

End-point assessment plan for Broadcast and Media Systems Technician apprenticeship standard

Apprenticeship standard reference number	Level of this end point assessment (EPA)	Integrated
ST0425	5	No

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Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Broadcast and Media Systems 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 Broadcast and Media Systems 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 will 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 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 that they can be evidenced to an EPAO.

All pre-requisites for EPA assessment methods must also be complete and available for the assessor as necessary.

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 a maximum of 6 month(s), beginning when the apprentice has passed the EPA gateway.

The EPA consists of 3 discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Knowledge test

- Fail
- Pass
- Distinction

Assessment method 2: Project with presentation and supplementary questioning

- Fail
- Pass
- Distinction

Assessment method 3: Professional Discussion underpinned by portfolio

- Fail
- Pass
- Distinction

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

- Fail
- Pass
- Distinction

EPA summary table

On-programme (typically 24 months)	<p>Training to develop the occupation standard's knowledge, skills and behaviours.</p> <p>Training towards English and mathematics Level 2, if required.</p> <p>Compiling a portfolio of examples.</p>
End-point Assessment Gateway	<p>Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard.</p> <p>Apprentices must have achieved English and mathematics at Level 2.</p> <p>Apprentices must submit:</p> <ul style="list-style-type: none"> • A portfolio of examples to be used to underpin the Professional Discussion. <p>The project's subject, title and scope will be agreed between the employer and the EPAO.</p>
End Point Assessment (which would typically take 6 months)	<p>Assessment Method 1: Knowledge test</p> <p>With the following grades:</p> <ul style="list-style-type: none"> • Fail • Pass • Distinction <p>Assessment Method 2: Project with presentation and supplementary questioning</p> <p>With the following grades:</p> <ul style="list-style-type: none"> • Fail • Pass • Distinction <p>Assessment Method 3: Professional Discussion underpinned by portfolio</p> <p>With the following grades:</p> <ul style="list-style-type: none"> • Fail • Pass • Distinction
Professional recognition	<p>Aligns with recognition by:</p> <ul style="list-style-type: none"> • Engineering Council - Technician Level

Length of end-point assessment period:

The EPA must be completed within an EPA period lasting a maximum of 6 month(s), beginning when the apprentice has passed the EPA gateway.

Any supporting material required for the EPA should be submitted at the Gateway.

If an EPA assessment method is failed, it should be resat or retaken within the EPA period and in-line with the requirements set out in this assessment plan.

Order of assessment methods

The assessment methods can be delivered in any order.

Gateway

The EPA period should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, that is to say they have achieved occupational competence. 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.

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:

English and mathematics at level 2.

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

For Knowledge Test:

- No specific requirements.

For Project with presentation and supplementary questioning:

- The EPAO should sign-off the project's subject, title and scope to confirm its suitability prior to the project commencing.

For Professional Discussion underpinned by portfolio, the apprentice will be required to submit:

- A portfolio of examples to be used as the basis for the Professional Discussion.
- The format and structure of the portfolio needs to be agreed between the employer, the apprentice and the EPAO (e.g. hard copy or on-line).
- The content must be sufficient to evidence the apprentice can apply the knowledge, skills and behaviours required as mapped to the professional discussion.

- There must be at least one piece of evidence relating to each of the knowledge, skills and behaviours mapped to the professional discussion. Evidence must be mapped against the KSBs.
- Evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is suggested.
- It is expected that there will typically be 10 pieces of evidence in total.
- The portfolio should contain evidence of work projects completed such as: written accounts of activities that have been completed, photographic evidence and work products, work instructions, safety documentation, technical reports, drawings, company policies and procedures as appropriate to the activities.
- Progress review documentation, witness testimonies, and feedback from colleagues and/ or clients should also be included.
- Reflective accounts and self-assessments must not be included as evidence.
- The evidence provided must be valid and attributable to the apprentice; the portfolio of evidence must contain a statement from the employer and apprentice confirming this.
- The apprentice's Manager/ Mentor will typically support the development of the portfolio in accordance with company policy and procedures, although the EPAO will provide further guidance on the content.

The portfolio of examples is not directly assessed. It underpins the Professional Discussion and therefore should not be marked by the EPAO. EPAOs should review the portfolio of examples in preparation for the Professional Discussion but are not required to provide feedback after this review of the portfolio.

Assessment methods

Assessment Method 1: Knowledge test (This Method has 1 component.)

Method 1 Component 1: Knowledge test

Overview

The rationale for this assessment method is:

This is a reliable way for employers to test some of the knowledge and skills in the apprenticeship Standard. It complements the other methods as it tests technical knowledge and application of this in detail that may not be possible to test as deeply in the other methods. The Knowledge Test assessment method can be delivered and marked relatively easily, providing the Independent Assessor with a quantitative score. This enables bench marking for consistency across the standard and is appropriate to ensure that this knowledge is embedded.

Test Format

The test can be:

- paper based
- computer based

It will consist of 20 questions.

These questions will consist of:

- Closed response multiple-choice questions
- Each of the 20 multiple choice questions will have 4 possible answers with 1 being correct. All questions are equally weighted. There are 20 marks available and each correct answer attracts 1 mark. Any incorrect or missing answers must be assigned zero marks. 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.

The following equipment is permitted during the test:

- Pen and notepaper.

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 another external person employed by the EPAO, or the independent assessor 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.

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.

Marking

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 question types allow this, to improve marking reliability.

A correct response will be assigned one mark.

Any incorrect or missing answers must be assigned zero marks.

Question and resources development

Questions must be written by EPAOs and must be relevant to the occupation and employer settings. Due to the technical nature of the role, it is recommended that this be done in consultation with employers of this occupation. EPAOs should also maintain the security and confidentiality of their questions when consulting with employers. Each EPAO must develop a test specification. EPAOs must develop 'question banks' of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure they, and the questions they contain, are fit for purpose.

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

Required supporting material

As a minimum EPAOs will produce the following material to support this method:

- a test specification
- question banks of sufficient size
- 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 2: Project with presentation and supplementary questioning (This Method has 2 components.)

Method 2 Component 1: Project

Overview

The rationale for this assessment method is:

Broadcast and Media Systems Technicians work in a project-based environment and are responsible for supporting the implementation of broadcast and media systems upgrades/ modifications. The project will address an engineering or media systems business issue, a broadcast and media systems modification, or an upgrade requirement, tailored to the broadcast and media systems specialism of the apprentice's employer which reflects the normal working practices within the role. As part of the role they will be expected to complete project reports and the project will reflect the areas their report would cover within the industry.

The project is compiled after the apprentice has gone through the Gateway process.

The work-based project should be designed to ensure that the apprentice's work meets the needs of the business, is relevant to their role and allows the relevant KSBs to be demonstrated for the EPA. Therefore, the project's subject, title and scope will be agreed between the employer and the EPAO.

The employer will ensure it has a real business application and the EPAO will ensure it meets the requirements of the EPA (including suitable coverage of the KSBs assignment to this assessment method).

The EPAO should sign-off the project's subject, title and scope to confirm its suitability prior to the project commencing. The following is the scope and it should be agreed between the employer and the EPAO at the gateway and prior to the project commencing:

1. Background
2. Outline of the issue or opportunity
3. Justification for the project

Delivery

Apprentices will conduct a project in the form of an employment-based project.

The project is compiled after the apprentice has gone through the Gateway process. The apprentice will conduct their project and submit it to the EPAO by a maximum of 8 week(s) from the EPA start date.

The employer will ensure the apprentice has sufficient time and the necessary resources, within this period, to plan and undertake the project.

The project should be in the form of a paper based or electronic report.

The project may be based on any of the following:

- an idea/ opportunity
- a specific problem
- a recurring issue

The employer and EPAO will agree the appropriateness of the project selected in the context of the apprentice's workplace and any tools, process and platforms required to complete the project. The

apprentice will have a maximum of 8 weeks from the EPA start date to deliver the project, write the report and prepare the presentation.

All work relating to the project and report write-up, must be completed during the EPA period.

The aim of the project must be:

To address an engineering or media systems business issue, a broadcast and media systems modification, or an upgrade requirement, tailored to the broadcast and media systems specialism of the apprentice's employer.

The project will comprise of a report and the relevant documentation needed for the project specialism in the form of appendices, and this will have a word count of 4,000 words (plus or minus 10% is allowed at the discretion of the apprentice) excluding appendices, references and diagrams. The report must contain the following:

- Background
- Outline of the issue or opportunity
- Justification for the project
- Evidence of effective research
- Potential benefits (cost saving, improved productivity, quality) and drawbacks including commercial, contractual and organisational etc.
- Potential risks
- Consideration of legislation, regulation, industry and organisational policies, procedures and requirements
- Proposed plan for implementation and work breakdown structure
- Stakeholder engagement
- Measures of success
- Technical recommendations and references and risk assessments should be included as appropriate in the appendices
- Appendices may include: Gantt chart, Design drawings
- The project must map, in an appendix, how it evidences the relevant KSBs for this assessment method; this is not included in the word count

The project will be conducted as set out here:

The apprentice will need to consider the availability of company and external resources required to complete the project. They must also ensure they are fully aware of the KSBs the project is intended to assess as that is what the grading of the project will be based on.

Whilst completing the project, the apprentice should be subject to the supervision arrangements outlined below: Normal line management controls. The apprentice may work as part of a team which could include technical internal or external support however the report will be the apprentice's own work and will be reflective of their own role and contribution.

The apprentice and supervisor will sign a cover sheet to confirm this is the apprentice's own work; the supervisor will not review or contribute to the project report.

The project must be submitted to the EPAO within 8 weeks of the EPA start date.

Marking

The independent assessor will review the project ahead of the presentation and supplementary questioning and mark the project alongside the presentation and supplementary questioning to ensure this is assessed holistically.

The independent assessor will make the grading decision based on all the components in the assessment method.

Required supporting material

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

- Outline of the assessment method's requirements
- Marking materials
- Examples of projects that address an engineering or media systems business issue or interpreting a technical brief for a broadcast and media systems modification or upgrade requirement e.g. replacing transmission equipment or antennas.

Method 2 Component 2: Presentation of Project and supplementary questioning

Overview

Apprentices will prepare and deliver a presentation that appropriately covers the KSBs assigned to this method of assessment.

The presentation will be based on the project and will cover:

- a summary of the main aspects of the project
- context/ implications/recommendations from the project
- practical application of knowledge, skills and behaviours
- business recommendations/ outcomes of the project
- any follow-on outcomes
- actions and next steps

The presentation will be completed and submitted after the gateway within 8 weeks of the EPA start date, and will be presented to an independent assessor, either face-to-face or via online video conferencing. The apprentice will have 10 days' notice of the presentation date to prepare for the presentation.

The rationale for this assessment method is:

The presentation is part of the overall "project with presentation and supplementary questioning" assessment method. The rationale for the use of the presentation element is that it replicates the work undertaken by competent individuals in the profession, where clearly communicating complex issues to non-technical and technical audiences is required.

Delivery

The presentation with supplementary questioning will last for 60 minutes. The presentation will last for 20 minutes and the supplementary questions and answers will last for 40 minutes. The supplementary questions will be held following the presentation. The independent assessor has the discretion to increase the time of both the presentation and supplementary questioning by up to 10% to allow the apprentice to complete their last point.

The independent assessor will ask a minimum of 10 supplementary questions to clarify elements of the project or presentation at the end of the presentation. During this method, the independent assessor must combine questions from the EPAO's question bank and also use questions generated by themselves on the day. Follow-up questions are allowed and do not form part of the question number count.

To deliver the presentation, the apprentice will have access to:

- flip chart
- work products
- notes
- interactive boards
- PowerPoint (or other presentation software)
- videos
- computer
- interactive demonstrations

The presentation will be conducted as follows:

- The presentation will take place on a one-to-one basis between the assessor and the apprentice.
- The way in which the content of the presentation is delivered is not prescriptive.
- A copy of the project must be sent to the EPAO at the end of the 8 weeks given to complete this, and the apprentice must outline details of visual aids to be used and specify any equipment required for the presentation.
- The independent assessor will review the project in advance of the presentation and prepare questions to be used at the end of the presentation.
- The presentation will be assessed as part of the overall project with presentation and supplementary questioning assessment method. This will ensure that consistent approaches are taken and that all key areas are appropriately explored.
- The independent assessor will make the grading decision based on all the components in the assessment method.

Venue

EPAOs must ensure that the presentation and questioning elements are conducted in a suitable controlled environment in any of the following:

- Employer's premises
- Other suitable venue selected by the EPAO (e.g. a training provider)

The presentation may be conducted face-to-face or via an electronic platform e.g. video-conferencing. EPAOs must ensure appropriate methods to prevent misrepresentation are in place should an electronic option be used, for example, screen share and 360-degree camera function with an administrator/invigilator present.

The venue shall have access to appropriate resources to conduct the assessment such as robust IT equipment and infrastructure to enable effective use of any technology used.

Supporting materials

EPAOs will produce the following materials to ensure that this assessment method is marked consistently and accurately:

- outline of the assessment method's requirements
- marking materials
- A question bank of sample questions for the independent assessor to use, although independent end-point assessors will need to tailor questions according to the work-based project and presentation. The question bank should be of sufficient size to prevent predictability and be reviewed regularly (at least once a year) to ensure the questions are fit for purpose.

Assessment Method 3: Professional Discussion underpinned by portfolio (This Method has 1 component.)

Method 3 Component 1: Professional Discussion

Overview

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. Questioning should assess the KSBs assigned to this assessment method and the apprentice may use their portfolio of examples to support their responses.

The rationale for this assessment method is:

This assessment method was selected as a valid way to draw out KSBs, in particular, the behaviours, which would be less likely to naturally occur in the knowledge test, or in the project with presentation and supplementary questioning.

It is commonplace for people in this occupation to engage in detailed technical discussions, so this assessment method mirrors their day to day work. This will allow some KSBs which may not naturally occur in every workplace or may take too long to observe to be assessed and the assessment of a disparate set of KSBs.

Delivery

The independent assessors will conduct and assess the professional discussion.

The professional discussion must last for 90 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. Further time may be granted for apprentices with appropriate needs in line with the EPAOs Reasonable Adjustment Policy.

During this method, the independent assessor must combine questions from the EPAO's question bank and use follow up questions generated by themselves on the day.

The professional discussion will be conducted as set out here:

The portfolio is submitted to the EPAO at Gateway, at least two weeks prior to the professional discussion, a copy can be retained by the apprentice and brought by them to the professional discussion.

This is a 1:1 conversation in an appropriate environment (a quiet room free from distraction).

The portfolio will be used by the apprentice to refer to exemplify a point. Questioning will be used to authenticate evidence, experience and competence.

The assessor will ask a minimum of 10 open questions from the question bank to ensure consistency in approach. Follow up questions will then be used to draw out further evidence.

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

The independent assessor will make all grading decisions.

Venue

EPAOs must ensure that the professional discussion is conducted in a suitable controlled environment in any of the following:

- Employer's premises
- Other suitable venue selected by the EPAO (e.g. a training provider)

The professional discussion may be conducted face-to-face or via an electronic platform e.g. video-conferencing. EPAOs must ensure appropriate methods to prevent misrepresentation are in place and ensure the apprentice is not being aided in any way should an electronic option be used, for example, screen share and 360-degree camera function with an administrator/ invigilator.

The professional discussion should take place in a quiet room, free from distractions and influence.

Other relevant information

A structured question bank must be developed by EPAOs. The 'question bank' must be of sufficient size to prevent predictability and it should be reviewed regularly (and at least once a year) to ensure that it, and its content, are fit for purpose.

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

Independent assessors must be developed and trained by the EPAO in the conduct of professional discussion and reaching consistent judgement.

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

- Outline of the assessment method's requirements
- Question bank
- Marking materials

Weighting of assessment methods

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

Grading

Assessment method 1: Knowledge Test

KSBs	Fail	Pass	Distinction
K7 K8 K11 K12 K13 K14 K15 K16 K17 K18 K19 K20 K21 K22 K23 K26 K39 K41 K42	Scores below 12 marks	Scores 12-16 marks	Scores 17–20 marks

Assessment method 2: Project with presentation and supplementary questioning

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Fail = Does not meet the pass criteria

KSBs	Pass In order to achieve a pass, all the pass descriptors mapped to this assessment method must be met.	Distinction In order to achieve a distinction, all the pass criteria and all the distinction criteria mapped against this assessment method must be met.
<p>K4 K6 K24 K25 K28 K29 K30 K31 K32 K33 K37 K38 K40 S11 S21 S22 S23 S24 S25 S26 S27 S33 S34 S36 B3 B5</p>	<p>Provide a rationale for their work with an appropriate aim and set of objectives based on their interpretation of the requirements for the brief. K38</p> <p>Demonstrate how they have considered the principles of design, architecture, development and maintenance of broadcast and media systems and networks and checked that the specifications are capable of being implemented and operated. K37 S33</p> <p>Describe how their work allows for the correct and safe connection and operation of broadcast and media systems and networks (including IT) and the methods and procedures used to meet requirements. K6 K25 K40 S36</p> <p>Explain the purpose, benefits, limitations and risks of the different equipment and software required for broadcast and media systems and technical operations and appropriate use of them. K24</p> <p>Provide a completed risk assessment for tasks and work activities including safe systems of work for own role when working on: antennas, high voltage, power boards, switchboards and uninterruptable power supplies. K4 S11</p> <p>Explain how they delivered broadcast and media systems modifications and upgrades in line with agreed timescales and to industry specifications. S34</p> <p>Demonstrate how they have considered and applied creative thinking and logic to solve potential technical issues - contributing to a process of continual improvement. B3</p> <p>Present their proposed solution for a problem; using relevant aids and supporting documentation adapting their communication style and checking the level of understanding with the audience. S23 S24</p>	<p>Provide contingencies for any implementation issues raised and explain how they can be managed. K37 S33 B3</p> <p>Provide examples of overcoming issues identified with systems specification and working to resolve these issues, including modifications to the process and conducting testing before use. K24 K33 S21 S34</p> <p>Explain how their advice and project findings could inform revisions to regulations/ standards/ guidelines or technical quality requirements. K28 S25</p>

	<p>Describe how their advice complies with relevant regulations/ standards/ guidelines and meets technical quality requirements. K28 S25</p> <p>Describe how they identified and advised on the most effective and realistic solution for the project, taking into account any constraints and through applying their knowledge of broadcast technical operations, technical systems and equipment and the context of their use in workplace activities. K30 K33 S21</p> <p>Speak confidently when communicating, listens to others and adapts their communication style to ensure technical language is understood. K29 S22 B5</p> <p>Explain how they ensured the delivery of systems/ services to customers in line with agreed service levels. S26</p> <p>Provide reports, records and logs as required for the project, with resources and timescales monitored in line with organisational systems. S27</p> <p>Explain why it is important to correctly organise and store information such as written descriptions, diagrams, note taking from meetings, feedback from reports, presentations and change control. K31 K32</p>	
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Assessment method 3: Professional Discussion underpinned by portfolio

ST0425/ AP01

Fail = Does not meet the pass criteria

KSBs	Pass In order to achieve a pass, all the pass descriptors mapped to this assessment method must be met.	Distinction In order to achieve a distinction, all the pass criteria and all the distinction criteria mapped against this assessment method must be met.
K1 K2 K3 K5 K9 K10 K27 K34 K35 K36 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S12 S13 S14 S15 S16 S17 S18 S19 S20 S28 S29 S30 S31 S32 S35 S37 S38 S39 B1 B2 B4 B6	<p>Explains how they have conducted planned and unplanned maintenance on broadcast and media systems in line with organisational procedures and schedules and complying with relevant regulations and guidelines including recording work carried out. K1 S1 S2 S4 S28</p> <p>Explain how to obtain functional and specification documentation such as equipment manuals, system specifications, manufacturers' maintenance plans, design documents, fault logs/ databases, regulatory requirements, functional specifications and operational handbooks for maintenance. K2</p> <p>Explain how they use resources to update their knowledge of new practices and procedures. K35</p> <p>Describe the maintenance characteristics that are particularly critical to the broadcast and media equipment or system, including electrical, electronic, mechanical, software, environmental and ergonomics. K3</p> <p>Describe the factors affecting decisions about ongoing maintenance versus replacement, including cost, downtime, reliability. K5</p> <p>Explain how to prioritise operational problems, equipment and minimise systems downtime, and why it is important to solve a problem quickly. K9 K27</p> <p>Provide examples of problems identified to broadcast media service or systems and how they have taken ownership to respond, diagnose and</p>	<p>Describe how they have delivered updates to documentation, such as handbooks and design documents, through the relevant system owner and analyses the impact of their updates. K2 K35</p> <p>Describe the impact to the business, and consequences of failing to follow procedures when carrying out maintenance. K5 K9 K27</p> <p>Explain where they have taken the lead in identifying, managing and mitigating risks to systems that they and third-party support vendors are working on such as</p>

<p>resolve and/or escalate faults and incidents promptly following the correct company procedures. S3 S5 S6</p> <p>Explain how they have demonstrated a strong work ethic and commitment to meet the standards required. B1</p> <p>Demonstrate compliance with legislation, including Health and Safety legislation, processes, policies, practices and procedures for own workplace, including working safely on antennas, high voltage, power boards, switchboards, and uninterruptable power supplies, and the correct reporting of incidents and risks. S9 S10 S12 B4</p> <p>Describes how they select, transport, store, maintain and use Broadcast and Media Systems test equipment and diagnostic tools, in line with organisational and the requirements to identify faults and resolve problems such as calibration. S13, S14, S15, S16, S17</p> <p>Explains how they have given technical advice and support to users, operators and customers of broadcast and media systems in line with service level agreements while building positive relationships; including communicating fault conditions and reporting these. S7 S8 B6</p> <p>Describe when they have used diagnostic tools to trouble-shoot problems with video and audio signals and to interface systems. S18 S19 S20</p> <p>Describe the importance of occupational competence and continuous development to their organisation, providing examples of how they obtain feedback on their performance, remain flexible, adaptable and positive to new directions, creative requirements and technical developments. K36 S30 S32</p> <p>Describes when they have undertaken and applied new learning, which demonstrates the desire to expand technical knowledge, and passion for working with broadcast and media systems. S29 S31 B2</p>	<p>software and hardware upgrades. S3 S5 S6 B1</p> <p>Describes how they have used the organisation's reporting systems to recognise trends in recurring faults and problems and escalate them appropriately. S7 S8 S18 S19</p> <p>Explains how they consult with and involve people from the team and other work areas, to actively achieve developmental goals. S30, S31, S32 B2 B6</p>
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	<p>Describe and give examples of the structure of the broadcasting and media systems industry, its heritage and its future direction. K34</p> <p>Describe key processes which underpin workflow requirements and how they check that outputs of broadcast and media systems comply with specifications, regulations, standards, guidelines and procedures and maintain security. S35 S37 S38 S39</p> <p>Describe own organisation's Business Continuity procedures. K10</p>	
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Overall EPA grading

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

Apprentices will be awarded a pass, distinction or fail. The apprenticeship grade will be based on the outcomes of the three end-point assessment methods:

1. Knowledge test
2. Project with Presentation and supplementary questioning
3. Professional Discussion

All EPA methods must be passed for a pass to be achieved.

The combined outcome for the three assessment methods will determine if a higher grade is awarded.

A grade above pass means the apprentice has demonstrated a level of performance over and above the standard.

Grading boundaries have been set as follows:

- Fail: full competence against the Standard not demonstrated in one or more of the assessment methods.
- Pass: all methods passed, full competence against the Standard demonstrated
- Distinction: distinction in all three methods of the assessment.

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

Assessment method 1: Knowledge test	Assessment method 2: Project with Presentation and supplementary questioning	Assessment method 3: Professional Discussion underpinned by portfolio	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	Distinction	Pass	Pass
Pass	Pass	Distinction	Pass
Distinction	Pass	Distinction	Pass
Distinction	Distinction	Pass	Pass
Pass	Distinction	Distinction	Pass
Distinction	Distinction	Distinction	Distinction

Roles and responsibilities

Role	Responsibility
Apprentice	<ul style="list-style-type: none"> • complete the on-programme element of the apprenticeship • prepare for and complete the EPA
Employer	<ul style="list-style-type: none"> • identify when the apprentice is ready to pass the gateway and undertake their EPA • notify the EPAO that the apprentice has passed the gateway • support the apprentice to achieve the KSBs outlined in the standard to their best ability • determines when the apprentice is working at or above the level outlined in the standard and is ready for EPA • select the EPAO • confirm arrangements with EPAO for the EPA (who, when, where) in a timely manner • ensure apprentice is well prepared for the EPA <p>should not be involved in the delivery of the EPA</p>
EPAO	<p>As a minimum EPAOs should:</p> <ul style="list-style-type: none"> • appoint administrators/ invigilators and markers to administer/ invigilate and mark the EPA • provide training and CPD to the independent assessors they employ to undertake the EPA • have no direct connection with the apprentice, their employer or training provider i.e. there must be no conflict of interest • have processes in place to conduct internal quality assurance and do this on a regular basis • organise standardisation events and activities in accordance with this plan's IQA section • organise and conduct moderation of independent assessors' marking in accordance with this plan • have, and operate, an appeals process
Independent assessor	<p>As a minimum an Independent assessor should:</p> <ul style="list-style-type: none"> • be independent of the apprentice, their employer and training provider(s) i.e. there must be no conflict of interest • hold or be working towards an independent assessor qualification e.g. A1 and have had training from their EPAO in terms of good assessment practice, operating the assessment tools and grading • have the capability to assess the apprentice at this level • attend the required number of EPAOs standardisation and training events per year (as defined in the IQA section)
Training provider	<p>As a minimum the training provider should:</p>

	<ul style="list-style-type: none"> • work with the employer to ensure that the apprentice is given the opportunities to develop the KSBs outlined in the standard and monitor their progress during the on-programme period • advise the employer, upon request, on the apprentice's readiness for EPA prior to the gateway • Plays no part in the EPA itself
Marker	<p>As a minimum, markers should:</p> <ul style="list-style-type: none"> • attend induction training • have no direct connection or conflict of interest with the apprentice, their employer or training provider in all instances • mark multiple-choice test answers accurately according to the EPAO's mark scheme and procedures
Invigilator	<p>As a minimum, invigilators should:</p> <ul style="list-style-type: none"> • attend induction training as directed by the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider in all instances • invigilate and supervise apprentices during tests and in breaks during assessment methods to prevent malpractice in accordance with the EPAO's invigilation procedures

Internal Quality Assurance (IQA)

Internal quality assurance refers to the requirements that EPA organisations must have in place to ensure consistent (reliable) and accurate (valid) assessment decisions. EPA organisations for this EPA must:

- appoint independent assessors who have knowledge of the following occupational areas:
Independent Assessors working for the EPAO will need to have at least 5 years of substantial and relevant industry experience and have the technical skills to undertake Broadcast and Media Systems technical duties. Roles undertaken could include, but are not limited to Broadcast and Media Systems Engineer, Senior Broadcast Engineer
- appoint independent assessors who have recent relevant experience of the occupation/sector at least one level above the apprentice gained in the last three years or significant experience of the occupation/sector.
- appoint independent assessors who are competent to deliver the end-point assessment
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have robust quality assurance systems and procedures that support fair, reliable and consistent assessment across the organisation and over time
- operate induction training and standardisation events for independent assessors when they begin working for the EPAO on this standard and before they deliver an updated assessment method for the first time
- all assessors must attend a standardisation event on at least an annual basis.

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.

Any assessment method re-sit or re-take must be taken during the maximum EPA period, otherwise the entire EPA must be taken again, unless in the opinion of the EPAO exceptional circumstances apply outside the control of the apprentice or their employer.

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.

Affordability

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

- online assessment
- using an employer's premises

Professional body recognition

This apprenticeship is designed to prepare successful apprentices to meet the requirements for registration at Technician Level with The Engineering Council.

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.

Mapping of knowledge, skills and behaviours (KSBs)

Assessment method 1: Knowledge Test

Knowledge
K7 Understand the types of faults that may occur in broadcast and media systems and how to identify these
K8 How to conduct root cause analysis
K11 Know and understand own workplace Health and Safety legislation, processes and procedures
K12 Know how to safely use and maintain Personal Protective Equipment (PPE), tools and equipment
K13 Understand the company procedures for reporting hazards and risks to the appropriate personnel
K14 Understand the main hazards to personal health and safety within own role such as electrical voltage and radio frequencies (RF)
K15 Understand the different types and uses of broadcast and media systems test equipment such as analysers or meters
K16 Know and understand the importance of keeping testing equipment clean and accurately calibrated
K17 Understand the correct procedures for storing and transporting testing equipment
K18 Know and understand how to use the testing equipment correctly and safely
K19 Know when, and who to report faults with the testing equipment to
K20 Understand elementary analogue and digital electronic techniques
K21 Understand the fundamentals of digital signals, coding techniques, modulation and multiplexing techniques and fibre optic communication
K22 Understand Radio Frequency (RF) communication principles, wave propagation, transmission media and RF radiators
K23 Understand the principles, techniques and applications of computer network systems, ethernet and IP technology, network components, server systems, virtualisation and remote access technology
K26 Know the types of problem that can occur with the operation of broadcast and media systems such as loss of power, signal degradation, overheating etc.
K39 Understand the file transfer protocols, relating to broadcast and media systems, software and equipment including file access rights
K41 Know and understand the appropriate formats required for different broadcast methods such as Joint Photographic Experts Group Standard (JPEG) or Moving Picture Experts Group Standard (MPEG) files or MP3 (audio format of MPEG)
K42 How to protect content and the importance of information security

Assessment method 2: Project with presentation and supplementary questioning

Knowledge
K4 Understand the safe systems of work and isolation for working on antennas, high voltage, power boards, switchboards and uninterruptable power supplies
K6 How to connect broadcast systems and equipment to IT systems
K24 Understand the purpose, benefits, limitations and risks of the different equipment and software required for broadcast and media systems and when it is appropriate to use them
K25 How to operate the broadcast and media systems, software and equipment required
K28 Understand the technical quality of service requirements that affect your work
K29 Understand how to adapt communication style and supporting information to meet audience requirements
K30 Understand how to identify and advise on the most effective and realistic solution in each circumstance, taking constraints into account
K31 Understand the importance of and methods for, organising and storing information such as written descriptions, diagrams, note taking from meetings, feedback from reports, presentations and change control
K32 Understand how to use the organisational recording systems correctly
K33 Understand broadcast technical operations, technical systems and equipment and the context of their use in workplace activities
K37 Understand the principles of design, architecture, development and maintenance of broadcast and media systems and networks
K38 Understand the brief for the work and how to interpret requirements and parameters as provided by the customer or line manager, or project manager and/or senior engineer
K40 Know how to connect broadcast and media systems and equipment to networks
Skills
S11 Complete Risk Assessments for tasks and work activities within and relevant to, own role
S21 Identify and advise on the most effective and realistic solution in each circumstance taking into account constraints
S22 Use a level of technical terminology that meets the technical understanding of the person receiving the advice
S23 Adapt your communications style according to the audience
S24 Use supporting information that aids others' understanding of advice when required such as system diagrams
S25 Check that the advice given complies with all relevant regulations and guidelines
S26 Ensure the delivery of systems/services to customers in line with agreed service levels
S27 Comply with organisational systems for reporting and recording information

S33 Check that specifications are capable of being implemented and operated
S34 Implement upgrades or modifications in line with organisational procedures and specification
S36 Operate broadcast and media systems using methods and procedures that meet requirements
Behaviours
B3 Thinking creatively and logically to solve technical issues - contributing to a process of continual improvement
B5 Displaying confidence in their approach to communicating with different audiences

Assessment method 3: Professional Discussion underpinned by portfolio

Knowledge
K1 Know where to source the correct maintenance procedures and schedules relevant to own role
K2 How to obtain functional and specification documentation such as equipment manuals, system specifications, manufacturers' maintenance plans, design documents, fault logs/databases, regulatory requirements, functional specifications and operational handbooks for maintenance
K3 Understand the maintenance characteristics that are particularly critical to the broadcast and media equipment or system, including electrical, electronic, mechanical, software, environmental and ergonomics
K5 Know and understand the factors affecting decisions about ongoing maintenance versus replacement, including cost, downtime, reliability
K9 Why it is important to minimise equipment and systems downtime, and to solve problems quickly e.g. loss of service and potential reputational damage, or financial penalties for breach of service level agreements
K10 Know and understand own Business Continuity procedures
K27 How to prioritise operational problems and why it is important to solve a problem quickly
K34 Understand the broadcasting and media systems industry; its heritage and its future direction.
K35 Know how to use resources, such as online sites, to update knowledge and find out what others are doing
K36 Understand how and when to ask questions to improve your practice
Skills
S1 Conduct planned maintenance on all systems in line with organisational procedures
S2 Ensure maintenance work complies with all relevant regulations and guidelines
S3 Take prompt action to respond to and diagnose any problems encountered
S4 Record maintenance carried out and actions taken in appropriate systems in line with organisational procedures

S5 Identify problems to broadcast media service or systems, conducting in-depth root cause analysis and fault finding as required
S6 Take ownership to resolve and/or escalate faults and incidents following the correct company procedures
S7 Communicate fault conditions in a timely manner, to colleagues, customers and service suppliers
S8 Log faults and report them to the relevant operational business area
S9 Comply with organisational Health and Safety policies, practices and procedures
S10 Identify, mitigate and report any incidents or risks to the appropriate personnel
S12 Work safely and follow procedures for working on antennas, high voltage, power boards, switchboards and with uninterruptable power supplies
S13 Identify and obtain the appropriate test equipment required
S14 Ensure the equipment is in working condition and calibrated correctly
S15 Safely transport and store the testing equipment in line with organisational procedures
S16 Report any faults with the test equipment, rectifying these if appropriate
S17 Test and evaluate the performance of electronic circuits
S18 Use software and hardware diagnostics tools and connectivity protocols to interface and integrate broadcast systems
S19 Use test equipment correctly, evaluating results and taking the appropriate course of action
S20 Interconnect and trouble-shoot video and audio signals
S28 Ensure records relating to planned and corrective maintenance are correctly completed and updated
S29 Create and maintain a professional development record to document progress against key competencies and enable effective learning from the workplace
S30 Seek help or advice from appropriate people or information sources when limitations in your knowledge or expertise will impact on your work
S31 Seek out learning and networking opportunities that will be most beneficial to you
S32 Remain flexible, adaptable and positive to new directions, creative requirements and technical developments
S35 Check ingested data or transport streams against workflow requirements
S37 Comply with the organisational processes for ensuring physical and electronic security of data and systems
S38 Play out or export media in line with requirements
S39 Check that outputs of broadcast and media systems comply with specifications, regulations, standards, guidelines and procedures

Behaviours
B1 A strong work ethic and commitment to meet the standards required
B2 Desire to expand technical knowledge, and passion for working with broadcast and media systems
B4 Recognition and compliance with workplace legislation, policies and procedures
B6 Building and maintaining positive relationships with colleagues, customers and suppliers