

Summit **SKILLS**

Electrical and Electronic Servicing

National Occupational Standards

March 2008

Important note:

This document contains National Occupational Standards only.

For the delivery of an NVQ, evidence requirements, assessment guidance and an assessment strategy are required.

This document does not contain - and is not intended to contain - any information on either evidence or assessment.

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EES1. APPLY HEALTH & SAFETY LEGISLATION AND WORKING PRACTICES

UNIT DESCRIPTOR

This unit is about maintaining a healthy and safe working environment across the range of installation or maintenance work, this involves being able to use safe procedures when working with others and use safe working practices.

The person carrying out this work must possess the skills and knowledge to ensure that their own actions do not create any health and safety risks, they do not ignore hazards with significant risk in the workplace and that they take sensible action to put things right

There are many potential hazards within our industry. This unit is designed to ensure that those that work within it are aware of the potential dangers, likely hazards and where to source: safety information, appropriate regulations and apply them to the workplace and the people who operate within it.

This unit is about identifying the hazards and risks that are associated with the job. Typically these will focus on the working environment, the tools and equipment that are used, materials and substances that are used, working practices that do not follow laid-down procedures, and manual lifting and carrying techniques.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Apply Health & Safety legislation and working practices, so they

1. Identify which workplace health and safety procedures are relevant to their working environment and ensure that they comply with their duties and obligations as defined by current, relevant legislation
2. Present themselves in the workplace suitably prepared for the activities to be undertaken
3. Where appropriate, produce a risk assessment and method statement for the work to be carried out
4. Review their own working practices and working environment for hazards which could cause serious harm, including the handling of potentially hazardous items, such as materials, tools and equipment
5. Follow the workplace policies and suppliers' or manufacturers' instructions for the safe use and maintenance of tools, plant and equipment, where appropriate
6. Control those health and safety hazards within their capability and job responsibility limits
7. Report to the relevant persons responsible for health and safety in the workplace, those hazards which may present a high risk
8. Ensure personal conduct around the workplace does not endanger the health and safety of themselves or other persons
9. Follow correct procedures in the event of injuries to self and others

10. Take remedial action(s) where work methods do not comply with risk assessment requirements
11. Demonstrate work processes, production and installation processes which comply with health and risk assessment safety requirements
12. Comply with hazard warning and prohibition notices

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know, understand, and apply as appropriate:

- a) The roles and responsibilities of themselves and others under the Health and Safety at Work Act 1974 and other current legislation (e.g. The Management of Health and Safety at Work Regulations; Workplace Health and Safety and Welfare Regulations; Personal Protection at Work Regulations; Manual Handling Operations Regulations; Provision and Use of Work Equipment Regulations; Display Screen at Work Regulations; Construction (Design and Management) Regulations; Control of Noise at Work Regulations; Control of Asbestos Regulations 2006)

The person carrying out this work must know and understand:

- b) The particular health and safety risks which may be present in their own job role (the tools, materials and equipment that they use, not reporting accidental breakages of tools or equipment and not following laid-down working practices and procedures) and the requirements of current health and safety legislation for the range of work operations
- c) How to recognise potential asbestos containing materials in the workplace
- d) The procedures for dealing with a suspected presence of asbestos in the workplace
- e) Public health concerns associated with their workplace
- f) Safe practices when carrying out work
- g) How to locate relevant health and safety information for their tasks, and the sources of expert assistance when help is needed
- h) What constitutes a hazard in the workplace (such as electricity, slippery and uneven surfaces, dust and fumes, handling and transporting, contaminants and irritants, fire, working at height, environment, dangerous occurrences, hazardous malfunctions, improper use and storage of tools and equipment)
- i) The importance of remaining alert to the presence of hazards in the whole work place
- j) The responsible persons to whom to report health and safety matters
- k) Emergency procedures in the workplace, including procedures for summoning emergency services and the information they require, alarm and evacuation procedures, escape routes and fire fighting procedures
- l) The first aid facilities that exist within their work area and within the organisation in general, and the procedures to be followed in the case of accidents involving injury
- m) How to read, understand and work to, or produce, general risk assessments and method statements and how to apply them in the workplace

- n) The warning signs for the seven main groups of hazardous substances defined by Classification, Packaging and Labelling of Dangerous Substances Regulations
- o) Safety precautions including the protective clothing and equipment that is available for their areas of activity
- p) The methods of protecting customer's property within the types of locations in which installation or maintenance work is carried out and how to report damage arising from work operations, should this arise

Important note: According to the Health and Safety at Work Act:

Employers must safeguard so far as is reasonably practicable, the health, safety and welfare at work of all the people who work for them and 'other persons'. This applies in particular to the provision and maintenance of safe plant and systems of work, and covers all machinery, equipment and substances used.

Employees also have a duty under the Act to take reasonable care to avoid harm to themselves or to others by their working practices, and to co-operate with employers and others in meeting statutory requirements. The Act also requires employees not to interfere with or misuse anything provided to protect their health, safety or welfare in compliance with the Act.

The Health and Safety at Work Act 1974 is the main piece of legislation under which nearly all the other regulations are made. It is for this reason that only this piece of legislation is specifically referred to in this Unit.

EES2. APPLY ENVIRONMENTAL LEGISLATION, WORKING PRACTICES AND PRINCIPLES (ELECTRICAL AND ELECTRONIC SERVICING)

UNIT DESCRIPTOR

The unit covers a key area which focuses on the need for the person carrying out the work to adopt a positive attitude to using practices and procedures which protect the environment and promote efficient use of resources.

The person carrying out this work should be aware of the implications for the environment of work processes, and procedures, and where the job specification permits, should ensure that materials used minimise risks to the environment.

The person completing the work should also be aware of appropriate energy saving products or components and should be able to advise on how such technologies could be utilised.

They should be aware of how their work relates to the environment and that all waste materials produced as a result of their work and which are their responsibility to dispose of, are dealt with according to current, relevant legislation.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Apply environmental legislation and working practices within the workplace, so they:

1. Apply work procedures which are environmentally friendly
2. In accordance with organisational procedures, identify and report materials, products or equipment that could potentially cause damage to the environment
3. Ensure that relevant people are advised of all product or component operating procedures that are intended to protect the environment
4. Handle potentially hazardous materials in a manner which complies with health and safety requirements
5. Follow workplace procedures and current, relevant legislation for the safe handling, storage and disposal of hazardous materials and products
6. Identify working practices that may harm the environment

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know, understand, and apply as appropriate:

- a) The current, relevant legislation for dealing with waste (e.g. The Controlled Waste Regulations; Packaging Regulations; The Waste Electrical and Electronic Equipment Regulations (WEEE); The Special Waste Regulations; The Hazardous Waste Regulations)

The person carrying out the work must know and understand:

- b) Where relevant, Water Supply Regulations
- c) The potential implications for the environment of the work procedures used in installing or maintaining products or components
- d) Work methods that reduce material wastage
- e) The legislation or recommendations governing the safe use and disposal of hazardous materials
- f) The materials and products that are classed as hazardous to the environment and how to identify them
- g) Organisational procedures for the handling and disposal of hazardous materials and products
- h) The materials and products that are classed as recyclable, how to identify them, and organisational procedures for dealing with them
- i) The importance of reporting hazards to the environment that arise from work procedures within the scope of their area of responsibility and of ensuring that appropriate actions are taken
- j) All environmentally friendly materials, products and procedures
- k) The importance of energy, and where relevant water, efficiency considerations when selecting products or components
- l) The relevant information that needs to be passed to relevant people to ensure the correct and economical use of products or components
- m) The general advice that can be given on methods of reducing waste of resources, and effecting savings, including environmental technologies

EES3. MAINTAIN EFFECTIVE WORKING RELATIONSHIPS

UNIT DESCRIPTOR

This unit identifies the competences needed to contribute to the development and maintenance of positive working relationships with other people, in accordance with organisational requirements. It is about being positive and constructive in dealings with others, keeping others informed about work plans and activities that affect them by using effective communication skills.

This unit covers the responsibilities required to comply with any policies of the organisation such as contributing to and maintaining positive working relationships with other people.

The person carrying out this work should know how they can develop and maintain positive working relationships with relevant people and understand the importance of appearance and behaviour, the feelings and expectations of others, including customer, and effective communications.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Establish and maintain productive working relationships with relevant people, including dealing with disagreements in an amicable and constructive way, so that good relationships are maintained
2. Identify and confirm the needs and expectations of their colleagues and, where appropriate, customers.
3. Greet others in an appropriate way that makes them feel valued and respected
4. Keep others informed about work plans or activities which affect them or their work
5. Respond effectively to requests for job information from relevant people
6. Seek assistance from others in a polite and courteous way without causing undue disruption to normal working activities
7. Respond promptly and willingly when others ask for help or information which fall within the limits of their own job responsibilities and capabilities, referring to the appropriate person when requests for assistance fall outside their area of responsibility
8. Where appropriate, contribute actively to effective team working by co-operating with colleagues, using appropriate methods of communication
9. Identify conflicts which may cause problems to productivity and promptly seek solutions from the responsible person
10. Meet their organisations standards for appearance and behaviour.

KNOWLEDGE REQUIREMENTS:

The person carrying out this work must know and understand:

- a) Legislation regarding health and safety, data protection, equal opportunities and regulations that affect the way that products and services are delivered to customers
- b) Industrial, organisational and professional codes of practice and ethical standards that apply
- c) The actions that are necessary to begin, develop and maintain good working relationships
- d) The principles of good working relationships, reasons why working relationships may break down and the action to take to resolve this
- e) The importance of developing positive working relationships with relevant people and maintaining productivity – the effect on morale, productivity and company image
- f) How to deal with problems that could have an adverse effect on relationships
- g) How to respond to those with physical disabilities, learning difficulties and language differences (including dialects and accents)
- h) Their organisation's standards for appearance and behaviour
- i) Their customers' rights including any contractual agreements they have with their organisation
- j) The limits of their own authority, and when they need to seek agreement or permission from others, the roles and responsibilities of different individuals and the management structures within different organisations employing labour
- k) Any organisational targets relevant to their job, their role in meeting them, and the consequences for their organisation if those targets are not met
- l) How to communicate in a clear, polite, confident way, why this is important and the lines of communication that are available to them
- m) The importance of considering and accepting the views and opinions of other people
- n) The implications for their work and organisation of their own actions
- o) The implications for their organisation of not being able to communicate effectively with others, including customers
- p) The types of job information that may be required by others in the workplace, including, where relevant, the need to keep colleagues informed about their work when it might impact on theirs
- q) How to use the key principles of good communication in work situations, including methods of confirming that the communication has been understood

EES4. PROVIDE RELEVANT PEOPLE WITH TECHNICAL AND FUNCTIONAL INFORMATION

UNIT DESCRIPTOR

This unit is for people who pass on technical or functional information relating to equipment and components on which they have been working. It is about supplying technical and functional information accurately on appropriate occasions or at handover with the right amount of detail, bearing in mind the level of awareness of the person receiving the information.

It is about identifying who should receive such information, at what level of detail.

It requires that the person carrying out the work complies with, and works within, the policies and procedures of their organisation, and reports any problems to an appropriate person, seeking guidance and instructions from others when necessary.

This unit is about understanding the equipment and/or components and their operation to a depth adequate for carrying out effective familiarisation and demonstration procedures to the required standard.

It includes understanding the needs of a customer and assessing the customer's ability to operate the product. It is important that, where relevant, any Health & Safety aspects are explained to the customer, both for their own protection and for the safe operation of the equipment or components including how to isolate the equipment in the case of emergency and the appropriate contact details should they need further advice or help.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Identify the relevant people, such as customers, that need to be supplied with technical and functional information and ensure they have any other necessary information, such as safety information, how to isolate the product in case of emergency and the person's address or contact details for further advice or help
2. Discuss, with the relevant people, the information they need in order for the systems, equipment or components to be operated safely and effectively
3. Obtain from appropriate sources current and relevant information required for the work
4. Pass on information in a timely, courteous and professional manner and in accordance with organisational procedures
5. Confirm that the supplied product or equipment is the correct one or suitable for the purpose, working to its given specifications, meets the customers expectations and meets all the required safety standards
6. Where relevant, explain and demonstrate the operation of the product to the customer
7. Where relevant, ensure that the customer is able to operate the product and is aware of the necessary health and safety information and advice
8. Clearly identify any unusual features of the condition of the system, equipment or component

9. Where necessary, confirm that relevant people involved accept that the system or equipment is in a satisfactory condition for handover to take place

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) Sources of technical and functional information such as the manufacturer, supplier or own organisation
- b) Responsibilities and limitations in their job role with respect to supplying technical and functional information
- c) The technical and functional information that they are providing and its implications for the operation of equipment and components
- d) The organisational policy regarding the handover and demonstration of a product or equipment
- e) Where appropriate, customer relations methods and procedures
- f) Work site requirements (eg structural, services and ventilation)
- g) Product or equipment operation, controls, settings and adjustments
- h) Waste disposal procedures at the work site
- i) Alternative systems or equipment that could be more appropriate to the relevant person's needs
- j) Which situations warrant written technical and functional information
- k) The importance of providing information clearly, courteously and professionally
- l) The safety implications and functional consequences of supplying inaccurate or incomplete information to the relevant person
- m) Methods of checking the relevant person's understanding of the technical and non-technical information provided, including Health & Safety information
- n) Where necessary, the organisational procedures for confirming and recording handover

EES5. OVERSEE THE WORK ENVIRONMENT

UNIT DESCRIPTOR

This unit is about overseeing the work environment, which in some cases might involve overseeing the work of other operatives and/or other contractors. The person carrying out this work is responsible for ensuring that the work is effectively coordinated in order to complete the work on time and to the specification.

The person carrying out this work should know the extent of their role and responsibilities, including understanding how best to motivate and communicate with others.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Produce a risk assessment and method statement for the work to be carried out
2. Ensure the risk assessment and method statement includes others working in the area including work colleagues and any other operatives
3. Where appropriate, allocate duties and responsibilities to operatives to make best use of their competence
4. Where relevant, instruct the operatives about their duties and responsibilities clearly and concisely
5. Ensure that all their communications are clear, accurate and appropriate to the situation
6. Where relevant, ensure effective co-ordination with the work of other contractors
7. Where relevant, monitor that the work of operatives is in accordance with working practices and is:
 - safe and fit for purpose
 - cost-effective
 - within the programme of work and complies with industry standards
8. Ensure that safe and appropriate action is taken promptly where a non-compliance is identified during the programme of work
9. Ensure that all documentation is in accordance with the operations and organisational requirements and is legible, accurate and timely
10. Liaise with the responsible person to resolve issues which are outside the scope of their job role
11. Ensure that the work on completion is safe, complies with both the work specification and industry standards

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) Their role and responsibilities (e.g. Health and Safety) towards other staff, employer, customers, any sub-contractors and, where appropriate, when supervising others
- b) Safety requirements with regard to others and their ability to re-schedule work to co-ordinate with their requirements
- c) How to interpret a risk assessment, apply a method statement, and monitor changing conditions in the workplace
- d) Different styles of supervision, how to best motivate others and, where appropriate, oversee the work of operatives for whom they are responsible
- e) Where relevant, how to identify the competence of the operatives for whom they are responsible
- f) Where relevant, how to plan the work allocations, duties and responsibilities of operatives for whom they are responsible
- g) How to communicate with others including operatives and, where appropriate, other staff, employer, customers and any sub-contractors
- h) How to be effective when communicating with and responding to others
- i) The scope for carrying out the work whilst maintaining safety, cost effectiveness and remaining within the programme of work
- j) The relevant industry standards for work carried out in operations
- k) Organisational requirements for completing the necessary documentation and how to ensure clarity, accuracy and completion within schedule
- l) How to identify that the operation on completion is safe and complies with industry standards

EES6. ORGANISE THE WORKING ENVIRONMENT

UNIT DESCRIPTOR

This unit is about managing the working environment on site. It involves discussing with the relevant people a programme of work and estimating the amount of time the work should take to complete.

The person carrying out the work should identify and organise the appropriate resources for the work to be carried out, including identifying suitable alternatives when the most appropriate resources are not available. It also involves ensuring that equipment and components are in a condition fit for the installation or maintenance to be carried out.

This unit also covers ensuring that work is carried out safely and in accordance with the programme of work and industry standards, and making sure that all relevant documentation is completed accurately.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Identify from the work specification what resources (such as materials, plant, vehicles or equipment) are required in order to carry out the work efficiently and, where necessary, identify suitable alternatives
2. Discuss and agree a programme of work which includes, where necessary, effective co-ordination with the work of other contractors and make an accurate estimate of the time the job should take to complete
3. Ensure that all their communications are clear, accurate and appropriate to the situation
4. Confirm that the required amount and type of materials are available for work to commence and be completed cost effectively
5. Ensure that all resources are delivered on time and undamaged by transportation
6. Where appropriate, ensure that there is sufficient and appropriate provision for the safe storage of materials and equipment in the work location
7. Ensure that all documentation is completed in accordance with the operations and organisational requirements and is legible, accurate and timely
8. Liaise with the responsible person to resolve issues which are outside the scope of their job role
9. Ensure that the work on completion is safe, complies with both the work specification and industry standards

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) Their responsibilities to their employer and to their customer
- b) The scope, purpose and requirements of the work operations with which they are involved and for which they are responsible
- c) How to interpret a method statement, a risk assessment and monitor changing conditions in the workplace
- d) How to interpret the work specification to identify the required resources (such as materials, plant, vehicles or equipment)
- e) How to estimate the amount of time for completion of the work and the factors to take into account
- f) How to identify and agree a programme of work from the work specification
- g) How to communicate with others clearly and concisely
- h) The material schedule and how to confirm they have the right type and quantity for work to commence and be completed cost-efficiently
- i) Suitable alternative resources (such as tools, materials, equipment and components)
- j) The transport and storage requirements for all materials and how to manage the available storage in the work location
- k) Organisational requirements for completing the necessary documentation and how to ensure clarity, accuracy and completion within schedule
- l) The relevant industry standards for work carried out in operations
- m) The scope for carrying out the work whilst maintaining safety, cost effectiveness and remaining within the programme of work
- n) The possible consequences of not carrying out the work within the estimated time and to the programme of work
- o) Their job role and its scope and when to involve someone with higher responsibilities
- p) How to identify that the operation on completion is safe and complies with industry standards

EES7. INSTALL CONSUMER ELECTRONIC EQUIPMENT IN PREMISES

UNIT DESCRIPTOR

This unit is about installing consumer/commercial electronic equipment in customers' premises. The person carrying out this work will be required to observe the manufacturer's installation instructions and use the appropriate test equipment.

Their responsibilities will require them to comply with, and work within, the policies and procedures of their organisation, and to report any problems to an appropriate person. They will know when to seek guidance and instructions from others, and will take full responsibility for their own actions and for the accuracy of their work.

Their underpinning knowledge will provide a good understanding of the products being installed and their operation. It will include installation techniques and best practices, performance specifications for the product, and the correct and safe use of tools and test equipment. They will also understand the requirements of the customer, and will have a good understanding of the health and safety guidelines and relevant codes of practice that apply. Their underpinning knowledge will be of adequate depth to provide a sound basis for carrying out installation procedures to the required standard.

They will understand the safety precautions required when carrying out the installation. They will also understand their responsibilities for health and safety in their place of work, and the importance of taking the necessary safeguards to protect themselves and others when they are working.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Confirm the location of the product with the customer, that all necessary supplies are available and ensure there is a free path to the installation
3. Follow all the manufacturers instructions and specifications for the installation being carried out and ensure that the product matches the customer's order and expectations
4. Use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition
5. Install, position and secure the equipment and set top components in accordance with the specification and to the customer's satisfaction
6. Ensure that all necessary connections to the equipment and between the relevant set top products are complete and using the correct leads
7. Deal promptly and effectively with problems within their control and report those that cannot be solved
8. Check that the installation is complete and that all components are free from damage
9. Confirm that everyone involved accepts that the product or asset is in a satisfactory condition for handover to take place

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with consumer/commercial electronic equipment (including relevant codes of practice)
- b) Customer care procedures and techniques
- c) Installation site requirements (e.g., structural, services and ventilation)
- d) The importance of correct location of equipment
- e) The manufacturers' installation instructions and specifications for the product or system
- f) The correct method of installing the product or system, and for making the necessary connections
- g) Tests to be carried out to ensure that the product is fault free
- h) The operation and care of test equipment and tools
- i) Installation techniques and best practice
- j) Waste disposal procedures
- k) The basic operation of the product and its controls
- l) High definition television (e.g. 1080i, 1080p)
- m) The correct lead and connector to use for interconnection of units (e.g. Scart, HDMI, component video, A/V, iLink etc.)
- n) The need to isolate a live (TV) chassis before working on it
- o) The signal requirements of the product
- p) The operation and care of test equipment (e.g., multimeter, oscilloscope, test signal generator, etc.)
- q) The extent of their own responsibility and to whom they should report if they have problems that they cannot resolve

EES8. INSTALL ELECTRICAL DOMESTIC APPLIANCE EQUIPMENT IN CUSTOMERS' PREMISES

UNIT DESCRIPTOR

This unit identifies the competencies the person will need to install domestic appliances in customer's premises. The person carrying out this work will be required to observe the manufacturer's installation instructions and use the appropriate test equipment.

Their responsibilities will require them to comply with, and work within, the policies and procedures of their organisation, and to report any problems to an appropriate person. They will know when to seek guidance and instructions from others, and will take full responsibility for their own actions and for the accuracy of their work.

Their underpinning knowledge will provide a good understanding of the products being installed, and their operation, and will include installation techniques and best practices, performance specifications and the correct and safe use of tools and test equipment. They will also understand the requirements of the customer, and will have a good understanding of the health and safety guidelines and relevant codes of practice that apply. Their underpinning knowledge will be of adequate depth to provide a sound basis for carrying out installation procedures to the required standard.

They will understand the safety precautions required when carrying out the installation, especially when working with heavy equipment. They will also understand their responsibilities for health and safety in their place of work, and the importance of taking the necessary safeguards to protect themselves and others when they are working.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Follow all relevant drawings and specifications for the installation being carried out
3. Use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition
4. Install, position and secure the equipment and components in accordance with the specification
5. Ensure that all necessary connections to the equipment are complete
6. Deal promptly and effectively with problems within their control and report those that cannot be solved
7. Check that the installation is complete and that all components are free from damage
8. Confirm that everyone involved accepts that the product is in a satisfactory condition for handover to take place

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with domestic appliances (including relevant codes of practice)
- b) Customer care procedures and techniques
- c) Installation site requirements (e.g., structural, services and ventilation)
- d) The importance of correct location of equipment
- e) The manufacturers' installation instructions and specifications for the appliance
- f) The correct method of installing the appliance, and for making the necessary connections
- g) Tests to be carried out to ensure that the appliance is fault free, and connections are leak free
- h) Installation techniques and best practice
- i) Waste disposal procedures
- j) The basic operation of the appliance
- k) The need to ensure a good, properly bonded earth for the appliance
- l) The settings that can be adjusted, and their effect on performance
- m) The operation and care of tools and test equipment (e.g., multimeter, earth loop impedance tester, insulation resistance tester, etc)
- n) Water by-laws (when appropriate)
- o) The extent of their own responsibility and to whom they should report if they have problems that they cannot resolve

EES9. INSTALL SIGNAL RECEPTION EQUIPMENT IN CUSTOMERS' PREMISES

UNIT DESCRIPTOR

This unit identifies the competencies the person will need to install signal reception equipment (terrestrial digital antennas, satellite dish antennas, outlets, cable, etc). They will be required to observe the manufacturer's installation instructions and use the appropriate test equipment.

Their responsibilities will require them to comply with, and work within, the policies and procedures of their organisation, and to report any problems to an appropriate person. They will know when to seek guidance and instructions from others, and will take full responsibility for their own actions and for the accuracy of their work.

Their underpinning knowledge will provide a good understanding of the products being installed, and their operation, and will include installation techniques and best practices, performance specifications for systems, modules and products, and the correct and safe use of tools and test equipment. They will also understand the requirements of the customer, and will have a good understanding of the health and safety guidelines and relevant codes of practice that apply. Their underpinning knowledge will be of adequate depth to provide a sound basis for carrying out installation procedures to the required standard.

They will understand the safety precautions required when carrying out the installation, especially when working at heights or with heavy or powered equipment. They will also understand their responsibilities for health and safety in their place of work, and the importance of taking the necessary safeguards to protect themselves and others when they are working.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines including safe working at heights and the handling and fitting of large brackets
2. Confirm the location of the receiver with the customer, that all the necessary supplies are available and ensure that there is a free path to the installation
3. Follow all the manufacturers instructions and specifications for the installation being carried out and ensure that the product matches the customer's order and expectations
4. Confirm the position of the antenna, the cable run and the position of the outlets with the customer
5. Confirm that planning permission has been obtained for the installation (or confirm that it is not required) and ensure that the structure, or ground, is sound and suitable for antenna mounting
6. Use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition.
7. Install, position and secure the antenna and set top components in accordance with the specification and to the customer's satisfaction

8. Ensure that all necessary connections to the equipment and between the relevant set top products are complete and using the correct leads
9. Deal promptly and effectively with problems within their control and report those that cannot be solved.
10. Check that the installation is complete and that all components are free from damage.

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with signal reception equipment (including relevant codes of practice).
- b) Customer care procedures and techniques.
- c) Installation site requirements (e.g., structural).
- d) Planning permission requirements.
- e) The techniques for drilling masonry, especially on high structures.
- f) The safe use of power tools, and the voltage requirements when working outdoors.
- g) How to select and use the appropriate mechanical fixing devices.
- h) The range of fittings that could be used in the installation, and how to secure them.
- i) How to terminate coaxial cables and other cable types (e.g., aerial amplifier power cables).
- j) The importance of correct location of equipment.
- k) The manufacturer's installation instructions and specifications for the product or system.
- l) The correct method of installing the product or system, and for making the necessary connections.
- m) Tests to be carried out to ensure that the equipment and system is fault free.
- n) Installation techniques and best practice.
- o) The causes of ghosting and multi-path reception, and how to minimise them.
- p) Waste disposal procedures.
- q) The basic operation of signal reception systems and the signal levels expected at each outlet.
- r) Alignment methods for both satellite and terrestrial antenna.
- s) The causes of signal loss in a system (e.g., cable type and length, diplexers, outlets, etc).
- t) The operation and care of test equipment (e.g., spectrum analyser, signal level meter, etc) and tools.
- u) The extent of their own responsibility and to whom they should report if they have problems that they cannot resolve

EES10. INSTALL DISTRIBUTION NETWORKS IN PREMISES

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to install signal reception and distribution equipment (terrestrial antenna, satellite dish antenna, splitters, outlets, cabling, etc). They will be required to observe the manufacturer's installation instructions and use the appropriate test equipment.

Their responsibilities will require them to comply with, and work within, the policies and procedures of their organisation, and to report any problems to an appropriate person. They will know when to seek guidance and instructions from others, although they will be expected to work with a minimum of supervision, taking full responsibility for their own actions and for the accuracy of their work.

Their underpinning knowledge will provide a good understanding of the products being installed, and their operation. It will include installation techniques and best practices, performance specifications for systems and their component parts and the correct and safe use of tools and test equipment. They will also understand the requirements of the customer, and will have a good understanding of the health and safety guidelines and relevant codes of practice that apply. Their underpinning knowledge will be of adequate depth to provide a sound basis for carrying out installation procedures to the required standard.

They will understand the safety precautions required when carrying out the installation, especially when working at heights or with heavy or powered equipment. They will also understand their responsibilities for health and safety in their place of work, and the importance of taking the necessary safeguards to protect themselves and others when they are working.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines including safe working at heights and the handling and fitting of large brackets
2. Confirm the location of the outlets with the customer, that all necessary supplies are available and that the area is safe and ready for the installation
3. Follow all the manufacturers instructions and specifications for the installation being carried out, ensure that all the component parts are present and correct and that the product matches the customer's order and expectations
4. Confirm that planning permission has been obtained for the installation (or confirm that it is not required) and ensure that the structure, or ground, is sound and suitable for antenna mounting
5. Use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition
6. Install the network in the appropriate premises (e.g. hotel or multiple-dwelling units, such as a block of flats or apartment)
7. Ensure that all connections are correctly made and terminated and that the correct signal levels are available at every stage and outlet

8. Deal promptly and effectively with problems within their control and report those that cannot be solved
9. Confirm that everyone involved accepts that the network is complete, all components are free from damage and in a satisfactory condition for handover to take place

KNOWLEDGE REQUIREMENTS

The person carrying out the work must know and understand:

- a) The specific safety precautions to be taken when working with signal reception equipment (including relevant codes of practice)
- b) Customer care requirements
- c) Installation site requirements (e.g., structural, services and ventilation)
- d) The importance of correct location of distribution equipment
- e) The correct operation and use of the spectrum analyser
- f) The design of a distribution system to give the correct signal levels relevant to each stage of the system
- g) The design, operation and calibration of frequency conversion equipment
- h) The causes of signal loss in a network distribution system (e.g., cable type and length, splitters, outlets, etc)
- i) Installation and alignment methods for both satellite and terrestrial antenna
- j) The manufacturers' installation instructions and specifications for the equipment or system
- k) The operation and use of network distribution components (e.g., amplifiers, splitters, outlets, etc)
- l) The correct method of installing the equipment or system, and for making the necessary connections
- m) Tests to be carried out to ensure that the distribution system is working correctly
- n) The operation and care of test equipment and tools (e.g., spectrum analyser, signal level meter, etc)
- o) Installation techniques and best practice
- p) Waste disposal procedures
- q) The extent of their own responsibility and to whom they should report if they have problems that they cannot resolve

EES11. CARRY OUT PREVENTATIVE MAINTENANCE PROCEDURES

UNIT DESCRIPTOR

This unit identifies the competencies the person will need to carry out preventive maintenance on domestic appliances, consumer electronic equipment or signal reception equipment or systems. They will be required to implement the preventive maintenance procedures in compliance with the manufacturer's instructions, to use the appropriate test equipment, and to restore the appliance to normal operation at the end of the work.

Their responsibilities will require them to comply with any policies and procedures of their service organisation in respect of maintenance procedures, and to report any problems to an appropriate person. They must ensure that all necessary company documentation is completed accurately and legibly. They will be expected to work within the general policies of their service organisation, and to know when to seek guidance and instructions from others, taking full responsibility for their own actions and for the quality and accuracy of their own work.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying preventive maintenance procedures. They will understand the operating principles of the product, systems or equipment, the installation procedures, codes of practice and preventive maintenance procedures, in adequate depth to provide a sound basis for carrying out the activities to the required standard. In addition, they will be expected to report where the outcome identifies the need for further investigation or maintenance work.

The person carrying out this work will understand the safety precautions required when carrying out the maintenance activities, especially those for isolating the equipment. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Follow the relevant maintenance schedules to carry out the required work
3. Carry out the maintenance activities within the limits of their personal authority
4. Carry out the maintenance activities in the specified sequence and in an agreed time scale
5. Report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
6. Complete relevant maintenance records accurately and pass them on to the appropriate person
7. Dispose of waste materials in accordance with safe working practices and approved procedures

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when preventing faults through preventive maintenance procedures
- b) The use of workshop manuals and maintenance procedures
- c) Customer care procedures and techniques
- d) Component or module replacement methods and techniques
- e) The requirements for handling specific components or modules (e.g., static-sensitive components)
- f) The correct tools and equipment required for the work in hand
- g) The company documentation required for service procedures
- h) Waste disposal procedures (including ownership and advice to customers)
- i) Disassembly and reassembly procedures for the product or system
- j) The product or system specification
- k) Faults that can be prevented by maintenance and those that can not
- l) The extent of their own responsibility and to whom they should report if they have problems that they cannot resolve

The following specific knowledge will also be required in relation to Signal Reception

- m) Alignment methods for both satellite and terrestrial antenna
- n) The cause of signal loss in a system (e.g., cable type and length, diplexers, outlets, etc)
- o) The operation and care of test equipment (e.g., spectrum analyser, signal level meter, etc)

The following specific knowledge will also be required in relation to Consumer/Commercial Electronics

- p) Basic operation of the product stage by stage
- q) The need to isolate a live (TV) chassis before working on it
- r) The signal requirements of the product
- s) The operation and care of test equipment (e.g., multimeter, oscilloscope, function generator, etc)

The following specific knowledge will also be required in relation to Domestic Appliance Servicing

- t) The basic operational principles of the modules contained in the appliance (motors, pumps, water valves, heaters, processors, etc)
- u) The sequence in which the appliance operates

- v) The need to ensure a good, properly bonded earth for the appliance
- w) The service requirements of the product
- x) Appliance settings that can be adjusted
- y) The operation and care of test equipment (e.g., multimeter, earth loop impedance tester, insulation resistance tester, etc)
- z) Gas legislation and water by-laws (when appropriate)

EES12. DIAGNOSE FAULTS IN CONSUMER ELECTRONIC EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to diagnose faults in consumer electronic equipment, in accordance with approved procedures. They will be required to use logical service techniques, and to select and use the appropriate test equipment.

Their responsibilities will require them to comply with, and work within, the policies and procedures of their service organisation, and to report any problems to an appropriate person. They will know when to seek guidance and instructions from others, and will take full responsibility for their own actions and for the accuracy of their work.

Their underpinning knowledge will provide a good understanding of the equipment being serviced, together with its operation, installation requirements and relevant codes of practice, in adequate depth to provide a sound basis for carrying out the servicing activities to the required standard.

They will understand the safety precautions required when carrying out the fault diagnosis activities, especially those for isolating a live TV chassis. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Review and use all relevant information on the symptoms and problems associated with the equipment
3. Investigate and establish the most likely causes of the faults
4. Select, use and apply diagnostic techniques, tools and aids to locate faults
5. Complete the fault diagnosis within the agreed time and inform the appropriate people when this cannot be achieved
6. Determine the implications of the fault for other work and for safety considerations
7. Use the evidence gained to draw valid conclusions about the nature and probable cause of the fault
8. Record details on the extent and location of the faults in an appropriate format

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with consumer electronic equipment
- b) The safety issues relating to working on live equipment at the customer's premises
- c) The codes of practice that apply to the type of equipment or system being diagnosed
- d) Customer care procedures and techniques
- e) The correct soldering techniques for the work in hand
- f) The risk of faults reoccurring, and how to minimise this
- g) The use of workshop manuals and other appropriate sources of information
- h) Hazards associated with carrying out fault diagnosis on electrical equipment (live electrical components or chassis, stored energy, misuse of tools), and how they can be minimised
- i) How to use the various aids, reports and sources of information available for fault diagnosis
- j) How to use various items of fault diagnostic equipment to investigate the problem
- k) The proper use and care of tools and equipment
- l) The various fault finding techniques that can be used, and how they are applied (such as half-split, input-to-output, function testing, injection and sampling techniques and equipment self-diagnostics)
- m) How to obtain and interpret drawings, circuit diagrams, manufacturers' manuals, and other documents needed for the fault diagnosis process
- n) The company documentation for recording the outcomes of servicing activities
- o) Basic operation of the product, stage by stage
- p) The need to isolate a live (TV) chassis before working on it
- q) The signal requirements of the product
- r) The operation and care of test equipment (e.g., multimeter, oscilloscope, function generator, etc)
- s) The extent of their own authority and whom they should report to if they have problems that they cannot resolve

EES13. DIAGNOSE AND ANALYSE FAULTS IN CONSUMER ELECTRONIC EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out the work needs to carry out efficient and effective fault diagnosis on consumer electronic equipment, in accordance with approved procedures. They will be required to diagnose faults on equipment using a variety of fault diagnosis methods and techniques, and to utilise a number of diagnostic aids and test equipment. From the evidence gained, they will be expected to identify the fault and to determine its probable cause. They also are expected to identify the most appropriate action to remedy the problem.

Their responsibilities will require them to comply with organisational policy and procedures for the fault diagnostic activities undertaken, and to report any problems with these activities (or the tools and equipment used) that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work with a minimum of supervision, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying fault diagnosis procedures on electronic equipment. They will understand the various fault diagnosis methods and techniques used, and their application. They will also know how to interpret and apply information obtained from the diagnostic aids and test equipment, in adequate depth to provide a sound basis for identifying faults or conditions that are outside the required specification.

They will understand the safety precautions required when carrying out the fault diagnosis activities, especially those for isolating a live TV chassis. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Review and use all relevant information on the symptoms and problems associated with the equipment
3. Investigate and establish the most likely causes of the faults including intermittent and reduced performance faults
4. Select, use and apply diagnostic techniques, tools and aids to locate faults
5. Complete the fault diagnosis within the agreed time and inform the appropriate people when this cannot be achieved
6. Determine the implications of the fault for other work and for safety considerations
7. Use the evidence gained to draw valid conclusions about the nature and probable cause of the fault
8. Record details on the extent and location of the faults in an appropriate format

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with electronic equipment
- b) The safety issues relating to working on live equipment at the customer's premises
- c) The codes of practice that apply to the type of equipment or system being diagnosed
- d) Customer care procedures and techniques
- e) The correct soldering techniques for the work in hand
- f) The risk of faults reoccurring, and how to minimise this
- g) The use of workshop manuals and other appropriate sources of information
- h) Hazards associated with carrying out fault diagnosis on electrical equipment (live electrical components, stored energy, misuse of tools), and how they can be minimised
- i) The procedure to be adopted to establish the background of the fault
- j) How to evaluate the various types of information available for fault diagnosis
- k) How to use the various aids, reports and sources of information available for fault diagnosis
- l) How to use various items of fault diagnostic equipment to investigate the problem
- m) The various fault finding techniques that can be used, and how they are applied (such as half-split, input-to-output, function testing, injection and sampling techniques and equipment self-diagnostics)
- n) How to analyse evidence and evaluate possible characteristics and causes of specific faults/problems
- o) How to relate previous reports/records of similar fault conditions
- p) How to calibrate electrical test instruments and check that they are free from damage and defects
- q) How to obtain and interpret drawings, circuit and physical layouts, charts, specifications, manufacturers' manuals, history/maintenance reports and other documents needed in the service process
- r) The basic principles of how the circuit functions, the operating sequence, the purpose of individual units/components and how they interact
- s) How to prepare a report or take follow-up action which satisfies the company policy on concluding fault diagnosis
- t) The theory relating to the operation of the product, stage by stage
- u) The need to isolate a live (TV) chassis before working on it
- v) The signal requirements of the product

- w) The operation and care of test equipment (e.g., multimeter, oscilloscope, function generator, etc)
- x) The extent of their own authority and whom they should report to if they have problems that they cannot resolve

EES14. DIAGNOSE FAULTS IN ELECTRICAL DOMESTIC APPLIANCE EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to diagnose faults in domestic appliances, in accordance with approved procedures. They will be required to use logical service techniques, and to select and use the appropriate test equipment.

Their responsibilities will require them to comply with, and work within, the policies and procedures of their service organisation, and to report any problems to an appropriate person. They will know when to seek guidance and instructions from others, and will take full responsibility for their own actions and for the accuracy of their work.

Their underpinning knowledge will provide a good understanding of the appliance being serviced, together with its operation, installation requirements and relevant codes of practice, in adequate depth to provide a sound basis for carrying out the servicing activities to the required standard.

They will understand the safety precautions required when carrying out the fault diagnosis activities, especially those for correct earthing requirements. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Review and use all relevant information on the symptoms and problems associated with the products or assets
3. Investigate and establish the most likely causes of the faults
4. Select, use and apply diagnostic techniques, tools and aids to locate faults
5. Complete the fault diagnosis within the agreed time and inform the appropriate people when this cannot be achieved
6. Determine the implications of the fault for other work and for safety considerations
7. Use the evidence gained to draw valid conclusions about the nature and probable cause of the fault
8. Record details on the extent and location of the faults in an appropriate format

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with domestic appliance
- b) The safety issues relating to working on live equipment at the customer's premises
- c) The codes of practice that apply to the type of equipment or system being diagnosed
- d) Customer care procedures and techniques
- e) The risk of faults reoccurring, and how to minimise this
- f) The use of workshop manuals and other appropriate sources of information
- g) Hazards associated with carrying out fault diagnosis on electrical equipment, and how they can be minimised
- h) How to use the various aids, reports and sources of information available for fault diagnosis
- i) How to use various items of fault diagnostic equipment to investigate the problem
- j) The proper use and care of tools and equipment
- k) The various fault finding techniques that can be used, and how they are applied (input-to-output, function testing and equipment self-diagnostics)
- l) How to obtain and interpret drawings, circuit diagrams, manufacturers' manuals, and other documents needed for the fault diagnosis process
- m) The company documentation for recording the outcomes of servicing activities
- n) The operational principles of the modules contained in the appliance (motors, pumps, water valves, heaters, processors etc.)
- o) The sequence in which the appliance operates
- p) The need to ensure a good, properly bonded earth for the appliance
- q) The service requirements of the product
- r) The operation and care of test equipment (e.g., multimeter, earth loop impedance tester, insulation resistance tester, etc)
- s) Gas legislation and water by-laws (when appropriate)
- t) The extent of their own authority and whom they should report to if they have problems that they cannot resolve

EES15. DIAGNOSE AND ANALYSE FAULTS IN ELECTRICAL DOMESTIC APPLIANCE EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to carry out efficient and effective fault diagnosis on domestic appliances in accordance with approved procedures. They will be required to diagnose faults on appliances using a variety of fault diagnosis methods and techniques, and to utilise a number of diagnostic aids and test equipment. From the evidence gained, they will be expected to identify the fault and to determine its probable cause. They will also be expected to identify the most appropriate action to remedy the problem.

Their responsibilities will require them to comply with organisational policy and procedures for the fault diagnostic activities undertaken, and to report any problems with these activities (or the tools and equipment used) that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work with a minimum of supervision, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying fault diagnosis procedures on electrical/electronic equipment. They will understand the various fault diagnosis methods and techniques used, and their application. They will also know how to interpret and apply information obtained from the diagnostic aids and test equipment, in adequate depth to provide a sound basis for identifying faults or conditions that are outside the required specification.

They will understand the safety precautions required when carrying out the fault diagnosis activities, especially those for correct earthing requirements. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Review and use all relevant information on the symptoms and problems associated with the products or assets
3. Investigate and establish the most likely causes of the faults
4. Select, use and apply diagnostic techniques, tools and aids to locate faults
5. Complete the fault diagnosis within the agreed time and inform the appropriate people when this cannot be achieved
6. Determine the implications of the fault for other work and for safety considerations
7. Use the evidence gained to draw valid conclusions about the nature and probable cause of the fault
8. Record details on the extent and location of the faults in an appropriate format

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with electrical equipment
- b) The safety issues relating to working on live equipment at the customer's premises
- c) The codes of practice that apply to the type of equipment or system being diagnosed
- d) Customer care procedures and techniques
- e) The correct soldering techniques for the work in hand
- f) The risk of faults reoccurring, and how to minimise this
- g) The use of workshop manuals and other appropriate sources of information
- h) Hazards associated with carrying out fault diagnosis on domestic equipment (live electrical components, stored energy, misuse of tools, water or gas leaks, rotating parts, etc), and how they can be minimised
- i) The procedure to be adopted to establish the background of the fault
- j) How to evaluate the various types of information available for fault diagnosis
- k) How to use the various aids, reports and sources of information available for fault diagnosis
- l) How to use various items of fault diagnostic equipment to investigate the problem
- m) The various fault finding techniques that can be used, and how they are applied (input-to-output, function testing, injection and equipment self-diagnostics)
- n) How to analyse evidence and evaluate possible characteristics and causes of specific faults/problems
- o) How to relate previous reports/records of similar fault conditions
- p) How to calibrate electrical test instruments and check that they are free from damage and defects
- q) How to obtain and interpret drawings, circuit and physical layouts, charts, specifications, manufacturers' manuals, history/maintenance reports, graphical electrical symbols, IEE wiring regulations, and other documents needed in the service process
- r) The basic principles of how the appliance functions, the operating sequence, the purpose of individual units/components and how they interact
- s) How to prepare a report or take follow-up action which satisfies the company policy on concluding fault diagnosis
- t) The need to ensure a good, properly bonded earth for the appliance
- u) The service requirements of the product
- v) The operation and care of test equipment (e.g., multimeter, earth loop impedance tester, insulation resistance tester, etc)

- w) Gas legislation and water by-laws (when appropriate)
- x) The extent of their own authority and whom they should report to if they have problems that they cannot resolve

EES16. DIAGNOSE FAULTS IN SIGNAL RECEPTION SYSTEMS

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to diagnose faults in signal reception equipment or systems, in accordance with approved procedures. They will be required to use logical service techniques, and to select and use the appropriate test equipment.

Their responsibilities will require them to comply with, and work within, the policies and procedures of their service organisation, and to report any problems to an appropriate person. They will know when to seek guidance and instructions from others, and will take full responsibility for their own actions and for the accuracy of their work.

Their underpinning knowledge will provide a good understanding of the system being serviced, together with its operation, installation requirements and relevant codes of practice, in adequate depth to provide a sound basis for carrying out the servicing activities to the required standard.

They will understand the safety precautions required when carrying out the fault diagnosis activities, especially those for working at heights. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines including safe working at heights
2. Review and use all relevant information on the symptoms and problems associated with the system
3. Investigate and establish the most likely causes of the faults
4. Select, use and apply diagnostic techniques, tools and aids to locate faults
5. Complete the fault diagnosis within the agreed time and inform the appropriate people when this cannot be achieved
6. Determine the implications of the fault for other work and for safety considerations
7. Use the evidence gained to draw valid conclusions about the nature and probable cause of the fault
8. Record details on the extent and location of the faults in an appropriate format

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with signal reception equipment
- b) The safety issues relating to working on live equipment at the customer's premises
- c) The codes of practice that apply to the type of equipment or system being diagnosed
- d) Customer care procedures and techniques
- e) The correct soldering techniques for the work in hand
- f) The risk of faults reoccurring, and how to minimise this
- g) The use of workshop manuals and other appropriate sources of information
- h) Hazards associated with carrying out fault diagnosis on electrical equipment, and how they can be minimised
- i) How to use the various aids, reports and sources of information available for fault diagnosis
- j) How to use various items of fault diagnostic equipment to investigate the problem
- k) The proper use and care of tools and equipment
- l) The various fault finding techniques that can be used, and how they are applied (e.g., input-to-output, function testing)
- m) How to obtain and interpret drawings, circuit diagrams, manufacturers' manuals, and other documents needed for the fault diagnosis process
- n) The company documentation for recording the outcomes of servicing activities
- o) Alignment methods for both satellite and terrestrial antenna
- p) The characteristics of antennas and dishes
- q) The causes of ghosting and multi-path reception, and how to minimise them
- r) The causes of signal loss in a system (e.g., cable type and length, diplexers, outlets, etc)
- s) The operation and care of test equipment (e.g., spectrum analyser, signal level meter, etc)
- t) The extent of their own authority and to whom they should report if they have problems that they cannot resolve

EES17. DIAGNOSE AND ANALYSE FAULTS IN SIGNAL RECEPTION NETWORKS

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to carry out efficient and effective fault diagnosis on signal reception networks, in accordance with approved procedures. They will be required to diagnose faults on these networks using a variety of fault diagnosis methods and techniques, and to utilise a number of diagnostic aids and test equipment. From the evidence gained, they will be expected to identify the fault and to determine its probable cause. They will also be expected to identify the most appropriate action to remedy the problem.

Their responsibilities will require them to comply with organisational policy and procedures for the fault diagnostic activities undertaken, and to report any problems with these activities (or the tools and equipment used) that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work with a minimum of supervision, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying fault diagnosis procedures on signal reception networks. They will understand the various fault diagnosis methods and techniques used, and their application. They will also know how to interpret and apply information obtained from the diagnostic aids and test equipment, in adequate depth to provide a sound basis for identifying faults or conditions that are outside the required specification.

They will understand the safety precautions required when carrying out the fault diagnosis activities, especially those for working at heights. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines including safe working at heights
2. Plan the fault diagnosis based on the available information about the fault
3. Carry out the fault diagnosis activities to component or module level, using approved procedures
4. Collect fault diagnosis evidence from 'live' and isolated circuits, disconnecting parts of the network, when appropriate, to confirm the diagnosis
5. Select, use and apply diagnostic techniques, tools and aids to locate faults
6. Identify the fault and determine appropriate corrective action
7. Complete the fault diagnosis within the agreed time and inform the appropriate people when this cannot be achieved
8. Determine the implications of the fault for other work and for safety considerations
9. Use the evidence gained to draw valid conclusions about the nature and probable cause of the fault

10. Record details on the extent and location of the faults in an appropriate format

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with signal reception equipment and networks
- b) The safety issues relating to working on live equipment at the customer's premises
- c) The codes of practice that apply to the type of equipment or system being diagnosed
- d) Customer care procedures and techniques
- e) The correct soldering techniques for the work in hand
- f) The risk of faults reoccurring, and how to minimise this
- g) The use of workshop manuals and other appropriate sources of information
- h) Hazards associated with carrying out fault diagnosis on electrical equipment (live electrical components, stored energy, misuse of tools), and how they can be minimised
- i) The procedure to be adopted to establish the background of the fault
- j) How to evaluate the various types of information available for fault diagnosis
- k) How to use the various aids, reports and sources of information available for fault diagnosis
- l) How to use various items of fault diagnostic equipment to investigate the problem
- m) The various fault finding techniques that can be used, and how they are applied (such as half-split, input-to-output, function testing, injection and sampling techniques and equipment self-diagnostics)
- n) How to analyse evidence and evaluate possible characteristics and causes of specific faults/problems
- o) How to relate previous reports/records of similar fault conditions
- p) How to calibrate electrical test instruments and check that they are free from damage and defects
- q) How to obtain and interpret drawings, circuit and physical layouts, charts, specifications, manufacturers' manuals, history/maintenance reports and other documents needed in the service process
- r) The basic principles of how the network functions, the purpose of individual units/components and how they interact
- s) How to prepare a report or take follow-up action which satisfies the company policy on concluding fault diagnosis
- t) The design of signal reception systems and the signal levels expected at each outlet
- u) Alignment methods for both satellite and terrestrial antenna

- v) The causes of signal loss in a system (e.g., cable type and length, duplexers, outlets, etc)
- w) The operation and care of test equipment (e.g., spectrum analyser, signal level meter, etc)
- x) The extent of their own authority and to whom they should report if they have problems that they cannot resolve

EES18. REPLACE COMPONENTS IN CONSUMER ELECTRONIC EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to rectify faults in consumer electronic equipment, by replacing (i.e., removing and replacing) faulty components and/or by making adjustments to components to bring the product back to full working order, in accordance with approved procedures. They will be required to ensure that any replacement parts are correct for their intended purpose, that they meet any safety requirements, and are fitted without damage.

Their responsibilities will require them to comply with organisational policy and procedures for the replacement of identified components and the associated work to be undertaken, and to report any problems with the components or assemblies to the relevant authority. They will be expected to know when to seek guidance and instruction from others, taking full responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of the product, together with its operation, installation procedures and relevant codes of practice, in adequate depth to provide a sound basis for carrying out servicing activities to the required standard.

They will understand the safety precautions required when carrying out the component replacement activities, especially those for isolating the equipment. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Obtain all the required components and ensure that they are in a suitable condition for replacement and fit for purpose
3. Ensure that any replacement components used, including safety components meet the required specification
4. Take adequate precautions to prevent damage to components, tools and equipment during replacement
5. Replace the components in the correct sequence using appropriate tools and techniques
6. Make any necessary settings or adjustments to the equipment to ensure that it is within the normal operating specification and meets the customer's expectation
7. Deal promptly and effectively with problems within their control and report those that cannot be solved
8. Maintain documentation in accordance with organisational requirements

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working consumer electronic equipment
- b) The safety issues relating to working on live equipment at the customer's premises
- c) Customer care procedures and techniques
- d) How to use workshop manuals and interpret circuit diagrams, mechanical and component drawings
- e) Component replacement techniques and safety precautions (e.g., de-soldering, soldering)
- f) The correct soldering techniques for the work in hand
- g) Appropriate component handling and disposal precautions (e.g., for static sensitive components)
- h) Component operating conditions and any associated hazards (e.g., stored electrical or mechanical energy)
- i) How to select and use the correct tools and equipment for the work in hand
- j) Tool and equipment care and control procedures
- k) Product specifications, and the tests needed to confirm that they are being met
- l) The company documentation required for service procedures
- m) Waste disposal procedures including ownership and advice to customers
- n) Basic operation of the product, stage by stage
- o) The need to isolate a live (TV) chassis before working on it
- p) The signal requirements of the product
- q) The operation and care of test equipment (e.g., multimeter, oscilloscope, signal generator, etc)
- r) The extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

EES19. RECTIFY FAULTS IN CONSUMER ELECTRONIC EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work will need to ensure efficient and effective rectification of faults on consumer electronic equipment, by replacing (i.e. removing and replacing) faulty components and/or by making adjustments to bring the product back to full working order, in accordance with approved procedures. They will be required to ensure that any replacement parts are correct for their intended purpose, that they meet any safety standards, and are fitted without damage.

Their responsibilities will require them to comply with organisational policy and procedures for the replacement of identified components and the associated work to be undertaken, and to report any problems with the components to the relevant authority. They will be expected to work with a minimum of supervision, taking full responsibility for their own actions and for the quality and accuracy of the work that they produce.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying component replacement procedures. They will understand the function and operating principles of the components being replaced and the techniques and procedures for replacing and/or adjusting them in sufficient depth to provide a sound basis for carrying out the replacement activities to the required standard.

They will understand the safety precautions required when carrying out the component replacement activities. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Take adequate precautions to prevent damage to components, tools and equipment during replacement
3. Ensure that all replacement components used, including safety components, meet the required specification
4. Replace the components in the correct sequence using appropriate tools and techniques
5. Make any necessary settings or adjustments to the equipment, to ensure that it is within normal operating specification and meets the customer's expectations
6. Deal promptly and effectively with problems within their control and report those that cannot be solved
7. Maintain documentation in accordance with organisational requirements

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with consumer electronic equipment
- b) The specific safety precautions when working with components and substances (e.g., solder, heatsink paste)
- c) How to identify and use the appropriate codes of practice
- d) Customer care procedures and techniques, including ownership and advice to customers
- e) How to interpret equipment circuit diagrams and component drawings
- f) Component replacement techniques and safety precautions (e.g., desoldering)
- g) The correct soldering techniques for the work in hand
- h) Appropriate component handling and disposal precautions (e.g., static sensitive components)
- i) Identification of component defects (e.g., visible changes/damage)
- j) Component or assembly operating conditions, and any associated hazards (e.g., stored electrical or mechanical energy)
- k) How to select and use the correct tools and equipment for the work in hand
- l) Tool and equipment care and control procedures (company-specific, HASAWA regulations)
- m) Product or system specifications, and the tests needed to confirm that they are being met
- n) Company documentation required for service procedures
- o) Waste disposal procedures
- p) The theory relating to the operation of the product, stage by stage
- q) The need to isolate a live (TV) chassis before working on it
- r) The signal requirements of the product
- s) The operation and care of test equipment (e.g., multimeter, oscilloscope, function generator, etc)
- t) The extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

EES20. REPLACE MODULES IN ELECTRICAL DOMESTIC APPLIANCE EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to rectify faults in domestic appliances, by replacing (i.e., removing and replacing) faulty modules to bring the product or system back to full working order, in accordance with approved procedures. They will be required to ensure that any replacement parts are correct for their intended purpose, that they meet any safety requirements, and are fitted without damage.

Their responsibilities will require them to comply with organisational policy and procedures for the replacement of identified modules and the associated work to be undertaken, and to report any problems with the modules to the relevant authority. They will be expected to know when to seek guidance and instruction from others, taking full responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of the appliance together with its operation, installation procedures and relevant codes of practice, in adequate depth to provide a sound basis for carrying out servicing activities to the required standard.

They will understand the safety precautions required when carrying out the module replacement activities, especially those for isolating the equipment. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Take adequate precautions to prevent damage to components, tools and equipment during replacement
3. Replace the components in the correct sequence using appropriate tools and techniques
4. Make any necessary settings or adjustments to the components to ensure they will function correctly
5. Deal promptly and effectively with problems within their control and report those that cannot be solved
6. Maintain documentation in accordance with organisational requirements

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with domestic appliances
- b) The safety issues relating to working on live equipment at the customer's premises
- c) Customer care procedures and techniques
- d) How to use workshop manuals and interpret circuit diagrams, mechanical and component drawings
- e) Module replacement techniques and safety precautions (e.g., mechanical fastenings and electrical connectors)
- f) Module operating conditions and any associated hazards (e.g., stored electrical or mechanical energy)
- g) How to select and use the correct tools and equipment for the work in hand
- h) Tool and equipment care and control procedures
- i) Appliance specifications, and the tests needed to confirm that they are being met
- j) The company documentation required for service procedures
- k) Waste disposal procedures including ownership and advice to customers
- l) The operational principles of the modules contained in the appliance (motors, pumps, water valves, heaters, processors, etc)
- m) The sequence in which the appliance operates
- n) The need to ensure a good, properly bonded earth for the appliance
- o) The service requirements of the appliance
- p) Appliance settings that can be adjusted
- q) The operation and care of test equipment (e.g., multimeter, earth loop impedance tester, insulation resistance tester, etc)
- r) Gas legislation and water by-laws (when appropriate)
- s) The extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

EES21. RECTIFY FAULTS IN ELECTRICAL DOMESTIC APPLIANCE EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competencies that the person will need to carry out efficient and effective rectification of faults on domestic appliances, by replacing (i.e., removing and replacing) faulty components and/or by making adjustments to bring the appliance back to full working order, in accordance with approved procedures. They will be required to ensure that any replacement parts are correct for their intended purpose, that they meet any safety standards, and are fitted without damage.

Their responsibilities will require them to comply with organisational policy and procedures for the replacement of identified components and the associated work to be undertaken, and to report any problems with the components to the relevant authority. They will be expected to work with a minimum of supervision, taking full responsibility for their own actions and for the quality and accuracy of the work that they produce.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying component replacement procedures. They will understand the function and operating principles of the components being replaced and the techniques and procedures for replacing and/or adjusting them in sufficient depth to provide a sound basis for carrying out the replacement activities to the required standard.

They will understand the safety precautions required when carrying out the component replacement activities. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Take adequate precautions to prevent damage to components, tools and equipment during replacement
3. Replace the components in the correct sequence using appropriate tools and techniques
4. Make any necessary settings or adjustments to the components to ensure they will function correctly
5. Deal promptly and effectively with problems within their control and report those that cannot be solved
6. Maintain documentation in accordance with organisational requirements

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with domestic appliances
- b) The specific safety precautions when working with components and substances (e.g., solder, heatsink paste, bearing grease, sealants, etc)
- c) How to identify and use the appropriate codes of practice
- d) Customer care procedures and techniques including ownership and advice to customers
- e) How to interpret equipment circuit diagrams, mechanical and component drawings
- f) Component or module replacement techniques and safety precautions (e.g., desoldering, mechanical fastenings and electrical connectors)
- g) The correct soldering techniques for the work in hand
- h) Appropriate component handling and disposal precautions (e.g., for static sensitive components)
- i) Identification of component defects (e.g., visible changes/damage)
- j) Component or assembly operating conditions, and any associated hazards (e.g., stored electrical or mechanical energy, rotating parts, gas leaks, live components, water leaks, etc)
- k) How to select and use the correct tools and equipment for the work in hand
- l) Tool and equipment care and control procedures (company-specific, HASAWA regulations)
- m) Product or system specifications, and the tests needed to confirm that they are being met
- n) Company documentation required for service procedures
- o) Waste disposal procedures
- p) The theory relating to the operation of the product, and its operating sequence
- q) The need to ensure a good, properly bonded earth for the appliance
- r) The service requirements of the product
- s) Appliance settings that can be adjusted
- t) The operation and care of test equipment (e.g., multimeter, earth loop impedance tester, insulation resistance tester, etc)
- u) Gas legislation and water by-laws (when appropriate)
- v) The extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

EES22. REPLACE MODULES IN SIGNAL RECEPTION SYSTEMS

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work needs to rectify faults in signal reception systems by replacing (i.e., removing and replacing) faulty modules, and/or by making adjustments to modules to bring the system back to full working order, in accordance with approved procedures. They will be required to ensure that any replacement parts are correct for their intended purpose, that they meet any safety requirements, and are fitted without damage.

Their responsibilities will require them to comply with organisational policy and procedures for the replacement of identified modules and the associated work to be undertaken, and to report any problems with the modules to the relevant authority. They will be expected to know when to seek guidance and instruction from others, taking full responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of the system, together with its operation, installation procedures and relevant codes of practice, in adequate depth to provide a sound basis for carrying out servicing activities to the required standard.

They will understand the safety precautions required when carrying out the replacement activities, especially those for isolating the equipment. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Obtain all the required components and ensure that they are in a suitable condition for replacement and fit for purpose
3. Ensure that any replacement components or modules used meet the required specification
4. Take adequate precautions to prevent damage to components, tools and equipment during replacement
5. Replace the components or modules in the correct sequence using appropriate tools and techniques
6. Make any necessary settings or adjustments to the system or equipment to ensure that it is within the normal operating specification and meets the customer's expectation
7. Deal promptly and effectively with problems within their control and report those that cannot be solved
8. Maintain documentation in accordance with organisational requirements

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with signal reception equipment or systems
- b) The safety issues relating to working on live equipment at the customer's premises
- c) Customer care procedures and techniques
- d) How to use workshop manuals and interpret circuit diagrams, mechanical and component drawings
- e) Component or module replacement techniques and safety precautions (e.g., de-soldering, mechanical fastenings and electrical connectors)
- f) The correct soldering techniques for the work in hand
- g) Appropriate component handling and disposal precautions (e.g., for static sensitive components)
- h) Component or module operating conditions, and any associated hazards (e.g., stored electrical or mechanical energy)
- i) How to select and use the correct tools and equipment for the work in hand
- j) Tool and equipment care and control procedures
- k) Product or system specifications, and the tests needed to confirm that they are being met
- l) The company documentation required for service procedures
- m) Waste disposal procedures including ownership and advice to customers
- n) Alignment methods for both satellite and terrestrial antenna
- o) The causes of signal loss in a system (e.g., cable type and length, diplexers, outlets, etc)
- p) The operation and care of test equipment (e.g., spectrum analyser, signal level meter, etc)
- q) The extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

EES23. RECTIFY FAULTS IN SIGNAL RECEPTION NETWORKS

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work will need to ensure efficient and effective rectification of faults on signal reception networks, in accordance with approved procedures. They will be expected to replace (i.e., remove and replace) faulty components or modules, and/or to make adjustments to bring the network back to full working order. They will be required to ensure that any replacement parts are correct for their intended purpose, that they meet any safety standards, and are fitted without damage.

Their responsibilities will require them to comply with organisational policy and procedures for the replacement of identified components or modules and the associated work to be undertaken, and to report any problems with the components or modules to the relevant authority. They will be expected to work with a minimum of supervision, taking full responsibility for their own actions and for the quality and accuracy of the work that they produce.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying component or module replacement procedures. They will understand the function and operating principles of the components or modules being replaced and the techniques and procedures for replacing and/or adjusting them in sufficient depth to provide a sound basis for carrying out the replacement activities to the required standard.

They will understand the safety precautions required when carrying out the component replacement activities. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Take adequate precautions to prevent damage to components, tools and equipment during replacement
3. Ensure that all replacement components or modules, including safety components, meet the required specification
4. Replace the components in the correct sequence using appropriate tools and techniques
5. Make any necessary settings or adjustments to the network or equipment to ensure that it is within the normal operating specification and meets the customer's expectation
6. Deal promptly and effectively with problems within their control and report those that cannot be solved
7. Maintain documentation in accordance with organisational requirements

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with signal reception networks
- b) The specific safety precautions when working with components and substances (e.g., solder, heatsink paste)
- c) How to identify and use the appropriate codes of practice
- d) Customer care procedures and techniques
- e) How to interpret equipment circuit diagrams, mechanical and component drawings
- f) Component or module replacement techniques and safety precautions (e.g., desoldering, mechanical fastenings and electrical connectors)
- g) The correct soldering techniques for the work in hand
- h) Appropriate component handling and disposal precautions (e.g., static sensitive components)
- i) Identification of component defects (e.g., visible changes/damage)
- j) Component or assembly operating conditions, and any associated hazards (e.g., stored electrical or mechanical energy)
- k) How to select and use the correct tools and equipment for the work in hand
- l) Tool and equipment care and control procedures (company-specific, HASAWA regulations)
- m) Product or system specifications, and the tests needed to confirm that they are being met
- n) Company documentation required for service procedures
- o) Waste disposal procedures, including ownership and advice to customers
- p) The design of signal reception networks, and the signal levels expected at each outlet
- q) Alignment methods for both satellite and terrestrial antenna
- r) The causes of signal loss in a system (e.g., cable type and length, diplexers, outlets, etc)
- s) The operation and care of test equipment (e.g., spectrum analyser, signal level meter, etc)
- t) The extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

EES24. ESTABLISH COMPLIANCE WITH DISTRIBUTION NETWORK SPECIFICATIONS

UNIT DESCRIPTOR

This unit identifies the competencies the person who is carrying out the work will need to test the compliance of a signal distribution system against its specification, in accordance with approved procedures. They will be required to ensure that the correct signal, at the correct level, is present at the points given in the system specification.

Their responsibilities will require them to comply with organisational policy and procedures for these activities, and to report any problems to the relevant authority. They will be expected to work with a minimum of supervision, taking full responsibility for their own actions and for the quality and accuracy of their work.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying the test procedures. They will understand the distribution system, and its application, and will know about the equipment that is used, in adequate depth to provide a sound basis for carrying out the activities to the required standard.

They will understand the safety precautions required when carrying out the compliance testing activities, especially where these involve working at heights, or with heavy or live equipment. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Follow and make appropriate use of the specifications for the product or asset being checked
3. Use all the correct tools and inspection equipment and check that they are in useable condition
4. Carry out the checks in an appropriate sequence using approved methods and procedures
5. Identify and assess any defects or variations from the specification and take appropriate action
6. Report completion of compliance activities in line with organisational procedures

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with signal reception and distribution equipment
- b) The relevant codes of practice and guidelines for distribution networks
- c) How to interpret and make best use of workshop and other manuals
- d) The company specifications for installed signal distribution systems
- e) The relevant compliance checking methods and techniques
- f) The adjustments that can be made to the system to ensure compliance with the specifications
- g) The acceptable limits of tolerance or deviation from the specification
- h) How to bring the system into compliance, and what to do if this cannot be achieved
- i) The company compliance reporting and quality control methods and documentation
- j) The design of signal reception systems, and the signal levels expected at each outlet
- k) Alignment methods for both satellite and terrestrial antenna
- l) The causes of signal loss in a system (e.g., cable type and length, diplexers, outlets, etc)
- m) The operation and care of test equipment (e.g., spectrum analyser, signal level meter, etc)
- n) The extent of their own responsibility and whom they should report to if they have problems that they cannot resolve

EES25. WORK SAFELY AT HEIGHTS WITH ANTENNAS

UNIT DESCRIPTOR

This unit identifies the competencies the person will need to work safely at heights, when installing or servicing antennas, etc, in accordance with approved procedures. They will be required to assess the risks - by identifying the hazards, estimating the likelihood of risk, assessing who would be at risk - and the appropriate safety precautions to minimise the risk. They will be familiar with the use of fall protection equipment, and the safety procedures for using ladders as a work platform or as a means of access.

Their responsibilities will require them to comply with organisational policy and procedures for the antenna installation or servicing activities undertaken, and to report any problems to the relevant authority. They will know when to seek guidance and instructions from others, and will take full responsibility for their own actions and for the accuracy of their work.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying the safety procedures for working at heights. They will understand the legal requirements as well as the regulations that apply. They will know about the codes of safety practice, in adequate depth to provide a sound basis for carrying out the activities to the required quality and safety standards.

The person carrying out this work will understand the safety precautions required when carrying out the installation or servicing at heights. They will also understand their responsibilities for health and safety in their place of work, and the importance of taking the necessary safeguards to protect themselves and others when they are working.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Carry out a risk assessment before starting work
3. Follow the codes of practice for ladder safety and working at heights
4. Use personal protection equipment, and ensure that it is in a useable and safe condition
5. Use fall protection equipment in the correct manner, and check that it is in a serviceable condition
6. Follow the approved safety procedures for working on pitched and flat roofs
7. Follow the approved safety procedures for when working in lofts and when handling large assemblies or components

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working at heights, especially when carrying, handling or fixing antennas and brackets
- b) The personal protective equipment (PPE) to be worn, and how to ensure that it is in good condition
- c) How to assess risks before, and during, the installation or servicing activity
- d) Codes of practice relating to ladder use and safety
- e) The procedure to be followed when it is not possible to secure a ladder with an eyebolt
- f) Types of fall protection equipment, and the correct way to use it
- g) The procedures for accessing pitched and flat roofs
- h) The procedures to be used when working on pitched and flat roofs
- i) The procedures to be used when working in lofts
- j) The procedures to be followed when there is no safe access to a loft
- k) Health and safety legislation, regulations and safe working practices and procedures applicable to working at heights
- l) How to ensure planning permission is obtained (or how to confirm that permission is not required)
- m) How to run cables over roofs
- n) How to check and ensure that the structure and pointing of chimney stacks is sound
- o) How to secure brackets and antennas to chimney stacks
- p) Company safety procedures, and the importance of adhering to them
- q) Company documentation required for safety procedures
- r) The extent of their own responsibility and to whom they should report if they have problems that they cannot resolve

EES26. IDENTIFY AND COST CUSTOMER REQUIREMENTS

UNIT DESCRIPTOR

This unit identifies the competencies the person will need to identify customer requirements, in accordance with approved procedures. They will be required to work with the customer to identify their needs, then to identify the products or services to meet those needs, to analyse the requirements in terms of resources, time and cost, and to reach agreement with the customer on the action to be taken to achieve the requirements.

Their responsibilities will require them to comply with organisational policy and procedures for dealing with customers and establishing their requirements. They will be expected to report any problems that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work with a minimum of supervision, and will take full responsibility for their own actions and for the quality of their work.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to interpreting customer requirements, and applying customer care procedures. They will understand the products or services being offered to the customer, and their installation and maintenance requirements. They will know about the company procedures and resources, in adequate depth to provide a sound basis for carrying out the activities to the required standard.

They will understand the safety precautions required when carrying out their duties, especially when working at heights or with heavy or powered equipment and they will bear these things in mind when establishing customer requirements. They will also understand their responsibilities for health and safety in their place of work, and the importance of taking the necessary safeguards to protect themselves and others when they are working.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Obtain sufficient information to understand clearly the type of service or product required by the customer
2. Ensure that the technical requirements are understood and specified
3. Identify the required actions or activities and put them into an appropriate time scale
4. Determine how their organisation can respond to the requirements in terms of workload and resources and identify the associated costs
5. Obtain customer agreement on the product or service required, the cost of that product or service, the time scale for achieving the customer's requirements and the actions to be taken
6. Record and file relevant information in accordance with organisational requirements
7. Check and obtain agreement that the requirements are interpreted correctly
8. Maintain appropriate levels of confidentiality

KNOWLEDGE REQUIREMENTS

The person carrying out this work must show that they:

- a) The specific safety precautions to be taken when working with electrical or electronic equipment
- b) The safety issues relating to working on live equipment at the customer's premises
- c) The specification, application and cost of the product or service to be provided
- d) Customer care requirements and techniques
- e) The types of difficulty that can occur with customer relations, and how such situations should be dealt with
- f) Relevant codes of practice
- g) Company policy on the provision of services, customer care and confidentiality
- h) Company reporting lines, procedures and documentation
- i) The extent of their own responsibility and whom they should report to if they have problems that they cannot resolve

The following specific knowledge will also be required in relation to Signal Reception

- j) The design of signal reception systems and the signal levels expected at each outlet
- k) Alignment methods for both satellite and terrestrial antenna
- l) The cause of signal loss in a system, (e.g., cable type and length, diplexers, outlets, etc)

The following specific knowledge will also be required in relation to Consumer/Commercial Electronics

- m) The theory relating to the operation of the product
- n) The signal requirements of the product

The following specific knowledge will also be required in relation to Domestic Appliance Servicing

- o) The theory relating to the operation of the product
- p) The need to ensure a good, properly bonded earth for the appliance
- q) The service requirements of the product
- r) Water by-laws and gas regulations (when appropriate)

EES27. TRANSPORT AND PROTECT PRODUCTS AND EQUIPMENT

UNIT DESCRIPTOR

This unit identifies the competences the person will need to transport and protect products and equipment to meet the requirements of their company. They will be required to protect products and equipment prior to transportation, to take all reasonable security measures to protect them prior to delivery, and to ensure that their delivery is made safely and effectively.

Their responsibilities will require them to comply with any policies of their company in respect of protection and transportation, and to report any problems to an appropriate person. They will be expected to work within the general policies of their company and know when to seek guidance and instructions from others, taking full responsibility for their own actions and for the quality and accuracy of their work.

They will require underpinning knowledge of handling, transportation and protection, customer relations, the products and services provided by their company, and the tools and equipment it uses for servicing.

The person carrying out this work will understand the safety precautions required when carrying out the transporting activities, especially where these involve heavy equipment. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines
2. Ensure that the product and/or equipment is suitable for use
3. Ensure that all products and/or equipment are loaded and protected correctly
4. Use the correct handling and lifting procedures
5. Complete and pass all the relevant documentation to the appropriate people
6. Inform the relevant people of any delay
7. Transport the product and/or equipment safely to its destination
8. Take all reasonable security measures to protect products and equipment in line with company policy and procedures
9. Correctly remove and dispose of waste material

KNOWLEDGE OBJECTIVES

The person carrying out this work must know and understand:

- a) The specific health and safety precautions to be taken when transporting products and equipment
- b) Customer relations methods and procedures
- c) Company policy regarding the transportation of products and equipment
- d) Types of packaging needed for specific products
- e) Methods of ensuring restriction of movement within a product (e.g., washing machine drum)
- f) The type of damage that can occur with products packed close together without protection
- g) The company record and documentation procedures
- h) Lifting techniques and handling aids
- i) The company products, services and procedures
- j) Protection and stowage techniques
- k) Specific security measures required to protect products when in transit
- l) Waste disposal procedures
- m) The extent of their own responsibility and to whom they should report if they have problems that they cannot resolve

EES28. COLLECT AND PROCESS PAYMENTS

UNIT DESCRIPTOR

This unit identifies the competences the person who is carrying out this work will need to collect and process payments for servicing or installation services. They will be required to establish the price and to obtain the correct payment from the customer.

Their responsibilities will require them to comply with any policies and procedures of their organisation in respect of collecting and processing payments, and to report any problems to an appropriate person. They will be expected to work within the general policies of their organisation, and to know when to seek guidance and instructions from others, taking full responsibility for their own actions and for the quality and accuracy of their work.

Their underpinning knowledge will include cash and credit control systems, customer relations, information systems, and costs of the activities, as well as the products and services that their organisation provides.

Safe working practices are as important in the collection and processing of payments as they are in other servicing activities, and the person will understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with relevant regulations and guidelines
2. Identify the service required by the customer
3. Correctly calculate the price of the service
4. Agree the price of the service with the customer
5. Obtain the correct payment
6. Record the payment in the appropriate documentation
7. Provide the customer with a correct record of the payment
8. Secure the payments in the correct manner and pass responsibility for their security to the appropriate people
9. Inform the appropriate people in case of difficulty

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) Company products and services, together with their cost
- b) VAT and other legal requirements
- c) Supplements or discounts that may be included in the cost
- d) Company financial policy, documentation and office procedures
- e) Procedures for presenting the total cost to customer
- f) Common types of disagreement that may occur over costs
- g) Customer relations, and methods of dealing with disagreements
- h) Methods of payment
- i) Security methods for different types of payment
- j) Security measures to be taken when transporting cash
- k) The extent of their own authority, and whom they should report to if they have problems that they cannot resolve

EES29. PROMOTE THE ORGANISATION'S PRODUCTS AND SERVICES

UNIT DESCRIPTOR

This unit identifies the competencies the person who is carrying out this work will need to promote the products and services of their organisation. They will be required to identify the customer's requirements, and to inform the customer about what the organisation can provide. They will then be expected to initiate and complete the sales of products and services to the customer.

Their responsibilities will require them to comply with any policies and procedures of their service organisation in respect of promoting and selling its products and services, and to report any problems to an appropriate person. They will be expected to work within the general policies of their service organisation, and know when to seek guidance and instructions from others, taking full responsibility for their own actions and for the quality and accuracy of their own work.

Their underpinning knowledge will include sales techniques and procedures, the products and services provided by their service organisation, and the principles of customer service.

They will understand their responsibilities for health and safety, and for explaining to the customer any health and safety requirements or implications of the products or services being supplied.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Work safely at all times, complying with relevant regulations and guidelines
2. Obtain sufficient information to identify the product or service required by the customer
3. Ensure that the technical requirements are understood and specified
4. Accurately convey to the customer the advantages of the product or service
5. Determine how their organisation can respond to the requirements in terms of workload and resources
6. Ensure the availability of the product or service
7. Check and obtain agreement that the requirements are interpreted correctly
8. Correctly calculate the price of the product or service
9. Agree the product or service and the price with the customer
10. Agree the delivery date with the customer
11. Obtain the correct payment or agreement, record it in the appropriate documentation, and provide the customer with a receipt
12. Inform the appropriate people in case of difficulty

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) Health and safety legislation and regulations
- b) Sales techniques and procedures
- c) Company products and services, together with their application and costs
- d) VAT and other legal requirements
- e) Supplements or discounts that may be included in the cost
- f) Company financial policy, documentation and office procedures such as on provision of services, customer care and confidentiality
- g) Procedures for presenting the total cost to the customer
- h) Common types of disagreement over cost
- i) Customer relations, and methods of dealing with disagreements
- j) The various methods of payment
- k) The security precautions to be taken for different payment methods
- l) Specific security measures to be taken when transporting cash
- m) The extent of their own authority, and whom they should report to if they have problems that they cannot resolve

The following specific knowledge will also be required in relation to Signal Reception

- a) Alignment methods for both satellite and terrestrial antenna
- b) The cause of signal loss in a system, (e.g., cable type and length, diplexers, outlets, etc)

The following specific knowledge will also be required in relation to Consumer/Commercial Electronics

- c) Basic operation of the products available
- d) The signal requirements of the product

The following specific knowledge will also be required in relation to Domestic Appliance Servicing

- e) Basic operation of the product
- f) The service requirements of the product
- g) Gas legislation and water by-laws (when appropriate)
- h) The operation of test equipment (e.g., earth loop impedance tester)

EES30. IDENTIFY AND RECOMMEND IMPROVEMENTS TO THE ORGANISATION'S PRODUCTS AND SERVICES

UNIT DESCRIPTOR

This unit identifies the competencies the person carrying out this work will need to identify and recommend improvements to their organisation's products and services, in accordance with approved procedures. They will be required to monitor and assess customer requirements and complaints, to compare their organisation's activities with those of its competitors, to identify areas of possible improvement within their organisation, and to make realistic recommendations for the implementation of those improvements.

Their responsibilities will require them to comply with organisational policy and procedures for the monitoring and assessment of organisational activities, and to report any problems with the monitoring or assessment to the relevant person. They will be expected to work with a minimum of supervision, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying monitoring and assessment procedures. They will understand the importance of customer care, and will know about their organisation's products, services and activities, in adequate depth to provide a sound basis for carrying out the duties.

They will be aware of any safety precautions required when carrying out the monitoring and assessment activities, and will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Monitor the impact and effectiveness of the organisation's activities
2. Ensure that regular contact with customers is maintained, and that their requirements are assessed for use in improving the organisation's activities
3. Review information on the products and services provided by other companies or competitors
4. Identify and assess activities within the organisation that could be improved
5. Make realistic recommendations for improvements to the organisation's activities to the appropriate people

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions to be taken when working with electrical and electronic equipment
- b) The organisation's products, their specifications and operation
- c) The organisation's services and activities
- d) Information sources, and how to access them
- e) The use of performance indicators
- f) Monitoring and assessment methods
- g) How to interpret specifications for products and systems
- h) How to identify and evaluate potential improvements to products and services
- i) Customer care procedures and techniques
- j) Lines of communication within the organisation and outside the organisation
- k) Who needs to be made aware of their recommendations
- l) How to write reports and make presentations
- m) The extent of their own responsibility and whom they should report to if they have problems that they cannot resolve

The following specific knowledge will also be required in relation to Signal Reception

- n) The design of signal reception systems
- o) The causes of signal loss in a system (e.g., cable type and length, diplexers, outlets, etc)
- p) Product specifications and applications

The following specific knowledge will also be required in relation to Consumer/Commercial Electronics

- q) The theory relating to the operation of the various products
- r) The signal requirements of the various products

The following specific knowledge will also be required in relation to Domestic Appliance Servicing

- s) The theory relating to the operation of the various products
- t) The service requirements of the various products
- u) Gas legislation and water by-laws, etc (which may have a bearing on any recommended improvements)

EES31. CONTRIBUTE TO DEVELOPMENT OF SELF AND COLLEAGUES

UNIT DESCRIPTOR

This unit identifies the competencies that the person who will be carrying out this work will need to contribute to the development of colleagues and themselves, in accordance with approved procedures. They will be required to carry out assessments, identify training needs, produce development plans with personal objectives, arrange suitable training, review training outcomes, provide positive feedback to colleagues, and encourage feedback from others.

Their responsibilities will require them to comply with organisational policy and procedures for these activities, and to report any problems to the relevant authority. They will be expected to work with a minimum of supervision, taking full responsibility for their own actions and for the quality and accuracy of their work.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to applying appraisal and training. They will understand the mentoring process, and its application, and will know about the company's products and services, in adequate depth to provide a sound basis for carrying out their activities to the required standard.

They will understand their responsibilities for safety, and the importance of applying safe working practices and taking the necessary safeguards to protect themselves and others in the workplace.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Assess their current competence and areas for development using relevant techniques and processes
2. Identify development objectives that produce a development plan that is realistic and achievable
3. Obtain or develop suitable training provision to meet the development objectives or plan, including health and safety requirements
4. Identify resources needed to carry out the development plan
5. Review their performance and progress regularly and use the outcome to plan future development activities
6. Seek constructive feedback and advice from others and use it to help them maintain and improve their performance
7. Agree with line management about the time and other resources needed to help achieve the development objectives

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The specific safety precautions that apply to the company products and services
- b) Customer care procedures and techniques
- c) How to identify and take advantage of training and development opportunities
- d) Self assessment models and techniques
- e) How to provide positive feedback, and how to obtain feedback from others
- f) Demonstration and presentation techniques
- g) The need for confidentiality
- h) How to identify appropriate sources of information and how to obtain relevant information from them
- i) The company procedures for obtaining resources
- j) How to set development objectives
- k) Working relationships, and how to maintain them
- l) The company reporting lines and procedures
- m) The company products and services
- n) The company installation methods and procedures
- o) Company service/maintenance methods and procedures
- p) The extent of their own responsibility and to whom they should report if they have problems that they cannot resolve