

End-point assessment plan for Radio Network Technician apprenticeship standard

| Apprenticeship standard reference number | Apprenticeship standard level | Integrated end-point assessment |
|--|-------------------------------|---------------------------------|
| ST0757 | 3 | No |

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Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Radio Network Technician apprenticeship standard. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Radio Network Technician apprentices, their employers and training providers.

Full time apprentices will typically spend 24 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices must spend a minimum of 12 months on-programme.

The EPA period should only start, and the EPA be arranged, once the employer is satisfied that the apprentice is deemed to be consistently working at or above the level set out in the occupational standard, all of the pre-requisite gateway requirements for EPA have been met and can be evidenced to an EPAO.

For level 3 apprenticeships and above apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA.

The EPA must be completed within an EPA period lasting typically 4 months, after the EPA gateway.

The EPA consists of 3 discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Practical assessment with questioning

- Fail
- Pass
- Distinction

Assessment method 2: Knowledge Test

- Fail
- Pass
- Distinction

Assessment method 3: Professional Discussion

- Fail
- Pass
- Distinction

Performance in the EPA will determine the overall apprenticeship standard grade of:

- Fail
- Pass
- Merit
- Distinction

EPA summary table

| | |
|---|--|
| On-programme (typically, 24 months) | Training to develop the knowledge, skills and behaviours (KSBs) within the occupational standard. Training towards English and mathematics Level 2, if required. |
| End-point assessment gateway | Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard. English and mathematics Level 2 |
| End-point assessment (which will typically take 4 months) | Assessment method 1: Practical Assessment with questioning <ul style="list-style-type: none"> · Fail · Pass · Distinction Assessment method 2: Knowledge Test <ul style="list-style-type: none"> · Fail · Pass · Distinction Assessment method 3: Professional Discussion <ul style="list-style-type: none"> · Fail · Pass · Distinction |
| Professional recognition | Aligns with recognition by: The Institute of Telecommunications Professionals <ul style="list-style-type: none"> • BCS, The Chartered Institute for IT This apprenticeship is recognised for entry onto the BCS, The Chartered Institute for IT, Register of IT Technicians confirming level 3 professional competence. Those completing the apprenticeship can apply for registration |

Length of end-point assessment period

The EPA will be completed within an EPA period lasting typically of 4 months, starting when the EPAO has confirmed that all gateway requirements have been met.

Order of assessment methods

The assessment methods can be delivered in any order.

The result of one assessment method does not need to be known before starting the next.

Gateway

The apprentice should only enter the gateway once the employer is content that the apprentice is working at or above the occupational standard. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

The EPAO determines when all other gateway requirements have been met, and the EPA period will only commence once the EPAO has confirmed this.

In addition to the employer's confirmation that the apprentice is working at or above the level in the occupational standard, the apprentice must have completed the following gateway requirements prior to beginning EPA:

- Achieved English and mathematics at Level 2.
For those with an education, health and care plan or a legacy statement, the apprenticeship's English and Mathematics minimum requirement is Entry Level 3. British Sign Language (BSL) qualifications are an alternative to English qualifications for those who have BSL as their primary language.

For the practical assessment with questioning:

- no specific requirements

For the knowledge test:

- no specific requirements

For the professional discussion:

- no specific requirements

Assessment methods

Assessment method 1: Practical assessment with questioning

Overview

Apprentices must be observed by an independent assessor completing 3 practical assessments which will take place in a simulated equipment environment, in which they will demonstrate the KSBs assigned to this assessment method. This will be supplemented by questioning by the independent assessor to establish the apprentice's understanding of underpinning reasoning. The end-point assessment organisation will arrange for the observation to take place, in consultation with the employer.

The practical assessments must be carried out over a total assessment time of 5 hours 30 minutes. The apprentice will be given one assessment at a time by the independent assessor and they will complete each practical assessment and questioning before going on to the next.

The independent assessor may conduct and observe only one apprentice during this assessment method. Questions can be asked both during and after each practical assessment on a one-to-one

basis. The independent assessor is responsible for ensuring the security of questions and that they are not overheard by other apprentices.

The rationale for this assessment method is:

The Radio Network Technician role is a practical (hands-on) role. The ability to plan, build and fault find digital data and voice networks in demanding environments, in a safe manner, using the correct tools, and in accordance with highest quality standards, could only be assessed fairly and accurately in a simulated environment. It was felt that the primary test method should be a practical assessment with questions ensuring that the apprentice can not only demonstrate their practical skills but can also underpin this with a broader knowledge of the task at hand.

Delivery

One week in advance of the practical assessments the EPAO must provide the apprentice and employer with a guidance document, with information on the format of the test, including timescales.

The practical assessment is split into three individual assessments. It is expected that all three assessments will be carried out over one day; however, it may be split over a maximum of 7 days to meet organisation needs if required. Once a practical assessment has commenced, it must be completed on the same day to ensure security of the assessment

Apprentices must conduct the assessments in a suitably controlled environment that is a quiet space, free of distractions and influence. All practical assessments must be invigilated. Invigilation will be carried out by the independent assessor.

The EPAO is required to have an invigilation policy that will set out how the practical assessments will be carried out. The EPAO must manage invigilation of apprentices during breaks in order to maintain security of the assessment in line with their malpractice policy. There may be breaks during the practical assessment to allow the apprentice to move from one location to another and for meal breaks.

The EPAO is responsible for ensuring the security of practical assessments they administer to ensure the assessment remains valid and reliable. The EPAO is responsible for verifying the validity of the identity of the person carrying out the assessments.

The practical assessment with questioning has a maximum permitted duration of 5 hours 30 minutes which will be broken down based on the timings of the individual assessments as detailed below. The independent assessor has the discretion to increase the time of the practical assessment with questions by up to 10% to allow the apprentice to complete a task or respond to a question.

Apprentices will be given 1 task at a time, in line with the individual timings of the tasks as stated below:

- Practical assessment 1: **Plan a digital data and voice network** will last for 1 hour
- Practical assessment 2: **Build a digital data and voice network** will last for 3 hours
- Practical assessment 3: **Fault find a digital data and voice network** will last for 1 hour 30 minutes

The independent assessor can ask questions throughout each of the three assessments and at the end of each assessment, but questioning must be conducted within the overall 5 hours 30 minutes hours. The independent assessor must ask a minimum of 10 questions during the practical assessment. Follow up questions are permitted where clarity is required. The independent assessor is responsible for determining where questioning is appropriate based on their observation of the practical demonstrations.

The purpose of questioning is to allow the apprentice to evidence any gaps in KSBs not evidenced by the practical assessment. The questions will be taken from a list prepared by the EPAO and the independent assessor can supplement these with their own questions if required.

The following activities **MUST** be observed during the practical assessment demonstrations as without these tasks it would seriously hamper the opportunity for the apprentice to demonstrate occupational competence against the KSBs assigned to this assessment method:

- Plan a digital data and voice network
- Build a digital data and voice network
- Fault find a digital data and voice network
- Carry out activities in a safe manner

The EPAO must ensure that all practical assessments provided meet the KSBs mapped to this method. The practical assessments must not hamper the opportunity for the apprentice to demonstrate occupational competence in the KSBs assigned to this assessment method.

For practical assessment 3: Fault find a digital data and voice network, the EPAO Guidance Document to employers and apprentices should include reference to a deliberate fault

KSBs observed and answers to questions must be documented by the independent assessor.

Typical Practical assessments

Practical Assessment 1: **Plan a digital data and voice network**

Example content:

- Devise plan of work for the build stage
- Choose the appropriate connection method/solution
- Select correct equipment type to install or to incorporate and the plan shows this will be positioned correctly according to the design
- Carry out process to book onto site and ensure other equipment is powered down as needed in order to be safe

Practical Assessment 2: **Build a digital data and voice network**

Example Content:

- Install or support the installation of equipment and termination of cabling in such a way that it's safe, tidy and can be re-used
- Equipment is installed and positioned correctly and in line with design and manufacturer's specifications. Create accurate installation reports and document test results
- Use and configure provided IP information as part of the RF network activity
- Provide a summary of the problem to be resolved including details of diagnostic tests carried out

Practical Assessment 3: **Fault find a digital data and voice network**

Example Content:

- Use appropriate methodology to identify issues in the system including measuring system performance against specified SLAs
- Use appropriate test systems, processes and data to locate and identify a fault
- Rectify faults and highlight any issues that cannot be immediately resolved

The independent assessor will make all grading decisions.

Questions and resources development

EPAOs will produce specifications to outline in detail how the practical assessment will operate, what it will cover and what should be assessed. It is recommended that this be done in consultation with employers. EPAOs should put in place measures and procedures to maintain the security and confidentiality of their specifications if employers are consulted. Specifications must be standardised by the EPAO.

EPAOs will create and set open questions to assess KSBs mapped to this assessment method. Each EPAO must develop a question bank of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure the questions they contain are fit for purpose. Independent assessors must use the question bank as a source for questioning and are expected to use their professional judgment to tailor those questions appropriately. Independent assessors are responsible for generating suitable follow-up questions in line with the EPAO's training and standardisation process. The questions relating to underpinning KSBs must be varied yet allow assessment of the relevant KSBs.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Assessment location

Practical assessments must take place in a simulated environment under controlled conditions and must be conducted in one of the following locations:

- the employer's premises
- a suitable venue selected by the EPAO (e.g. a training provider's premises or another employer's premises)

The area should be fitted with:

- adequate connectivity to other network parts
- appropriate racking to accommodate the build activity
- pre-installed power supply

Support material

EPAOs will produce the following material to support this assessment method:

- independent assessor training materials
- assessment specifications
- grading guidance
- a question bank
- assessment recording documentation
- guidance document for employers and apprentices to describe how the practical assessment will be delivered / administered.
- guidance document for independent assessors on how to administer the practical assessment
- a process for capturing and accommodating any additional needs for the apprentice in line with the EPAOs Reasonable Adjustments Policy

Assessment method 2: Knowledge Test

Overview

This assessment method has 1 component.

A test is a controlled assessment which consists of a series of questions in which apprentices are asked to provide a response.

The rationale for this assessment method is:

This will allow the knowledge which may not naturally occur during the practical assessment or may take too long to observe to be assessed and the assessment of a disparate set of knowledge requirements. The test is mapped to knowledge statements that could not be fully assessed in the other two assessment methods.

Delivery

Test Format

The test can be:

- computer based
- paper based

It will consist of 20 questions.

These questions will consist of closed response questions (e.g. multiple-choice questions). The multiple-choice questions will have four options of which one will be correct. The questions must be varied to avoid the test becoming too predictable yet allow assessment of the relevant KSBs.

Test administration

Apprentices must have a maximum of 60 minutes to complete the test.

The test is closed book which means that the apprentice cannot refer to reference books or materials.

Apprentices must take the test in a suitably controlled environment that is a quiet space, free of distractions and influence, in the presence of an invigilator. The invigilator may be the independent assessor, or another external person employed by the EPAO or specialised (proctor) software, if the test can be taken on-line. The EPAO is required to have an invigilation policy that will set out how the test/examination is to be carried out. This will include specifying the most appropriate ratio of apprentices to invigilators to best take into account the setting and security required in administering the test/examination.

The EPAO is responsible for ensuring the security of testing they administer to ensure the test remains valid and reliable (this includes any arrangements made using online tools). The EPAO is responsible for verifying the validity of the identity of the person taking the test.

The EPAO must verify the suitability of the venue for taking the test and the identity of the person taking the test.

Assessment

Tests must be marked by independent assessors or markers employed by the EPAO following a marking guide produced by the EPAO. Alternatively, marking by computer is permissible where questions types allow this.

A correct response will be assigned one mark.

Any incorrect or missing answers must be assigned zero marks.

Question and resource development

Questions must be written by EPAOs, must be relevant to the occupation and assess KSBs mapped to this assessment method. It is recommended that this be done in consultation with employers of this occupation. EPAOs should maintain the security and confidentiality of their questions when consulting employers.

Each EPAO must develop a test specification. They must also develop a question bank of sufficient size to prevent predictability and review it regularly (and at least once a year) to ensure it, and the questions it contain, are fit for purpose.

The test questions must be varied yet assess the relevant KSBs.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

EPAOs will produce the following material to support this assessment method:

- a question bank
- a test specification
- sample tests and mark schemes
- live tests and mark schemes
- analysis reports which show areas of weakness for completed tests/exams and an invigilation policy
- assessment recording documentation

Assessment method 3: Professional Discussion

Overview

A professional discussion is a two-way discussion which involves both the independent assessor and the apprentice actively listening and participating in a formal conversation. It gives the apprentice the opportunity to make detailed and proactive contributions to confirm their competency across the KSBs mapped to this method.

The rationale for this assessment method is:

A professional discussion is a well-recognised method and is widely used within the digital sector. It allows for knowledge, skills and behaviours that may not naturally occur as part of the other assessment methods to be assessed and more easily discussed.

Delivery

This assessment will take the form of a professional discussion which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method. It will involve the questions that will focus on the KSBs mapped to this method of assessment.

The independent assessor will conduct and assess the professional discussion.

The professional discussion must last for 60 minutes. The independent assessor has the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer.

The themes that must be covered are:

- Security
- Health and Safety
- Radio Planning
- Radio Performance
- Analysis
- Approach to Work
- Continuous Professional Development

During this method, the independent assessor must combine questions from the EPAO's question bank and those generated by themselves. The independent assessor will ask a minimum of 7 questions. The independent assessor must ensure the apprentice has been given the opportunity to evidence all the knowledge, skills and behaviours for the assessment method.

The professional discussion should be graded fail, pass or distinction. The independent assessor must allocate grades using the grading criteria.

The independent assessor will make all grading decisions.

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the professional discussion.

Assessment location

The professional discussion should take place in a quiet room, free from distractions and influence. Live streaming and screen sharing can be used to conduct the professional discussion, but the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way.

The professional discussion can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO (for example a training provider's premises).

Question and resource development

Independent assessors are responsible for generating suitable questions in line with the EPAO's training and standardisation process. A question bank must be developed by EPAOs. Independent assessors must use the question bank as a source for questioning and are expected to use their professional judgment to tailor those questions appropriately. The question bank must be of sufficient size to prevent predictability and the EPAO must review it regularly (at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

EPAOs will produce the following material to support this assessment method:

- question bank that address all KSBs mapped to this assessment method
- structured specification
- a structured discussion point template for the independent assessor to use and record on during the professional discussion
- the discussion areas mapped to KSBs

- a grading matrix for the independent assessor to use

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments for this apprenticeship standard. This should include how an apprentice qualifies for reasonable adjustment and what reasonable adjustments will be made. The adjustments must maintain the validity, reliability and integrity of the assessment methods outlined in this assessment plan.

Weighting of assessment methods

All assessment methods are weighted equally in their contribution to the overall EPA grade.

Grading

Assessment method 1: Practical assessment with questioning

| KSBs | Fail | Pass Apprentices must meet all pass descriptors for a pass | Distinction Apprentices must meet all pass and all distinction descriptors for a distinction |
|---|---------------------------------|---|--|
| <p>K5 K13 K15 K16</p> <p>S1 S3 S4 S8 S9 S10 S11 S12 S13 S14 S17 S18 S19</p> <p>B1 B5</p> | Does not meet the pass criteria | <p>Plan a digital data and voice network</p> <p>Outlines the merits of different cabling and connectivity and applies a solution to the task set/given</p> <p>Selects and positions the equipment to be used with reference to their plan</p> <p>Demonstrates the use of equipment in a way that reflects the policies and procedures of the organisation and adheres to manufacturers guidelines</p> <p>Locates and applies organisational security policies and procedures</p> <p>Demonstrates that they access sites in a way which follows standard operating procedures and the policies/guidelines set out by the organisation</p> <p>(K5, S1, S4, S17, S18, S19)</p> <p>Build a digital data and voice network</p> <p>Demonstrates the installation or provides support for the installation of equipment and termination of cabling</p> <p>Performs and/or supports the installation and positioning of equipment to manufacturers specification and/or design detail producing reports and/or conducts tests to verify their actions</p> <p>Demonstrates the configuring and maintenance of IP based RF network(s)</p> <p>Reviews, audits, and modifies network element parameters (S3 S4 S12 S13 S14)</p> | <p>Justifies their choice of cabling and connectivity</p> <p>(S1)</p> <p>Reviews their application/use of equipment and technology to ensure continued compliance with manufacturers guidelines and organisational policies and procedures</p> <p>(S4)</p> |

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| | <p>Fault find a digital data and voice network</p> <p>Outlines and applies the use of fault finding methodologies to identify issues in the system, collating together related issues, including measuring system performance against specified SLAs</p> <p>Explains typical faults found in the scenario presented and describes how error control relates to this</p> <p>Uses test systems, processes and data to locate and identify the fault(s)</p> <p>Completes escalation processes according to organisation procedures for any issues that cannot be immediately resolved and updates fault management system</p> <p>Rectifies faults and highlights any issues that cannot be immediately resolved</p> <p>Configuration issues found and amendments made to both the system and the system documentation</p> <p>Establishes an approach to solving problems which puts causes and practical solutions in an order of priority (K13 K15 K16 S8 S9 S10 S11,S14 B5)</p> <p>Safety</p> <p>Establishes an approach to work practices and tasks which reflect standard operating procedures and the Health, Safety and Environmental policies of the organisation (B1)</p> | <p>Analyses test data and applies alternative systems or techniques in order to validate the original result (S14)</p> <p>Justifies why the appropriate test system is the right one to use (S8)</p> |
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Assessment method 2: Knowledge Test

The following grade boundaries apply to the test:

| Grade | Minimum score | Maximum score |
|-------------|---------------|---------------|
| Distinction | 17 | 20 |
| Pass | 14 | 16 |
| Fail | 0 | 13 |

Assessment method 3: Professional Discussion

| KSBs | Fail | Pass Apprentices must meet all pass descriptors for a pass | Distinction Apprentices must meet all pass and all distinction descriptors for a distinction |
|---|---------------------------------|---|---|
| K9 K11 K14 K17 K18 K19 K20 K22 K23 K24 K25 S2 S5 S6 S7 S15 S16 S20 S21 S22 S23 S24 B2 B3 B4 B6 | Does not meet the pass criteria | Security Describes basic security principles, policies and procedures including data protection, software, access encryption and regulation Describes how to report security breaches Explains network vulnerabilities and methods of assessing potential network vulnerabilities Explains the security process for how access to field-based sites is arranged (K18 K19 K20) Health and Safety Explains the importance of following HSE requirements (K17) Radio Planning Demonstrates the selection of location with reference to the planning process Explains constraints to spectrum on a given radio site Describes why capacity constraints exists and techniques used to increase available capacity Describes the relationship between capacity demands | |

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| | <p>and spectral usage in networks and to frequency re-use requirements</p> <p>Explains how to select the right frequency or code planning method for Code Division Multiple Access (CDMA) (K9 K11 S2 S7)</p> <p>Radio Performance</p> <p>Describes when a voice and data network is operating to user requirements</p> <p>Identifies the causes of issues relating to frequency re-use and other noise sources</p> <p>Demonstrates changes made to networks to enhance their performance (K14 S5 S15)</p> <p>Analysis</p> <p>Explains how to access information available in data sources and explains any differences</p> <p>Analyses complex data to draw conclusions. Describes the commercial impact of their conclusions (K24 S16 S14)</p> <p>Approach to Work</p> <p>Explains how they prioritise and plan work using a methodical approach</p> <p>Describes how they have written work plans and shares examples of how they have communicated to others</p> <p>Demonstrates how they have used customer feedback to process, prioritise and resolve issues effectively</p> <p>Explains the need for accessibility for all users and diversity of user need</p> <p>Explains how they have integrated into a multi-functional team both internally and externally to their organisation</p> <p>Describes an example of where they have taken ownership and responsibility for their work</p> | <p>Justifies their choice of frequency or code planning method (S7)</p> <p>Explains a range of interference sources and justifies the most likely cause (S5)</p> <p>Interprets the results of data analysis to critically evaluate the commercial impact (S16)</p> |
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| | <p>Prioritises and aligns work activities to organisational objectives</p> <p>Establishes a lead in the approach to workplace tasks which others follow (K22 K23 S6 S20 S21 S22 B2 B4 B6)</p> <p>Continual Professional Development</p> <p>Assumes the responsibility for their own CPD</p> <p>Demonstrates how they have reviewed their own development and kept up to date with developments in technologies, trends innovation and regulatory requirements</p> <p>Describes how their occupation fits into the wider digital landscape (K25 B3 S23 S24)</p> | |
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Overall EPA grading

All EPA methods must be passed for the EPA to be passed overall.

See table below.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole:

| Practical Assessment | Knowledge Test | Professional Discussion | Overall grading |
|----------------------|----------------|-------------------------|-----------------|
| Fail | Any grade | Any grade | Fail |
| Any grade | Fail | Any grade | Fail |
| Any grade | Any grade | Fail | Fail |
| Pass | Pass | Pass | Pass |
| Distinction | Pass | Pass | Pass |
| Pass | Pass | Distinction | Pass |
| Pass | Distinction | Pass | Pass |
| Pass | Distinction | Distinction | Merit |
| Distinction | Pass | Distinction | Merit |
| Distinction | Distinction | Pass | Merit |
| Distinction | Distinction | Distinction | Distinction |

Re-sits and re-takes

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit or re-take any failed assessment methods only.

The timescales for a re-sit/re-take is agreed between the employer and EPAO. A re-sit is typically taken within 2 months of the EPA outcome notification. The timescale for a re-take is dependent on how much re-training is required and is typically taken within 4 months of the EPA outcome notification.

All assessment methods must be taken within a 6-month period, otherwise the entire EPA will need to be re-sat/re-taken.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to distinction.

Where any assessment method has to be re-sat or re-taken, the apprentice will be awarded a maximum EPA grade of pass, unless the EPAO determines there are exceptional circumstances requiring a re-sit or re-take.

Roles and responsibilities

| Role | Responsibility |
|------------|---|
| Apprentice | <p>As a minimum, apprentices should:</p> <ul style="list-style-type: none"> • participate in and complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • undertake 20% off-the-job training as arranged by the employer and training provider • understand the purpose and importance of EPA • undertake the EPA including meeting all gateway requirements |
| Employer | <p>As a minimum, employers should:</p> <ul style="list-style-type: none"> • select the EPAO and training provider • work with the training provider (where applicable) to support the apprentice in the workplace and to provide the opportunities for the apprentice to develop the KSBs • arrange and support a minimum of 20% off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the occupational standard and so is ready for EPA • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan • remain independent from the delivery of the EPA • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner (including providing access to any employer-specific documentation as required, for example company policies) • ensure that the EPA is scheduled with the EPAO for a date and time which allow appropriate opportunity for the KSBs to be met • ensure the apprentice is well prepared for the EPA • ensure the apprentice is given sufficient time away from regular duties to prepare for and complete all post-gateway elements of the EPA, and that any required supervision during this time (as stated within this EPA plan) is in place • where the apprentice is assessed in the workplace, ensure that the apprentice has access to the resources used on a daily basis |

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| EPAO | <p>As a minimum, EPAOs should:</p> <ul style="list-style-type: none"> • agree the EPA price • conform to the requirements of this EPA plan and deliver its requirements in a timely manner • conform to the requirements of the Register of End-Point Assessment Organisations (RoEPAO) • conform to the requirements of the external quality assurance provider (EQAP) for this apprenticeship standard • understand the occupational standard • make all necessary contractual arrangements, including agreeing the price of the EPA • develop and produce assessment materials including specifications and marking materials (for example mark schemes, practice materials, training material) • appoint suitably qualified and competent independent assessors • appoint administrators (and invigilators where required) to administer the EPA as appropriate • provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading • provide adequate information, advice and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA • arrange for the EPA to take place, in consultation with the employer • deliver the EPA as outlined in this EPA plan in a timely manner • where the apprentice is not assessed in the workplace, ensure that the apprentice has access to the required resources and liaise with the employer to agree this if necessary • develop and provide appropriate assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to all relevant stakeholders • have no direct connection with the apprentice, their employer or training provider. In all instances, including when the EPAO is the training provider (i.e. HEI), there must be no conflict of interest • have policies and procedures for internal quality assurance (IQA), and maintain records of regular and robust IQA activity and moderation for external quality assurance (EQA) purposes |
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|----------------------|--|
| | <ul style="list-style-type: none"> • deliver induction training for independent assessors, and for invigilators and/or markers (where used) • undertake standardisation activity on this apprenticeship standard for all independent assessors before they conduct an EPA for the first time, if the EPA is updated and periodically as appropriate (a minimum of annually) • manage invigilation of apprentices in order to maintain security of the assessment in line with the EPAO's malpractice policy • verify the identity of the apprentice being assessed • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard • provide details of the independent assessor's name and contact details to the employer • have and apply appropriately an EPA appeals process • request certification via the Apprenticeship Service upon successful achievement of the EPA |
| Independent assessor | <p>As a minimum, independent assessors should:</p> <ul style="list-style-type: none"> • have the competence to assess the apprentice at this level and hold any required qualifications and experience in line with the requirements of the independent assessor as detailed in the IQA section of this EPA plan • understand the occupational standard and the requirements of this EPA • have, maintain and be able to evidence up-to-date knowledge and expertise of the subject matter • deliver the end-point assessment in-line with the EPA plan • comply with the IQA requirements of the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider; in all instances, including when the EPAO is the training provider (i.e. HEI) • attend induction training • attend standardisation events when they begin working for the EPAO, before they conduct an EPA for the first time and a minimum of annually on this apprenticeship standard • assess each assessment method, as determined by the EPA plan, and without extending the EPA unnecessarily • assess against the KSBs assigned to each assessment method, as shown in the mapping of assessment methods and as determined by the EPAO, and without extending the EPA unnecessarily • make all grading decisions • record and report all assessment outcome decisions, for each apprentice, following instructions and using |

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| | <p>assessment recording documentation provided by the EPAO, in a timely manner</p> <ul style="list-style-type: none"> • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard |
| Training provider | <p>As a minimum, training providers should:</p> <ul style="list-style-type: none"> • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the knowledge, skills and behaviours as listed in the occupational standard • conduct training covering any knowledge, skill or behaviour requirement agreed as part of the Commitment Statement (often known as the Individual Learning Plan). • monitor the apprentice's progress during any training provider led on-programme learning • advise the employer, upon request, on the apprentice's readiness for EPA • remain independent from delivery of the EPA. Where the training provider is the EPA (i.e. a HEI) there must be procedures in place to mitigate against any conflict of interest |

Internal Quality Assurance (IQA)

Internal quality assurance refers to the strategies, policies and procedures that EPAOs must have in place to ensure valid, consistent and reliable end-point assessment decisions. EPAOs for this EPA must adhere to all requirements within the Roles and Responsibilities section and:

- have effective and rigorous quality assurance systems and procedures that ensure fair, reliable and consistent assessment across employers, places, times and independent assessors
- appoint independent assessors who have recent relevant experience of the occupation/sector at least one level above the apprentice gained in the last two years or significant experience of the occupation/sector.
- appoint independent assessors who are competent to deliver the end-point assessment and who meet the following minimum requirements:
 - Experience of setting up, configuring, maintaining and monitoring radio networks to deliver data services and has operated processes for the design, installation, test, implementation, fault finding and optimisation of radio telecoms networks.
- operate induction training for independent assessors, markers and invigilators
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- where appropriate:
 - provide ongoing training for markers
 - provide ongoing training for invigilators
- undertake standardisation activity on this apprenticeship standard for all independent assessors:
 - before they conduct an EPA for the first time
 - if the EPA is updated
 - periodically as appropriate (a minimum of annually)
- conduct effective moderation of assessment decisions and grades
- conduct appeals where required, according to the EPAO's appeals procedure, reviewing and making final decisions on assessment decisions and grades

Value for money

Affordability of the EPA will be aided by using at least some of the following practice:

- Use of technology – for example live streaming and screen sharing where applicable

Location – for example use of employer premises

Professional body recognition

This apprenticeship is designed to prepare successful apprentices to meet the requirements for registration as a Radio Network Technician with The Institute of Telecommunications Professionals.

The experience gained and responsibility held by the apprentice on completion of the apprenticeship standard will either wholly or partially satisfy the requirements for registration with the professional

body. For more details on the requirements and application process, please contact the professional body directly.

Mapping of knowledge, skills and behaviours (KSBs)

Assessment method 1: Practical assessment with questioning

| Knowledge |
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| K5 The different types of cabling and connectivity and their relative merits |
| K13 Techniques and systems used in testing to identify the location and cause of faults in complex and/or non-standard radio telecommunications networks; including observation, simulation, measurement, identification of function loss comparison, and previous fault data. Previous fault data includes frequency of occurrence, manufacturers' documentation including user guides and diagnostic data, maintenance records, trending, built-in diagnostics, alarm priority, comparison with commissioning results |
| K15 The fault finding process and how to measure performance against targets, including an awareness of service level agreements |
| K16 The types of fault which may occur, the main factors affecting network performance including typical faults, and approaches to error control |

| Skills |
|--|
| S1 Operate the planning process including selection of appropriate equipment |
| S3 Install or support installation of equipment and termination of cabling |
| S4 Install, or support the installation, positioning equipment according to manufacturer's specifications, design detail and perform administrative tasks including installation reports and test results |
| S8 Access and use the appropriate test system |
| S9 Report faults and use the appropriate escalation process |
| S10 Collate and input fault data and statements into the fault management system |
| S11 Rectify faults within own area of control or escalate as appropriate |
| S12 Utilise tools to review, audit and modify network element parameters |
| S13 Configure and maintain Internet Protocol (IP) based Radio Frequency (RF) telecommunications network |
| S14 Gather network performance information and user insight through feedback or user experience |
| S17 Use equipment and technology responsibly and effectively |
| S18 Locate and apply organisational security policies |
| S19 Arrange access to sites according to required procedure |

| Behaviours |
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| B1 Adheres to required work practices and conducts all work in a manner which is safe |

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| B5 Demonstrates a pragmatic and logical approach to problem solving |
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Assessment method 2: Knowledge Test

| Knowledge |
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| K1 The basics of radio propagation including path profile analysis and the behavior of radio waves as they travel from one point to another covering line of sight and different band frequencies |
| K2 The characteristics of digital communication including differences to how analogue networks behave |
| K3 The causes and impact of radio interference and noise in a network |
| K4 Basic electricity theory for antenna |
| K6 Network architectures, the specification of a network's physical components and their functional organisation and configuration; its operational principles, procedures, protocols and related management tools |
| K7 The need for and the principles of spectrum re-use in networks and an understanding of manual and automated methods of frequency planning for narrow band networks |
| K8 The existence of uplink and downlink channels in networks and their uses |
| K10 Impact of harmonics in radio frequency and how to reduce this |
| K12 The differences between wide-band and narrow band networks, the use of simplex and duplex techniques in networks, methods of frequency hopping and their benefits in narrow band networks and manual and automated methods of code planning in Code Division Multiple Access (CDMA) networks |
| K21 How to use data ethically and the implications for wider society, with respect to the use of data and automation |

Assessment method 3: Professional Discussion

| Knowledge |
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| K9 Constraints to spectrum which can be used on a given radio site based on information about spectrum already in use on it and nearby |
| K11 The relationship between capacity demands and spectral usage in networks and to frequency re-use requirements |
| K14 What equates to good voice and data network performance |
| K17 The importance of following relevant health and safety requirements |

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| K18 Basic security principles, policies and procedures including general relevant data protection, software, access, encryption and regulation and how to report security breaches and an awareness of digital infrastructure |
| K19 Existence of network vulnerabilities and how they are assessed |
| K20 The security process for accessing field based sites |
| K22 The need for accessibility for all users and diversity of user needs |
| K23 Roles within a multidisciplinary team and the interfaces with other areas of an organisation |
| K24 Information available in data sources, how to access these and commonality and difference between them |
| K25 How their occupation fits into the wider digital landscape and any current or future regulatory requirements |

| Skills |
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| S2 Select appropriate location as part the planning process |
| S5 Identify the causes of issues relating to frequency re-use and other noise sources |
| S6 Prioritise, plan and organise work activity using a methodical approach |
| S7 Select the right frequency or code planning method for Code Division Multiple Access (CDMA) in a given scenario |
| S15 Implement procedures to enhance the performance of the network |
| S16 Analyse complex data, draw meaningful conclusions and understand commercial impact |
| S20 Create a written work plan & communicate plan to team members |
| S21 Use customer feedback to process, prioritise and resolve issues effectively |
| S22 Work in agile, multi-disciplinary delivery teams, taking a flexible, collaborative and pragmatic approach to delivering tasks |
| S23 Keep up to date with developments in technologies, trends and innovation using a range of sources |
| S24 Review own development needs |

| Behaviours |
|---|
| B2 Aligns work activities and priorities to organisational objectives |
| B3 Is responsible for own continued professional development |
| B4 Uses initiative to take ownership and responsibility for their work |
| B6 Is a positive role model to others in attitude to work and how it is undertaken |