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NAS Level 3 Radio Network Technician End-Point Assessment Specification

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Introduction to Notebook Assessment Services

Welcome to the Notebook Assessment Services (NAS) End-Point Assessment specification for the Level 3 Radio Network Technician Apprenticeship Standard (ST0757). This specification is designed for Version 1.0 of the standard.

The information for this apprenticeship standard can be accessed on the Institute for Apprenticeships & Technical Education (IfATE) website here. The assessment plan can be accessed here.

NAS is an independent End-Point Assessment organisation that has been approved to offer and carry out the Independent End-Point Assessment (EPA) for the Level 3 Radio Network Technician Apprenticeship Standard. NAS mark and Internally Quality Assure (IQA) all EPA in accordance with marking and quality assurance processes.

Additionally, all EPAs are Externally Quality Assured (EQA) by Ofqual.

This specification is designed to outline all you need to know about the EPA for this Standard and will also provide an overview of the on-programme delivery requirements.

In addition, advice, and guidance for training providers on how to prepare apprentices for the EPA is included. The approaches suggested are not the only way in which an apprentice may be prepared for their assessments, but providers may find them helpful as a starting point.

Key facts	
Apprenticeship Standard:	Radio Network Technician
Reference Code:	ST0757
Version:	1.0
Level:	3
LARS Code:	611
On Programme Duration:	Typically 24 months (with 20% off-the-job training)
EPA Period:	Typically 4 Months
Overall Grading:	Fail/ Pass/ Merit/ Distinction
Assessment methods:	1. Practical Assessment with questioning 2. Knowledge Test 3. Professional Discussion
Assessment Order	Assessments can be taken in any order
Professional Recognition	Recognised for entry onto the BCS Register of IT Technicians Those completing the apprenticeship are eligible for recognition of the Institute of Telecommunications Professionals at full membership

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Assessment methodology summary

Practical Assessment with Questioning

The apprentice will be observed conducting 3 practical assessments in a simulated environment. This will be supplemented by a minimum of 10 questions during and after the practical.

The practical will last 5 hours and 30 minutes and be broken down as below:

1. Plan a digital data and voice network (1 hour)
2. Build a digital data and voice network (3 hours)
3. Fault find a digital data and voice network (1 hour 30 minutes)

The assessor can extend the assessment by up to 10% to allow the apprentice to complete a task or question.

Grading: Fail/ Pass/ Distinction

Knowledge Test

The apprentice will complete a closed book multiple choice question test consisting of 20 questions.

The test will last up to 60 minutes.

Grading: Fail/ Pass/ Distinction

Professional Discussion

A two-way discussion between the apprentice and the assessor.

The discussion will last for 60 minutes and may be extended by 10% to allow the apprentice to complete their last answer.

The assessor will ask a minimum of 7 questions.

Grading: Fail/ Pass/ Distinction

Gateway Requirements

For Radio Network Technician, the following requirements must be met and evidenced for an apprentice to pass through Gateway:

- The employer must be satisfied that the apprentice is consistently working at, or above, the level of the occupational standard.
- The apprentice must hold a Level 2 English and Maths functional skills qualification or equivalent.
- NAS Gateway Declaration Form.

For those with an education, health and care plan or a legacy statement the English and Mathematics minimum requirement is Entry Level 3 and British Sign Language qualifications are an alternative to English qualifications for whom this is their primary language.

Overview of the Standard

The role of the radio network technician is found in Telecommunications operators, the Ministry of Defence and their vendors and suppliers responsible for broadcasting digital voice and data services via a mobile telecommunications network. This network will deliver these services to specific corporate, public, emergency services and military organisations.

The broad purpose of the occupation is to ensure that digital data and voice networks operate at an optimal level. This is to provide the best possible service to their customers, working as part of a national or regional radio network team.

The individual will set up, configure, maintain and monitor radio networks to deliver data services and operate processes for the design, installation, test, implementation, fault finding and optimisation of radio telecoms networks.

In their daily work, an employee in this occupation interacts with internal and external customers, owners of potential new cell site locations, equipment suppliers, internal teams, and cross functional leaders. The occupation is a mix of office work, on site work and field-based work.

An employee in this occupation will be responsible for managing radio network equipment to achieve network performance objectives in terms of service, coverage, quality and availability. They will initiate, own and complete processes, tasks and procedures, supporting the wider team to deliver long-term and short-term project priorities. They will use their initiative, work with minimal supervision, and report into a manager.

On-programme requirements

The process of learning, development and on-programme assessment is crucial to ensure that the apprentice develops the KSBs required to achieve full competence in line with the Radio Network Technician Apprenticeship Standard.

Apprentices will be required to demonstrate continuous and sustained progress towards the EPA by completing work set out by their employer and demonstrating the KSBs required in the relevant role.

The on-programme aspect of the apprenticeship is expected to take a minimum of 24 months to complete and should include specific milestones to ensure that the apprentice continues to make good progress towards their EPA.

Therefore, it is recommended that quarterly milestone meetings with the training provider, employer and apprentice are scheduled to check progress against KSBs and for everyone to give feedback.

The milestone meetings could take the form of one-to-one tutorials, interviews, or professional conversations to support the development of the apprentice's communication and employability skills.

This period of learning and associated assessments must be completed before the EPA can take place.

All training leading to EPA should cover the breadth and depth of the Standard, integrating the KSBs to ensure that the apprentice is sufficiently prepared to undertake the EPA.

Registration

Apprentices should be registered onto ACE 360 as soon as they start their apprenticeship programme and the provider has decided to use NAS for their EPA.

Gateway

How to prepare for Gateway

To begin their EPA, an apprentice must first pass-through Gateway. This stage is driven by the employer being satisfied that the apprentice is consistently working at or above the level set out in the occupational standard. Essentially, stating that the apprentice has achieved occupational competence. This decision is often made at a Gateway meeting involving the employer, the apprentice, and the training provider. The decision must ultimately be made by the employer.

The apprentice should prepare for this meeting by bringing along relevant work-based evidence, including:

- Customer feedback
- Recordings
- Manager statements
- Witness statements

As well as evidence from others, the apprentice may wish to include:

- Mid and end-of-year performance reviews
- Feedback to show how they have met the KSBs while on programme

Apprentices should be advised by employers and providers to gather evidence and undertake the required qualifications during their on-programme training.

It is recommended that employers and providers complete regular checks and reviews of this evidence to ensure the apprentice is progressing and achieving the Standards before the formal Gateway meeting is arranged.

The Gateway meeting

The Gateway meeting should last around 1 hour and must be completed on or after the apprenticeship on-programme end date.

It should be attended by the apprentice and the relevant people who have worked with the apprentice on programme.

During the meeting, the apprentice, employer, and training provider will discuss the apprentice's progress to date and confirm if the apprentice has met the full criteria of the apprenticeship Standard during their on-programme training.

The **Gateway declaration form** should be used to log the outcomes of the meeting and agreed upon by all 3 parties. This form is available to download from ACE 360 for each standard. The form should then be submitted to NAS via ACE 360 along with the other required documents to initiate the EPA process. If you require any support completing the Gateway readiness report, please contact NAS.

Please note: a copy of the Standard should be available to all attendees during the Gateway meeting.

Reasonable Adjustments and Special Consideration

A reasonable adjustment, as defined by Ofqual, is an adjustment to an assessment to enable a disabled Learner to demonstrate his or her knowledge, skills and understanding to the levels of attainment required by the specification for that qualification.

A special consideration, as defined by Ofqual, is consideration to be given to a Learner who has temporarily experienced an illness or injury, or some other event outside of his or her control, which has, or is reasonably likely to have, materially affected the Learner's ability to:

a. take an assessment, or
b. demonstrate his or her level of attainment in an assessment

Please refer to the NAS Reasonable Adjustments and Special Consideration Policy for full information on eligibility and applying for a reasonable adjustment or special consideration. This policy is accessible via the NAS website and ACE 360.

Photographic ID requirements

All employers are required to ensure that each apprentice has their identification with them on the day of assessment so the IEPA can check that the person undertaking the assessment is indeed the person they are claiming to be.

NAS will accept the following as proof of an apprentice's identity:

- A valid passport (any nationality)
- A signed UK photocard driving licence
- A valid identity card issued by HM forces or the police
- Another photographic ID card, e.g., employee ID card, travel card, etc.

Assessment

Practical Assessment with Questioning

Overview

Apprentices will be observed by an IEPA completing 3 practical assessments in a simulated environment. This will be supplemented by questioning by the independent assessor to establish the apprentice's understanding of underpinning reasoning.

The practical assessments must be carried out over a total assessment time of 5 hours and 30 minutes. The apprentice will be given one assessment at a time by the IEPA, and they will complete each practical assessment and questioning before going on to the next. The IEPA has the discretion to extend the assessment by up to 10% to allow the apprentice to complete a task or respond to a question.

Up to 10 questions will be asked both during and after the assessment. This will occur within the total allowed time of 5 hours 30 minutes. The purpose of questioning is to allow the apprentice to evidence any gaps in KSBs not evidenced by the practical assessment.

The IEPA can only conduct one assessment at the same time.

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

The assessment has three distinct elements:

1. Plan a digital data and voice network (lasting 1 hour)
2. Build a digital data and voice network (lasting 3 hours)
3. Fault find a digital data and voice network (lasting 1 hour 30 minutes)

Typically, all three assessments will be completed on a single day, however, they can cover a period of up to 7 days. Once started, an element must be completed on the same day.

The assessment will be conducted in a controlled environment, free from distractions and influence and apprentices will be invigilated throughout the day to ensure the security of the assessment, including during breaks. Typically, the assessment will take place on the employer's premises and may be at a location selected by NAS. The location must be fitted with:

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

The IEPA will ensure that the apprentice is carrying out the activities in a safe manner.

NAS will arrange for the practical assessment with questioning to take place in consultation with the employer and training provider.

Typical Practical Assessments

The assessment plan provides the below examples of content that may appear in each assessment element.

Element 1: Plan a digital data and voice network:

- Devise a plan of work for the build stage
- Choose the appropriate connection method/solution
- Select the 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

Element 2: Build a digital data and voice network:

- 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 the 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

Element 3: Fault find a digital data and voice network

- 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 practical assessment will be graded as Fail, Pass or Distinction.

Knowledge Test

The apprentice will undertake a closed book multiple choice question test. The test will consist of 20 questions with four options for each and will last a maximum of 1 hour.

NAS offer the option for the test to be taken electronically with remote invigilation or paper based.

The test will be undertaken in an invigilated environment, either remotely or in person with an invigilator.

The knowledge test will be graded as Fail, Pass or Distinction.

Professional Discussion

The Professional Discussion is a conversation between the IEPA and the apprentice where the apprentice will be asked a minimum of 7 questions. These questions will align with the KSBS assigned to the Professional Discussion. The discussion can take place at the employer's premises, or another suitable venue selected by the EPAO. The venue must meet NAS' Controlled Assessment Policy and can utilise video conferencing.

The discussion must last for 60 minutes, and the IEPA has the discretion to increase the time allowance by up to 10% to allow the apprentice to complete their last answer.

The discussion will cover the following themes:

- Security
- Health and Safety
- Radio Planning
- Radio performance
- Analysis
- Approach to work
- Continuous Professional Development

The assessment will be conducted in a controlled environment, free from distractions and influence.

The professional discussion will be graded as Fail, Pass or Distinction.

Assessment Method Grading

Assessment Method 1: Practical Assessment with Questioning

For this assessment method, the apprentice must meet all of the pass criteria for a pass and all pass and distinction criteria to achieve a distinction. If all pass criteria are not met, the apprentice will receive a fail.

KSBs	Name of grade	Grade descriptor
K5, K13, K15, K16 S1, S3, S4, S8, S9, S10, S11, S12, S13, S14, S17, S18, S19 B1, B5	Fail	Fails to meet the pass criteria
	Pass	**All of the following pass criteria need to be achieved to obtain a pass:** **Plan a digital data and voice network** Outlines the merits of different cabling and connectivity and applies a solution to the task set/given Selects and positions the equipment to be used with reference to their plan Demonstrates the use of equipment in a way that reflects the policies and procedures of the organisation and adheres to manufacturers guidelines Locates and applies organisational security policies and procedures Demonstrates that they access sites in a way which follows standard operating procedures and the policies/guidelines set out by the organisation (K5, S1, S4, S17, S18, S19) **Build a digital data and voice network** Demonstrates the installation or provides support for the installation of equipment and termination of cabling

		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 Demonstrates the configuring and maintenance of IP based RF network(s) Reviews, audits, and modifies network element parameters (S3, S4, S12, S13, S14) **Fault find a digital data and voice network** 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 Explains typical faults found in the scenario presented and describes how error control relates to this Uses test systems, processes and data to locate and identify the fault(s) Completes escalation processes according to organisation procedures for any issues that cannot be immediately resolved and updates fault management system Rectifies faults and highlights any issues that cannot be immediately resolved Configuration issues found and amendments made to both the system and the system documentation 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) **Safety**

		Establishes an approach to work practices and tasks which reflect standard operating procedures and the Health, Safety and Environmental policies of the organisation (B1)
	Distinction	**In addition to achieving all pass criteria, all of the following distinction criteria need to be achieved to obtain a distinction:** Justifies their choice of cabling and connectivity (S1) Reviews their application/use of equipment and technology to ensure continued compliance with manufacturers guidelines and organisational policies and procedures (S4) Analyses test data and applies alternative systems or techniques in order to validate the original result (S14) Justifies why the appropriate test system is the right one to use (S8)

Assessment Method 2: Knowledge Test
For this assessment component, the apprentice must achieve a minimum number of marks to obtain a passing grade. The maximum number of marks it is possible to receive is 20.

Grade	Minimum Score	Maximum Score
Distinction	17	20
Pass	14	16
Fail	0	13

Assessment Method 3: Professional Discussion
For this assessment method, the apprentice must meet all of the pass criteria for a pass and all pass and distinction criteria to achieve a distinction. If all pass criteria are not met, the apprentice will receive a fail.

KSBs	Name of grade	Grade descriptor
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	Fail	Fails to meet the pass criteria
	Pass	**All of the following pass criteria need to be achieved to obtain a pass:** **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 and spectral usage in networks and to frequency re-use requirements

		Explains how to select the right frequency or code planning method for Code Division Multiple Access (CDMA) (K9 K11 S2 S7) **Radio Performance** Describes when a voice and data network is operating to user requirements Identifies the causes of issues relating to frequency re-use and other noise sources Demonstrates changes made to networks to enhance their performance (K14 S5 S15) **Analysis** Explains how to access information available in data sources and explains any differences Analyses complex data to draw conclusions. Describes the commercial impact of their conclusions (K24 S16 S14) **Approach to Work** Explains how they prioritise and plan work using a methodical approach Describes how they have written work plans and shares examples of how they have communicated to others Demonstrates how they have used customer feedback to process, prioritise and resolve issues effectively

		Explains the need for accessibility for all users and diversity of user need Explains how they have integrated into a multi-functional team both internally and externally to their organisation Describes an example of where they have taken ownership and responsibility for their work Prioritises and aligns work activities to organisational objectives Establishes a lead in the approach to workplace tasks which others follow (K22 K23 S6 S20 S21 S22 B2 B4 B6) **Continual Professional Development** Assumes the responsibility for their own CPD Demonstrates how they have reviewed their own development and kept up to date with developments in technologies, trends innovation and regulatory requirements Describes how their occupation fits into the wider digital landscape (K25 B3 S23 S24)
	Distinction	**In addition to achieving all pass criteria all of the following distinction criteria need to be achieved to obtain a distinction:** Justifies their choice of frequency or code planning method (S7) Explains a range of interference sources and justifies the most likely cause (S5) Interprets the results of data analysis to critically evaluate the commercial impact (S16)

Before the assessment

The employer/training provider should brief the apprentice on the areas that will be assessed during the EPA.

Employers/training providers should:

- Ensure the apprentice knows the date, time, and location of the assessment
- Brief the apprentice on the activities to be carried out and the duration of the assessments
- Ensure the apprentice knows which criteria will be assessed
- Encourage the apprentice to reflect on their experience and learning on-programme to understand what is required to meet the Standard
- Be prepared to provide clarification to the apprentice, and signpost them to relevant parts of their on-programme experience in preparation for their assessment
- Strongly advise apprentices to take a printed copy of their portfolio and the Apprentice Portfolio Checklist to which they can refer during the Professional Discussion.

Aiming for distinction

For the apprentice to give themselves the best chance of achieving a distinction, they should prepare as best they can.

The IEPA may ask questions or give prompts to explore why the apprentice has approached a task in a certain way and to provide them with more opportunities to demonstrate the distinction criteria which may require them to justify or explain their thinking to a higher level.

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Apprenticeship Grading

The final apprenticeship grade is based on performance across all three EPA methods. The IEPA will combine the result of the Practical Assessment with Questioning, the Knowledge Test and the Professional Discussion to produce a final grade. The apprentice must achieve a minimum of a **pass** in all components to gain an overall **pass,** two **distinctions** across the three components to get an overall **merit** and gain a **distinction** in all components to gain an overall **distinction**. This is outlined in the table below:

Practical Assessment and Questioning	**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

NAS will issue a results statement to the Training Provider via ACE360. The results statement will detail the result for each of the EPA activities, alongside the overall grade. It will also provide details of the apprentice's rights to appeal, and how to arrange resits or retakes.

NAS will send the results to the training provider and after 10 working days, when the appeals window has elapsed, will apply for the apprenticeship certificates. Where an appeal is submitted, the apprenticeship certificate will not be applied for. Certificates will be sent direct to the Employer from the Education and Skills Funding Agency.

Retake and resit information

Where an apprentice fails an assessment component or the assessment is voided, they will have the opportunity to undertake a re-sit or re-take for that component.

Re-sits can be arranged immediately whilst re-takes require the apprentice to go back into a period of learning. Re-sits and re-takes can be for individual components or all components of the apprenticeship and will incur additional fees as stated in NAS' price list. Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to decide that either a re-sit or re-take is an appropriate course of action.

When undertaking a re-sit or re-take, the whole assessment component will need to be reattempted in full, regardless of any individual assessment criteria that were passed on any prior attempt. The EPA Results Statement will contain feedback on areas for development that will be useful for the apprentice.

The timescales for a re-sit/re-take are agreed between the employer and NAS. 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.

Any assessment methods must be taken within a six-month period, otherwise, the entire EPA will need to be re-sat or re-taken. The exception to this is where circumstances apply that may be suitable for Reasonable Adjustment.

Re-sits and re-takes are not offered to apprentices wishing to improve their overall grade.

Where any assessment method must be re-sat or re-taken, the apprentice will be awarded a maximum EPA grade of pass, unless NAS determines there are exceptional circumstances.

Appeals

Appeals must be submitted to NAS within 10 working days of the issue of the result to the training provider and must follow the process outlined within the NAS Appeals Policy. Appropriate grounds for appeal are outlined within the policy that can be found on ACE 360.

Quality assurance

Internal – NAS have in place quality assurance procedures adhering to best practice and regulatory requirements. This includes minimum occupational competence requirements for IEPAs and standardisation training to ensure consistency across assessments.

External – External quality assurance will be undertaken by Ofqual.

Contact information

enquiries@notebook-epa.co.uk

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Appendix A – Occupational Duties

Duty	Criteria for Measuring Performance	KSBs
Duty 1 Select new cell site locations and design new cell sites in relation to network planning which is required to meet site specific targets including containment of coverage. This should also include consideration of Health & Safety procedures and applicable national and international legislation and regulations. This may include sites to be permanently part of the network or for a temporary purpose.	Meets specific geographic coverage and quality targets. Cell sites successfully implemented. Complies with Health & Safety procedures, and applicable national and international legislation and regulations.	K1, K3, K5, K7, K9, K11, K12, K17, K20 S1, S2, S5, S15, S17, S22 B1, B2, B6
Duty 2 Perform user level maintenance and testing on the digital radio and data network using associated test equipment e.g. TEMS (testing mobile systems tool) or CW (constant carrier wave testing) or other testing systems such as built in test facilities for digital radios and user data terminals. Test and monitor the network performance and signal, analyse log files to identify faults and key issues. Inspect and test internal and external distribution systems of static sites and mobile network platforms.	Effective testing and monitoring of network performance carried out within set timescales. Proficient use of proprietary generic log file tools to correctly identify, locate, rectify or report issue/faults is demonstrated within timescales to ensure optimisation. Faults are correctly analysed using all available tools including network applications and online support in compliance with equipment care directives and policy. After action review has taken place to analyse and identify trends or common factors affecting network performance. Log files shared with support teams others who need them in accordance to defined timescales; Insight gathered and signed off for quality to specifications.	K2, K3, K13, K14, K15, K17 S4, S7, S8, S9, S10, S14 S15 B1, B2, B4, B5, B6

Duty 3 Report on the information contained in generic log files or system generated fault codes and how this information provides insight into the performance of their own network and that of their competitors. React and correct issues within their control. Identify issues that require support from other people or teams and request network support at the correct level following process.	Reports any areas of concern and raises any potential hazards/risks to the relevant people	K2, K10, K12, K13, K22, K24 S7, S11, S14 S15, S16, S22 B1, B2, B6
Duty 4 Follow security policies relating to people security, information and process security, physical security and computer and network security policies, current data protection regulations and non-disclosure agreements	Faults correctly identified and managed. Meets targets for service availability and consistent and reliable network provided for customers use.	K18, K19, K20, K21 S17, S18 B1, B2, B6
Duty 5 Manage faults using fault management systems and state the responsibilities of the team to support this.	Reacts appropriately to triggers in the required timescale. Takes action or makes recommendations following process. Records recommendations accurately. Network services meets company objectives for area under this employee's control.	K13, K15, K16, K22, K24 S8, S10, S11 S16, S17, S22 B1, B2, B6
Duty 6 Monitor network statistics, identify where changes can be made and make adjustments or corrections to improve the network. Complete any further changes based on reviews which could include reversal of changes. Escalate any adjustments or corrections outside of their control to the appropriate areas.	Records and reports recommendations or requests made to others where the fix is outside of employee's direct control. Takes action or makes adjustments and recommendations following process. Network Key Performance Indicators (KPIs) meet minimum	K2, K6, K12, K13, K14, K16, K22, K24 S8, S11, S12 S14, S15, S16, S17 B2, B5, B6

	standard for area under employee's direct control.	
Duty 7 Review customers' feedback and make adjustments to improve the network by monitoring sources of input (including customer complaints via customer care, social media, customer satisfaction surveys) and recognise which issues can and should be addressed.	Network equipment built to plan specification within timescales required. Once complete, work signed off by technical lead.	K2, K13, K15, K16, K19, K21 S8, S11, S12 S14, S15, S16, S17, S21 B2, B5, B6
Duty 8 Install and commission radio network equipment and systems.	Deliver level of capacity required to meet customer expectations. Optimisation efforts agreed and signed off by technical expert.	K4, K5, K6, K10, K17 S1, S2, S4, S13, S17, S19, S22 B1, B5, B6
Duty 9 Support frequency and Code Division Multiple Access (CDMA) code planning for radio networks to ensure optimisation of network capacity available to customers.	Deadlines of work activity and duties met Priorities are achieved	K1, K3, K7, K8, K9, K10, K11, K12 S5, S7, S17 B2, B6
Duty 10 Independently create and implement a prioritised plan of own workload to meet deadlines and company priorities	Technical expert signs off that area under employees control following any guidance set in place.	K17 S6, S20, S22 B1, B2, B4, B6
Duty 11 Recognise the purpose of networking settings and parameters and ensures that the network continues to adhere to any controls for these parameters.		K2, K24 S12, S13, S16, S17 B1, B6
Duty 12 Practice continuous self-learning to keep up to date with technological developments to enhance relevant skills and take responsibility for own professional development.		K25 S23, S24 B3, B4

Duty 13 Collaborate with people both internally and externally at all levels with a view to deliver a network that meets customer's needs.		K22, K23 S6, S9, S20, S22 B6

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Appendix B – Published Knowledge, Skills and Understanding

Knowledge
K1: The basics of radio propagation including path profile analysis and the behaviour 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
K5: The different types of cabling and connectivity and their relative merits
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
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
K10: Impact of harmonics in radio frequency and how to reduce this
K11: The relationship between capacity demands and spectral usage in networks and to frequency re-use requirements
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.
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.
K14: What equates to good voice and data network performance
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
K17: The importance of following relevant health and safety requirements
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

K21: How to use data ethically and the implications for wider society, with respect to the use of data and automation.
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
S1: Operate the planning process including selection of appropriate equipment
S2: Select appropriate location as part the planning process
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
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
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
S15: Implement procedures to enhance the performance of the network
S16: Analyse complex data, draw meaningful conclusions and understand commercial impact
S17: Use equipment and technology responsibly and effectively
S18: Locate and apply organisational security polices
S19: Arrange access to sites according to required procedure
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
B1: Adheres to required work practices and conducts all work in a manner which is safe
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
B5: Demonstrates a pragmatic and logical approach to problem solving
B6: Is a positive role model to others in attitude to work and how it is undertaken

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Appendix C – Roles and Responsibilities

Role	Responsibility
Apprentice	As a minimum, apprentices should: • 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	As a minimum, employers should: • 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
EPAO	As a minimum, EPAOs should: • 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 • 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	As a minimum, independent assessors should: • 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 assessment recording documentation provided by the EPAO, in a timely manner • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard
Training provider	As a minimum, training providers should: • 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

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Appendix D – Mapping of KSBs

KSB code	Methods mapped against
Knowledge	
K1	Knowledge Test
K2	Knowledge Test
K3	Knowledge Test
K4	Knowledge Test
K5	Practical Assessment with Questioning
K6	Knowledge Test
K7	Knowledge Test
K8	Knowledge Test
K9	Professional Discussion
K10	Knowledge Test
K11	Professional Discussion
K12	Knowledge Test
K13	Practical Assessment with Questioning
K14	Professional Discussion
K15	Practical Assessment with Questioning
K16	Practical Assessment with Questioning
K17	Professional Discussion
K18	Professional Discussion
K19	Professional Discussion
K20	Professional Discussion
K21	Knowledge Test
K22	Professional Discussion
K23	Professional Discussion
K24	Professional Discussion
K25	Professional Discussion
Skills	
S1	Practical Assessment with Questioning
S2	Professional Discussion
S3	Practical Assessment with Questioning
S4	Practical Assessment with Questioning
S5	Professional Discussion
S6	Professional Discussion
S7	Professional Discussion
S8	Practical Assessment with Questioning
S9	Practical Assessment with Questioning
S10	Practical Assessment with Questioning
S11	Practical Assessment with Questioning
S12	Practical Assessment with Questioning
S13	Practical Assessment with Questioning
S14	Practical Assessment with Questioning
S15	Professional Discussion
S16	Professional Discussion
S17	Practical Assessment with Questioning
S18	Practical Assessment with Questioning

S19	Practical Assessment with Questioning
S20	Professional Discussion
S21	Professional Discussion
S22	Professional Discussion
S23	Professional Discussion
S24	Professional Discussion
Behaviours	
B1	Practical Assessment with Questioning
B2	Professional Discussion
B3	Professional Discussion
B4	Professional Discussion
B5	Practical Assessment with Questioning
B6	Professional Discussion