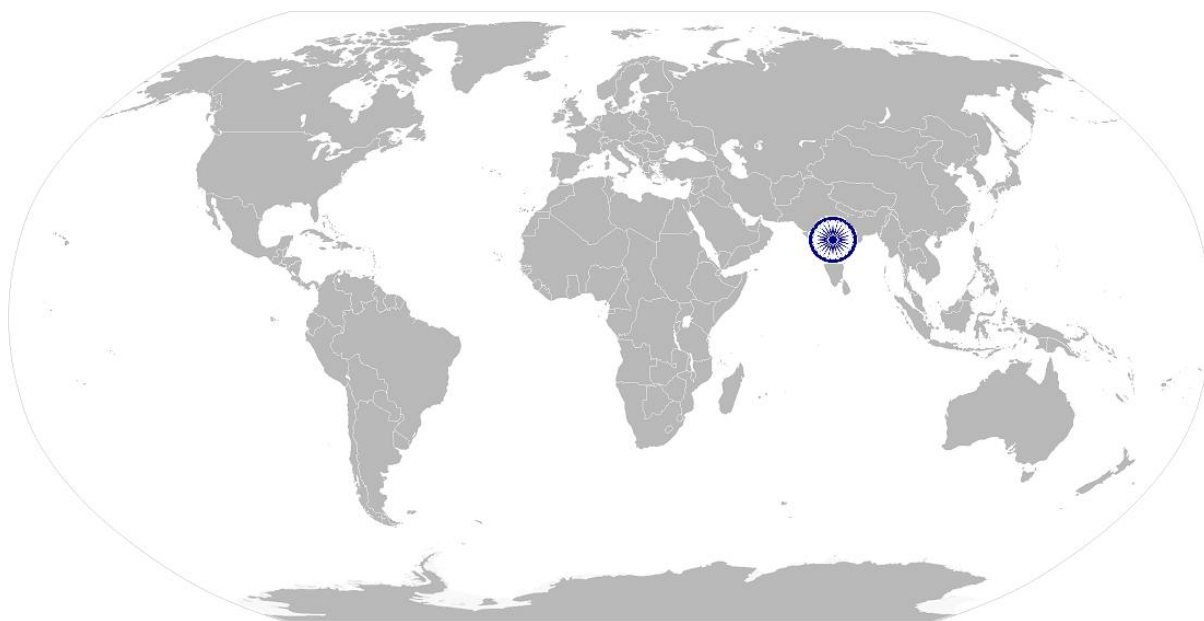
Overview

This unit is about installing set top box at customer's place and to addressing service related complaints.

ELE/N8101   **Install and repair DAS set top box**

Unit Code	ELE/N8101
Unit Title (Task)	**Install and repair DAS set top box**
Description	This unit is about installing set top box of DAS type at client's site, addressing service complaints and completing documentation
Scope	This unit/ task covers the following: • Collect the customer's site details and carry necessary equipment and products • Install the set top box (DAS) at customer's site • Provide field service and resolve faults in case of complaint • Collect documents and forms filled by customer as per company's policy • Achieve productivity and quality targets as prescribed by company

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Collecting customer details and carrying necessary equipment and products	To be competent, the user/ individual must be able to: PC1. understand the work order and site details of the customer from the superior and customer PC2. coordinate with stores department to collect the set box and other components or tools required for installation or servicing such as drilling machine, satellite meter, multi-meter
Installing DAS Set Top Box	To be competent, the user/ individual must be able to: PC3. install set top box and check RF signal strength for non-digital through cable PC4. check Digital Signal Strength and quality (MER, BER & Power) for digital PC5. check distribution circuit path from distribution point to end customer and rectify loose connections PC6. align distribution amplifier PC7. connect set top box with TV PC8. connect home theatre System with TV/ STB via HDMI, Audio/ Video/ Svideo/ SPDIF etc.
Servicing and resolving faults	To be competent, the user/ individual must be able to: PC9. identify the fault responsible for unsatisfactory/interrupted service by checking wire, signal strength, connectors, set top box PC10. check the AC Mains output with the help of multi-meter and check the external power supply (Adaptor DC Output) PC11. rectify the problem and resume uninterrupted service to the satisfaction of client PC12. fill in the technical report of the fault found in the defective set top box and send to the L2 service centre where it will repaired
Completing documentation	To be competent, the user/ individual must be able to: PC13. maintain opening and closing documents for collection of material and testing devices from the stores PC14. collect necessary forms such as Customer Registration and Program Authentication Form and submit to relevant departments in the company

ELE/N8101   **Install and repair DAS set top box**

	PC15. collect customer identity (ID) proof and Customer feedback form
Achieving productivity, quality and safety standards	To be competent, the user/ individual must be able to: PC16. achieve 100% installation and servicing as allotted PC17. rectify customer complaint at first visit itself PC18. ensure zero repetitive complaints PC19. ensure 100% complaints resolution PC20. minimize material consumed for resolving the complaint/fault PC21. carry out the work as per standards specified for the quality PC22. follow the safety standards as per company's policy PC23. ensure 100% functioning of the set top box such as Transponder, Signal Strength, Audio and Video quality, and Remote control
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The individual on the job needs to know and understand: KA1. company's quality policies/ vision on: Customer Handling, Turnaround Time (TAT), Commitment KA2. organization structure and process of other departments of importance KA3. importance of the individual's role in the organization KA4. reporting structure KA5. profiling of customers KA6. installation and activation policy KA7. service model of the company
B. Technical Knowledge	The individual on the job needs to know and understand: KB1. optimum signal strength/ signal quality for good reception KB2. basics of input/output functions and block diagram of the set top box KB3. functions of the set top box and remote control KB4. structure of cable, parameters and the implications on signal KB5. basic functioning of tuners KB6. basics of digital signals and difference in analogue and digital KB7. transmission of television signals and functioning of television sets KB8. specifications of different kind of inputs available on TV sets such as RF, AV, RGB, VGA, USB and HDMI KB9. digital signal processing chain including CAS and SMS KB10. basics of Digital TV signal distribution through HFC network including elements of fibre, coaxial chain and devices such as nodes, amplifier, taps, splitter, etc., from head ends to input point of consumer premises for DAS KB11. concepts of modulation, demodulation, encryption, decryption, decoding, signal ingress, cross modulation, tuning, amplifying, coupling, attenuation, equalisation, digitising, etc., and their purposes KB12. commonly used terms and their meanings such as ECM, EMM, EPG-SDT, MPEG KB13. frequently occurring faults, causes and solutions KB14. safety standards and practices to be followed while using power connection,

	stair to climb, first aid
	KB15. Quality of Service (QoS) and End of Line (EoL) parameters and optimum range as specified by IS13420
	KB16. parameters for digital signals, viz., MER, BER, C/N, CTV and CSO and proper recording of these for future reference
	KB17. output ports of all types of set top boxes and input/ output ports of compatible products such as LCD/ LED TV, Projectors, PCs
	KB18. connectivity of STB via additional device/ PC
	KB19. safety precautions to be followed while using set top box by customer

Skills (S)	
A. Core Skills/ Generic Skills	**Basic reading and writing skills**
	The individual on the job needs to know and understand how to:
	SA1. read warnings, instructions and other text material on product labels
	SA2. read job sheet and complaints
	SA3. read product operating manuals
	SA4. operate computers and software installed
	SA5. read and understand electrical and electronic symbols, multiples and SI units
	Documentation skills
	The individual on the job needs to know and understand:
	SA6. how to document completion note for customer
	SA7. how to record completion information in the ERP system
B. Professional Skills	**Communication skills**
	The individual on the job needs to know and understand:
	SB1. how to interact with customer to understand the problem faced
	SB2. how to market and sell accessories and products of the company
	SB3. importance of communicating in language
	SB4. precautions and etiquette while dealing with customer
	SB5. be polite, patient and punctual
	Using tools and machines
	The individual on the job needs to know and understand:
	SB6. to use hand tools such as lead tester, spanner, cutter, etc.
	SB7. to operate machines/meters such as RF strength meter, multi-meter, QAM meter, etc.
	Critical thinking
	The individual on the job needs to know and understand:
	SB8. to match symptoms of the fault noticed to the cause of the problem
	SB9. anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes

NOS Version Control

NOS Code	ELE/N8101		
Credits(NVEQF/NVQF/NSQF) [*OPTIONAL*]	TBD	Version number	1.0
Industry	Electronics	Drafted on	19/07/13
Industry Sub-sector	Communication & Broadcasting	Last reviewed on	24/03/14
		Next review date	24/03/15

National Occupational Standard

<u>Overview</u>

This unit is about interacting with customers to understand their service requirements.

ELE/N8102   **Comprehend customer's requirement**

Unit Code	ELE/N8102
Unit Title (Task)	Comprehend customer's requirement
Description	This OS unit is about interacting with customer to understand their requirement with respect to problem in the appliance
Scope	This unit/ task covers the following: • Interact with the customer prior to visit • Interact with customer at their premises • Suggest possible solutions to customer • Achieve productivity and quality as per company's norms

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Interacting with customer prior to visit	To be competent, the user/ individual must be able to: PC1. check customer complaint registered at customer care or installation schedule PC2. call customer to confirm problem and fix time for visit PC3. greet the customer and confirm the problem registered PC4. be polite and patient when interacting with customer PC5. check about warranty status of appliance and annual maintenance contract PC6. anticipate possible problems to carry tools and parts accordingly PC7. ascertain customer location in order to make the route plan for the day
Interacting with customer at their premises	To be competent, the user/ individual must be able to: PC8. enquire about the symptoms and history of problems in the appliance PC9. ask about the age of appliance and status of upkeep PC10. identify the problem based on customer's information PC11. communicate the problems identified and educate on possible reasons PC12. inform about costs involved
Suggesting solutions to customer	To be competent, the user/ individual must be able to: PC13. discuss the problem(s) identified with customer PC14. suggest possible solutions and costs involved PC15. explain the time required and methodology for servicing necessary PC16. seek customer's approval on further action
Achieving productivity and quality	To be competent, the user/ individual must be able to: PC17. accurately assess the problem and solution(s) necessary PC18. offer most appropriate and cost-effective service as per customer's requirement

ELE/N8102   **Comprehend customer requirement**

	PC19. communicate problem effectively in order to secure customer's confidence
	PC20. ensure customer satisfaction and positive feedback
	PC21. record minimum customer complaints post service
	PC22. avoid repeat problem post service
	PC23. prepare most optimum route plan to complete daily target visits

Knowledge and Understanding (K)

B. Organizational Context (Knowledge of the company / organization and its processes)	The individual on the job needs to know and understand: KA1. company's policies on: customer care KA2. company's code of conduct KA3. organisation culture and typical customer profile KA4. company's reporting structure KA5. company's documentation policy
B. Technical Knowledge	The individual on the job needs to know and understand: KB1. company's products and recurring problems reported in consumer appliances KB2. how to communicate with customers in order to put them at ease KB3. basic electrical and mechanical modules of various products KB4. electronics involved in the type of product KB5. models of different appliances and their common and distinguishing features KB6. etiquette to be followed at customer's premises KB7. precautions to be taken while handling field calls and dealing with customers KB8. relevant reference sheets, manuals and documents to carry in the field

Skills (S)

C. Core Skills/ Generic Skills	**Reading and writing skills**
	The individual on the job needs to know and understand: SA1. how to read product and module serial numbers and interpret details such as make, date, availability SA2. how to note problems on job sheet and details of work done
D. Professional Skills	**Interpersonal skills**
	The individual on the job needs to know and understand how: SB1. to put customer at ease and generate customer's confidence SB2. to listen carefully and interpret their statement of symptoms
	Communication skills
	The individual on the job needs to know and understand how: SB3. to seek inputs at assess the problems SB4. how to communicate in local language SB5. how to educate and inform customer about contractual issues such as warranty, cost of service and module replacement SB6. to educate on precautions to be taken post repairs to avoid recurrence of problem

ELE/N8102   **Comprehend customer requirement**

	Behavioural skills
	The individual on the job needs to know and understand: SB7. importance of personal grooming SB8. significance of etiquette such as maintaining the appropriate physical distance with customer during conversation, not entering bedroom without permission SB9. importance of being patient and courteous with all types of customers SB10. being polite and courteous under all circumstances SB11. importance of maintaining clean surface/work area
	Decision making skills
	SB12. decide on the spot on whether interaction of customer with supervisor is necessary or not SB13. when to call customer care and close the call after work is done to customer's satisfaction and documentation is complete

NOS Version Control

NOS Code	ELE/N8102		
Credits(NVEQF/NVQF/NSQF) [*OPTIONAL*]	TBD	Version number	1.0
Industry	Electronics	Drafted on	19/07/13
Industry Sub-sector	Communication & Broadcasting	Last reviewed on	24/03/14
		Next review date	24/03/15

National Occupational Standard

Overview

This unit is about the individual's level of communication with co employees and other departments within the organisation. It determines the ability to work as a team member to achieve the required deliverables on schedule.

National Occupational Standard

Unit Code	ELE/N9951
Unit Title (Task)	Interact with other employees
Description	This OS unit is about communicating with colleagues and seniors in order to achieve smooth work flow
Scope	This unit/ task covers the following: • Interact with supervisor or superior • Coordinate with colleagues

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Interacting with supervisor	To be competent, the user/ individual must be able to: PC1. understand work requirements, targets and incentives PC2. report problems identified in the field PC3. escalate customer concerns that cannot be handled on field PC4. resolve personnel issues PC5. receive feedback on work standards and customer satisfaction PC6. communicate any potential hazards at a particular location PC7. meet given targets PC8. deliver work of expected quality despite constraints PC9. have feedback from a happy and satisfied customer
Interacting with colleagues	To be competent, the user/ individual must be able to: PC10. resolve inter-personnel conflicts and achieve smooth workflow PC11. receive spares from tool room or stores PC12. deposit faulty modules and tools to stores PC13. pass on customer complaints to colleagues in a respective geographical area PC14. assist colleagues with resolving field problems PC15. clearly demarcate roles of each team member

Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The individual on the job needs to know and understand: KA1. company's policies on: incentives, delivery standards, and personnel management KA2. importance of the individual's role in the workflow KA3. reporting structure
B. Technical Knowledge	The individual on the job needs to know and understand: KB1. how to communicate effectively KB2. how to build team coordination

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Skills (S) [Optional]		
A. Core Skills/ Generic Skills	**Teamwork and multitasking**	
	The individual on the job needs to know and understand how: SA1. to deliver product to next work process on time	
B. Professional Skills	**Decision making**	
	The individual on the job needs to know and understand: SB1. how to report potential areas of disruptions to work process SB2. when to report to supervisor and when to deal with a colleague depending on the type of concern	
	Reflective thinking	
	The individual on the job needs to know and understand: SB3. how to improve work process	
	Critical thinking	
	The individual on the job needs to know and understand: SB4. how to spot process disruptions and delays	

NOS Version Control

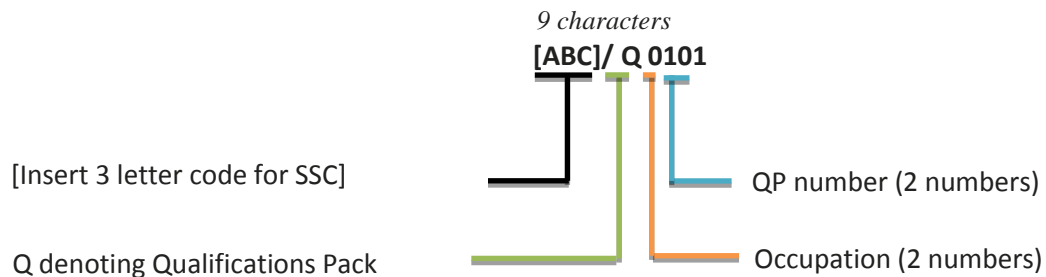| NOS Code	ELE/N9951		
Credits(NVEQF/NVQF/NSQF) [*OPTIONAL*]	TBD	Version number	1.0
Industry	Electronics	Drafted on	19/07/13
Industry Sub-sector	Communication & Broadcasting	Last reviewed on	24/03/14
		Next review date	24/03/15

Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or an area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-function	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (OS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding	Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.

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Core Skills/ Generic Skills	Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.

Acronyms

Keywords /Terms	Description
AC	Alternating current
AV	Audio visual
BER	Bit Error rate
CAS	Conditional Access System
CSO	Cable (TV) Service Operator
DAS	Digital Addressable System
DC	Direct current
DTH	Direct to home
ECM	Entitlement Control Message
EMM	Entitlement Management Message
EPG	Electronic Program Guide
HDMI	High Definition Multimedia Interface
HFC	Hybrid Fibre Coax
LNBC	Low Noise block down converter
MER	Modulation error ratio
MPEG	Moving Picture Experts Group
MSO	Multi-system Operator
NOS	National Occupational Standard(s)
NSQF	National Qualifications Framework
NVEQF	National Vocational Education Qualifications Framework
NVQF	National Vocational Qualifications Framework
QP	Qualifications Pack
RF	Radio frequency
RGB	Red Green Blue
S/PDIF	Sony, Philips Digital Interface
STB	Set top box
USB	Universal serial bus
VGA	Video Graphics Array

Annexure

Nomenclature for QP and NOS

Qualifications Pack

9 characters
[ABC]/ Q 0101

[Insert 3 letter code for SSC]

QP number (2 numbers)

Q denoting Qualifications Pack

Occupation (2 numbers)

Occupational Standard

An example of NOS with 'N'

9 characters
[ABC] /N0101

[Insert 3 letter code for SSC]

OS number (2 numbers)

N denoting National Occupational Standard

Occupation (2 numbers)
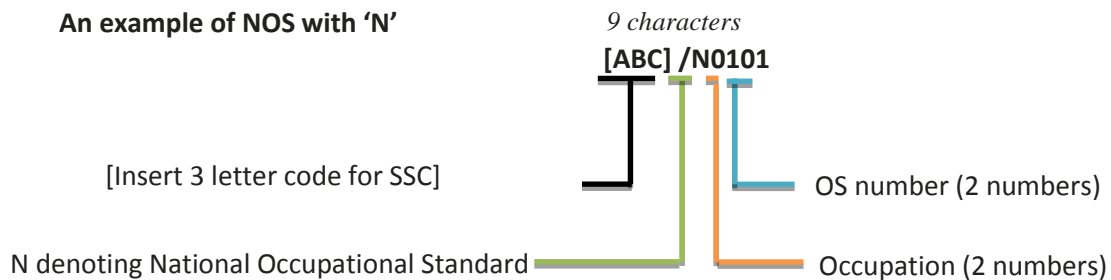
The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Passive Components	01 - 10
Semiconductors	11 - 20
PCB Manufacturing	21 - 30
Consumer Electronics	31 - 40
IT Hardware	41 - 50
PCB Assembly	51 - 55
Solar Electronics	56 - 60
Strategic Electronics	61 - 65
Automotive Electronics	66 - 70
Industrial Electronics	71 - 75
Medical Electronics	76 - 80
Communication Electronics	81 - 85
PCB Design	86 - 90
LED	91 - 95

Sequence	Description	Example
Three letters	Industry name	ELE
Slash	/	/
Next letter	Whether **Q**P or **N**OS	Q
Next two numbers	Occupation code	01
Next two numbers	OS number	01