

# **Broadcast & Media Systems Engineer Level 6 Integrated Degree Apprenticeship End-Point Assessment Plan**

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## End-Point Assessment Plan

### Broadcast & Media Systems Engineer Degree Standard

#### 1. Introduction

The Broadcast & Media Systems Engineer Standard has been designed to operate as the professional standard for people working as Broadcast & Media Systems Engineers at Level 6 across the sector.

The assessment plan is to accompany the standard and will ensure that the completion of a Broadcast & Media Systems Engineer Apprenticeship meets the requirements of the standard in terms of Knowledge, Skills and Behaviours.

On completion of the Apprenticeship, the individual will be recognised as competent to perform in the role of Broadcast & Media Systems Engineer across the sector. This will be achieved by passing the end-point Assessment (EPA).

This plan outlines the end-point Assessment that apprentices must successfully complete to achieve their apprenticeship.

**ENGLISH & MATHS AT LEVEL 2 OR ABOVE**  
+  
**SUBMISSION OF PORTFOLIO OF EVIDENCE**  
+  
**SUBMISSION OF SYNOPTIC PROJECT**  
+  
**SUCCESSFUL COMPLETION OF LEVEL 4-6 OF THE DEGREE PROGRAMME**  
+  
**EMPLOYER AND TRAINING PROVIDER REVIEW PROGRESS AND AGREE  
WHETHER THE APPRENTICE IS ON TRACK TO ACHIEVE THE  
KNOWLEDGE, SKILLS AND BEHAVIOURS OF THE STANDARD**

**Knowledge Test**

**Presentation**

**Professional  
Discussion**

## End-Point Assessment

### 2. On-programme activities

Activity	Timescale	Requirement
A recommended structured programme of degree level learning and formative assessment modules based on the knowledge, skills and behaviours in the Standard.	Before the EPA	Mandatory
Collection of a portfolio of evidence to provide as the basis of the discussion during the Professional Discussion element of the end-point Assessment.  Completion of the synoptic project to be used as the basis for the Presentation element of the end-Point Assessment.	Before the EPA	Mandatory
English & Maths to be achieved at Level 2 or above	Before the EPA	Mandatory

### On-programme Activities

A robust programme of learning activities will be delivered as part of the Degree programme, and formative module assessments will ensure that apprentices make good progress towards the end-point assessment.

The end-point assessment will itself be of sufficient quality to attest to the level of knowledge, skills and behaviours (KSBs) required in the Broadcast & Media Systems Engineer standard. In totality, the degree modules will cover the full range of the required skills and knowledge from the standard. The modules will be developed against the standard to integrate appropriate blends of skill and knowledge. This will enable individual instances of degree apprenticeship programmes to be mapped against the standard. The suggested formative assessment will give an ongoing indication of performance against the final outcomes defined in the standard.

The university and employer will be able to support the apprentice and provide extra guidance where performance issues might arise to ensure that the apprentice is fully supported in meeting the outcomes on the standard. This will provide regular review points to ensure guided progression.

This approach draws upon the established good practice already undertaken in universities, but with the advantage of employer support and the workplace context to help apprentices see the real world application of their skills, knowledge and behaviours on an ongoing basis. Individual modules will be assessed and must be passed in accordance with university regulations. This will ensure that the apprentice is prepared and ready to undertake the end-point assessment and will demonstrate successfully the skills, knowledge and behaviours defined in the standard.

Employers may wish to use their normal performance management processes to monitor the progress of the apprentice, provide feedback and guide development.

- Training providers may wish to support this by ensuring that the requirements of the apprenticeship are reflected in these processes and by filling any gaps through their work with apprentices
- Employers and training providers may carry out joint reviews of progress at 3 monthly intervals, involving apprentices, line managers and others directly involved e.g. mentors, workplace coaches, etc.
- The apprentice will be required to create and maintain a mandatory Portfolio during the course of their apprenticeship
- This mandatory Portfolio will typically contain 8 pieces of evidence, such as videos, design documents, project reports and other examples of training, practical skills and experience gained during the apprenticeship. The Portfolio itself will not be assessed, but will be used as the basis for the discussion in the Professional Discussion method of the EPA to test the KSBs outlined in Appendix 1

## End-Point Assessment Gateway

Employers must satisfy themselves that apprentices are on track for their end-point assessment following typically 36 months of training. Apprentices must demonstrate that they meet the following criteria:

- Completion of years 1-3 of the degree programme
- Submission of the mandatory portfolio with eight pieces of evidence for the Professional Discussion
- Submission of the synoptic project that the Presentation element of the end-point Assessment is to be based on

Before an apprentice can pass through the gateway (decision point) for end-point assessment, they must, in addition to being competent across the knowledge, skills and behaviours required by the standard, have achieved Level 2 in English and Mathematics. For those with an education, health and care plan or a legacy statement the apprenticeship's English and Maths minimum

requirement is Entry Level 3, and British Sign Language qualifications are an alternative to English qualifications for those whom this is their primary language.

Although the apprentice should only be recommended for end-point assessment when they are ready, employers should have a remediation process in place to support any apprentice who does not meet the conditions of the end-point assessment.

### 3. Assessment Methods for End-Point Assessment

Method	Coverage	Assessed	Grading	Grade Weighting
Knowledge Test	Knowledge	RoEPAO approved body	Fail/Pass/Merit/Distinction	20%
Presentation	Knowledge, skills and behaviours	RoEPAO approved body	Fail/Pass/Merit/Distinction	40%
Professional Discussion	Knowledge, skills and behaviours	RoEPAO approved body	Fail/Pass/Merit/Distinction	40%

#### 3.1 End-Point Assessment Timings and Activities

It is suggested that the process of setting up the end-point Assessment, as recommended and outlined in the table below, should begin around 3 months before the completion of the apprenticeship.

Timescale	Who	Activity
<b>On-programme</b>	Apprentice /Employer/ Training Providers on the ESFA register	<ul style="list-style-type: none"> <li>Engage in a structured programme of learning and assessment.</li> <li>Keep a portfolio of evidence of completed tasks in the workplace (e.g. logbooks of work completed, performance review records, learning/training evidence, design documents, project reports) covering skills, behaviours and performance on occupational tasks</li> <li>Work placement reports</li> <li>Review progress and ensure the apprentice is on track as part of regular tracking of progress</li> <li>English &amp; Maths Requirement</li> <li>Completion of portfolio of evidence</li> </ul>

<p><b>Up to 3 months prior to completion of the on-programme period</b></p>	<p>Employer/ Training Providers on the ESFA register</p>	<ul style="list-style-type: none"> <li>• Employer/training providers to decide timing of the end assessment based on the outcomes of the on-programme training and progress demonstrated in the apprentice's portfolio of evidence.</li> <li>• The Synoptic project that the presentation is to be based on is set. The synoptic project is a work based project that represent the skills, knowledge and behaviours assigned to the presentation. The project will provide substantive evidence from a business-related project to demonstrate the application of skills, knowledge and behaviours.</li> <li>• It will take place over a period of around 3 months, near the end of the on-programme period. It is designed to assess apprentices in a consistent way, irrespective of their particular workplace and university.</li> <li>• Because of the significance of the project the employer and university should work together with the apprentice to agree a project that is achievable within the employer's business constraints and that provides the scope for the KSBs assigned to the presentation to be assessed.</li> <li>• The project should be conducted as part of the apprentice's normal work. Employers should make suitable allowance for the project to be undertaken, both in terms of time and resources. However there are some elements such as the writing of the report, particularly in its reflective aspects that may be undertaken outside of normal work. This should be agreed between apprentice, employer and university such that apprentices are not disadvantaged in any way from performing their job and meeting the requirements of the project.</li> <li>• Any issues with confidentiality and/or security will also be addressed between the university, employer and apprentice allowing for projects of business value to be undertaken using real data.</li> <li>• The project should relate to at least two of the topic themes in the standard.</li> </ul> <p><b>Generic Content of the Synoptic Project</b> Each project must enable the following to be demonstrated:</p> <ul style="list-style-type: none"> <li>• the application of the core knowledge, skills and behaviours assigned to the presentation;</li> <li>• the approach to planning and completion of the project; The project will cover the specialist skills, knowledge and behaviours</li> </ul>
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		<p>relating to the topic themes chosen as defined in the mapping document Appendix 1.</p> <p><b>Practical Requirements for the design of Synoptic Projects</b></p> <ul style="list-style-type: none"> <li>• Agreement to be made between apprentice, employer and university on what systems, tools and platforms will be required to complete the task and how these will be made available.</li> <li>• Specification of what has to be delivered on completion of the project – must include the output, documented project plans etc.</li> <li>• Apprentices are required to document their assumptions and to highlight the consequences of those assumptions – enabling them to show their understanding of commercial pressures, and the application of their thinking and problem solving skills.</li> <li>• Terms of reference developed by the apprentice and agreed by the university and employer early in the project.</li> <li>• University to provide clear project assessment criteria including terms of reference, approach to the problem, the design of the solution, the implementation of the solution, the final report and presentation etc.</li> <li>• Universities will work with the employer and apprentice to agree suitable project title and support arrangements for the project to be undertaken.</li> <li>• The project should normally be based an agreed business problem that forms part of the apprentice’s role.</li> <li>• Suitable time should be set aside by the employer for the apprentice to plan, undertake and write up their project.</li> <li>• For each project the apprentice will first work out what is required and present terms of reference and an initial plan for agreement across employer, apprentice and university.</li> <li>• The project will be typically undertaken at the employer’s premises as agreed with the employer.</li> <li>• The employer and university to ensure the apprentice has access to the specified systems, tools and platforms to complete the task.</li> <li>• The employer to obtain a signed statement to authenticate that this is the apprentice’s own work.</li> <li>• Whilst other projects may typically be included during the programme, the synoptic project will be set and completed in the final year of the apprenticeship near the end of the programme.</li> </ul> <p><b>Practical Requirements for the project environment</b></p> <ul style="list-style-type: none"> <li>• A suitable project environment should be provided ensuring access to all required tools, systems etc. This may be the apprentice’s normal workstation or may be another environment as appropriate to the nature of the project.</li> </ul>
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		<ul style="list-style-type: none"> <li>Someone responsible for overseeing the project from the employer perspective.</li> <li>The project on completion, should be forwarded to the EPAO 10 working days prior to the scheduled presentation.</li> </ul>
<b>EPA</b>	End-point Assessment Organisation on RoEPAO	The EPA pulls together all activities which have taken place during the apprenticeship and provides the overall final decision as to the competence of the apprentice following the end-point Assessment.

### 3.2 End-Point Assessment

End-point assessment must be undertaken by an end-Point Assessment Organisation (EPAO). All end-point assessment organisations must be on the Education Skills Funding Agency's Register of end-point Assessment Organisations (RoEPAO). It is recommended that end-point assessment organisations work collaboratively to ensure standardisation in delivery of assessment services for the standard. End-point assessment organisations must ensure the independent assessor appointed has recent relevant experience of the occupation/sector at least the same level as the apprentice gained in the last two years or significant experience of the occupation/sector. Assessors must be independent i.e. have no connection with the apprentice, HE course team or employer.

The end-point assessment may be completed over a 12-month period to accommodate work scheduling and cost effective planning of resources. The Presentation and Professional Discussion stages of the EPA will normally be undertaken over one day. Successful achievement of the end-point assessment will lead to final certification of the apprenticeship and demonstrate that the apprentice is a fully competent Broadcast & Media Systems Engineer.

The end-point assessment is supported by a module in the integrated degree programme, and the degree cannot be achieved without this module being passed.

The EPA uses the following three components and should be undertaken in this order:

- Knowledge Test (weighting 20%); this will cover areas of knowledge identified in Appendix A
- Presentation (weighting 40%); this will be of the project, submitted at gateway in which the Apprentice will demonstrate their knowledge, skills and behaviours identified in Appendix A
- Professional Discussion (weighting 40%); this will take the form of a professional discussion and Portfolio review in which the apprentice will demonstrate their

application of the knowledge, skills and behaviours identified in Appendix A

See Appendix 1 for details of which assessment method will be used to assess each element of the standard. Further details on each assessment element are provided below.

### 3.3 Knowledge Test (Stage 1)

Apprentices will be required to complete a digital Knowledge Test consisting of 60 questions, taken under examination conditions in a controlled environment. The questions will consist of multiple choice. The test will be made up of 60 multiple choice questions and will have 4 response options with one correct option. Questions will cover knowledge elements detailed in Appendix 1 applied to the work environment.

There are 7 topic themes covered in the Knowledge section in Appendix 1, please see below:

- Broadcast and Media Systems
- Audio and Video Systems
- Broadcasting Software management
- IP Networking
- Security Principles
- Electrical Engineering
- Health and Safety Legislation, policies and procedures

The questions will be set, held and moderated by the end-point assessment organisation and EPAO's must develop and maintain a knowledge test question bank of sufficient size to mitigate predictability and reviewed at least annually.

The assessment will be a 90 minute electronic question paper. It is recommended that the Knowledge Test is undertaken as the first method of assessment of the EPA. The questions will be determined and standardised by the end-point assessment organisations and may be developed in consultation with representative employers. When this is the case, the EPAO is responsible for ensuring the security and confidentiality of those questions.

The apprentice will take the knowledge test in a suitably controlled environment with the necessary equipment (e.g. computer) recommended by the end-point assessment organisation in the presence of an invigilator. The invigilator will be sourced by the end-point assessment organisation. EPAOs must ensure appropriate measures are in place to prevent misrepresentation, for example, screen share and 360-degree camera function with assessors when the assessments are undertaken remotely.

The Knowledge Test will be marked out of 60 marks. The 60 questions in the test will each have a mark of 1 for every correct answer given; a minimum of 48 marks will be needed to pass. The Knowledge Test marks and associated grades are shown at the top of Table 2. The Knowledge Test mark will provide a percentage score towards the overall apprentice grade when the weighting for this assessment method is applied i.e. Knowledge Test mark x 0.2 [Knowledge Test 20% weighting] = Knowledge Test percentage score towards overall apprenticeship grading.

### 3.4 Presentation (Stage 2)

The presentation is a structured presentation between the apprentice and the independent assessor, focussing on the outcomes of the synoptic project undertaken before gateway. It covers both what the apprentice has done, the standard of their work, and also how they have done it. Typically this is the approach taken in university individual projects. This enables the assessment to include the assessment of skills, knowledge and behaviours as required by the standard. There will also be a follow up question and answer session (Q & A) at the end of the presentation.

The purpose of the presentation and Q&A is to review:

- what the apprentice set out to achieve
- what they actually delivered and produced in the project;
- how they approached the work and dealt with any issues arising; lessons learnt, what they would do differently
- clarify any questions the IA has from their assessment of the project;
- explore in more detail, aspects of the project work
- confirm the demonstration of appropriate interpersonal and behavioural skills.

### Practical Requirements for the Presentation

- The apprentice should have at least seven days notice of their presentation time and venue
- The presentation and Q&A will last 30 minutes +/-10%
- The presentation will be conducted face to face or in exceptional circumstances via live media.
- The presentation will be conducted in a suitable location; this may be at the university or employer location as appropriate.

During the presentation in a controlled environment, apprentices will be expected to demonstrate the knowledge, skills and behaviours they have learnt through completion of the apprenticeship process as outlined in Appendix 1.

There will be a Question and Answer (Q&A) session at the end of the presentation. This will allow the opportunity for the IA to assess any KSBs, if they have not arisen naturally through the presentation. The IA will use standardised questions provided by the EPA Organisation, to help ensure consistency.

There will be an opportunity for two follow up questions per theme as necessary.

The duration of the Presentation and Q&A will be 30 minutes in length, with 15 minutes +/- 10% for the presentation and 15 minutes +/- 10% for Q&A follow up. The Presentation and Q&A can only be undertaken if the candidate has passed the Knowledge Test.

The Presentation and Q&A will be managed and marked by an independent assessor appointed by the end-point assessment organisation, this should be the same independent assessor who conducts the Professional Discussion. Any independent assessors appointed must have recent relevant experience of the occupation/sector at least the same level as the apprentice gained in the last two years or significant experience of the occupation/sector.

End-point assessment organisations will provide a standard template upon which to record the assessment outcome.

This Presentation and Q&A will provide the opportunity for the apprentice to synoptically demonstrate core and specific KSBs as detailed in Appendix 1. This will offer the opportunity to bring together and apply their learning.

The Presentation and Q&A will be marked out of 100 marks; a minimum of 40 marks will be needed to pass. Criteria for marking and grading the presentation are shown in Table 1. The Presentation and Q&A mark will provide a percentage score towards the overall apprentice grade when the weighting for this assessment method is applied i.e. Presentation and Q&A mark x 0.4 [Practical assessment 40% weighting] = Practical assessment percentage score towards overall apprenticeship grading.

### **3.5 Professional Discussion (Stage 3)**

As the final stage of the end-point assessment process, the apprentice will complete a Professional Discussion with an IA. This will be a structured interview and will take place after the Knowledge Test, Presentation and Q&A. Any IA's appointed by the end-point assessment organisation must have recent relevant experience of the occupation/sector at least the same level as the apprentice gained in the last two years or significant experience of the occupation/sector.

The Professional Discussion will be a structured discussion between the apprentice and independent assessor. It will also cover the apprentice's achievements, the standard of their work and their approach. The Portfolio of Evidence will be used to inform questioning during the interview.

In the Portfolio, the apprentice will refer to evidence collected from written work, small projects, employer progress review information, design documents, earlier workplace observations, videos, photographs and supervisor/client comments. The Portfolio will primarily be in an online format to allow ease of submission, but guidance for the format and contents of the portfolio will be available as part of the assessment tools provided by the end-point assessment organisations.

This will enable the assessment of four core topics to cover a broad range of knowledge and understanding, skills and behaviours, including:

### **Broadcast and Media Systems Engineering Technical Skills**

#### **Theme 1 – Monitoring and maintaining operational systems through analysis and problem solving**

- Operate and maintain technical broadcast or networking systems following defined procedures to ensure uninterrupted service
- Isolate, diagnose and resolve faults and problems on broadcast systems and networks using appropriate tools and techniques
- Use software to monitor and maintain broadcast and network system availability and act on any issues

#### **Theme 2 – Testing and Maintenance**

- Use and maintain mobile and fixed test and measurement equipment such as analysers, and act on the results
- Use technical knowledge bases to support existing and new installations

#### **Theme 3 - System designs and specifications**

- Produce and update system designs and documentation when required
- Interpret and use technical documentation including circuit diagrams and data sheets when creating, installing or maintaining systems and networks
- Identify and specify the appropriate cables, connectors and components for the required frequencies or data rates that need to be delivered

#### **Theme 4 – System installation, communication skills and sharing technical knowledge**

- Install broadcast and network systems, commission and produce appropriate technical documentation and handover to users checking these are understood
- Communicate clearly and concisely both verbally and in writing, taking into account the audience and possible impact on business relationships

- Provide technical advice and guidance as required
- Maintain a high degree of accuracy and attention to detail

## Practical Requirements for the Professional Discussion

- The apprentice should have at least seven days notice of their professional discussion time and venue
- The EPA Portfolio will typically consist of 8 types/pieces of evidence, such as design documents, project reports, project plans etc. These will be taken from the on-programme body of work. Each piece of evidence should be mapped to the KSBs assigned to this assessment method and it is expected that each piece of evidence will cover multiple KSBs
- The professional discussion will last for 60 minutes +/-10%
- Competency based questions will be used, based on the Portfolio of evidence, and these will be set, held and moderated by the EPAO
- There will be four competency based questions only, one per theme area set by the EPAO
- The professional discussion will be conducted face to face or in exceptional circumstances via live media
- The professional discussion will be conducted in a suitable location (e.g quiet room away from the workplace and free from distraction and influence). This may be at the university or employer location as appropriate

The Professional Discussion will normally take place on the same day as the Presentation element of the EPA and would be undertaken following successful completion of the Knowledge Test and Project Presentation. The Professional Discussion will be marked out of 100 marks; a minimum of 40 marks will be needed to pass.

Criteria for marking and grading the professional Discussion are shown in Table 1.

The Professional Discussion mark will provide a percentage score towards the overall apprentice grade when the weighting for this assessment method is applied i.e. Professional Discussion mark x 0.4 [Professional Discussion 40% weighting] towards overall apprenticeship grading.

### 3.6 Re-takes and/or re-sits

- Apprentices who fail one or more EPA method may be offered the opportunity to undertake a re-sit/retake
- Re-sits/re-takes must not be offered to apprentices wishing to move from pass to merit or distinction or from merit to distinction. A re-sit does not require further learning, whereas a re-take does

- The apprentice's employer will need to agree that a re-sit/re-take is an appropriate course of action. Apprentices should have a supportive action plan to prepare for the re-sit/re-take
- An individual EPA method re-sit/re-take must be taken within 12 months of the original EPA notification, otherwise the entire EPA must be retaken
- The maximum grade awarded to a re-sit/re-take will be pass, for the method and for the apprenticeship overall unless the EPAO identifies exceptional circumstances beyond the apprentice's control accounting for the original fail

### 3.7 Affordability

Affordability and feasibility have been considered by stipulating that all assessment methods are undertaken in a suitably controlled environment, including employer premises, as well as conducting the knowledge test electronically. It is anticipated that there will be 20 starts per year on this apprenticeship and 30 per year once established.

## 4. Marking Criteria

Table 1 below outlines the marking criteria that will be applied for each assessment method; detailed guidance will be developed by the end-point assessment organisations.

Appendix 1 shows which elements of the standard will be assessed by each assessment method in the end-point assessment.

In order to achieve the end-point assessment and complete the apprenticeship, all pass criteria needs to be reached. Merit criteria build on the knowledge, skills and behaviour demonstrated to reach the pass criteria; distinction criteria build on both pass and merit.

**4.1 Table 1**

End-point assessment Element	Distinction 70-100	Merit 60-69	Pass 40-59	Fail ≤39
Knowledge Test 20%	<b>Test Score 95-100%</b>	<b>Test Score 90-94%</b>	<b>Test Score 80-89%</b>	<b>Test Score ≤80%</b>

<p>Presentation 40%</p>	<p><b>In addition to the Pass and Merit performance :</b></p> <ul style="list-style-type: none"> <li>• There was an excellent rationale for the project demonstrated during the presentation, with a well considered aim and supporting SMART objectives</li> <li>• Comprehensive performance evidence given during the presentation covered all the themes more than once</li> <li>• Presents an excellent understanding of any issues raised and how they can be managed.</li> <li>• Risk assessment included, and health and safety potential risks identified and the action needed to be taken to eliminate or reduce risks to an acceptable level specified</li> <li>• Consults and involves people from the team and any other areas to achieve higher performance and time management</li> <li>• Communicates with authority and can</li> </ul>	<p><b>In addition to the Pass performance:</b></p> <ul style="list-style-type: none"> <li>• There was an appropriate rationale for the project with an appropriate aim and set of measurable objectives.</li> <li>• There was a good understanding of any issue raised</li> <li>• Risk assessment was included and health and safety and potential risks identified and any issues discussed</li> <li>• Provides performance evidence that covers all the themes, with two themes shown more than once.</li> <li>• Works with others to identify areas for improvement and follows through on any agreed implementation</li> <li>• Effectively contributes to team success and suggests valid ideas for improvement</li> <li>• Demonstrates a positive professional relationship with other team members</li> </ul>	<ul style="list-style-type: none"> <li>• There was a clear rationale for the project with an appropriate aim and set of objectives</li> <li>• Reports, records and logs were maintained as required for the project, with resources and timescales monitored</li> <li>• Risk assessment was included, and health and safety potential risks identified</li> <li>• Provides evidence to cover all the themes.</li> <li>• Applies general workplace health, safety and welfare requirements and work safely when undertaking broadcast and media systems engineering activities</li> <li>• Identifies how they can and then effectively contributes, to team success</li> <li>• Completes work in a timely manner and manage time efficiently</li> <li>• Speaks confidently when communicating, listens to others and takes required action</li> <li>• Consistently demonstrates compliance with safe systems of work</li> </ul>	<ul style="list-style-type: none"> <li>• It is unclear why the project was undertaken and did not relate to the topic themes</li> <li>• Very limited or no set of tasks covering the project with poor consideration of expected resources and timescales</li> <li>• Limited or no consideration was given to health and safety issues and risks.</li> <li>• Does not provide sufficient evidence to meet skill and behavioural requirements</li> </ul>
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	<p>explain complex technical findings</p> <ul style="list-style-type: none"> <li>• Pre-empts risks prior to task commencement and put actions in place to prevent them occurring</li> </ul>	<ul style="list-style-type: none"> <li>• Adapts their method and style of communications to changing circumstances and needs.</li> <li>• Consistently demonstrates compliance with safe systems of work and make suggestions to reduce risks</li> </ul>	<ul style="list-style-type: none"> <li>• Proactively identifies workplace hazards</li> </ul>	
Professional Discussion 40%	<p><b>In addition to the Pass and Merit performance :</b></p> <p><b>Monitoring and maintaining operational systems through analysis and problem solving</b></p> <p>Describes how they have researched and developed an innovative solution to a problem, how they managed the implementation and can evaluate the impact this has had within their organisation</p> <ul style="list-style-type: none"> <li>• Justifies the application of operational practices, processes and procedures covering all of the theme areas</li> <li>• Provides examples of taking on additional responsibility and autonomy to</li> </ul>	<p><b>In addition to the Pass performance:</b></p> <p>Describes the relevant operational practices, processes and procedures covering 3 out of the 4 theme areas</p> <p><b>Monitoring and maintaining operational systems through analysis and problem solving</b></p> <p>Describes how they have researched and developed innovative solutions to a range of broadcast and media systems problems and how they managed the implementation</p> <p><b>Testing and Maintenance</b></p> <p>Can provide</p>	<p><b>Monitoring and maintaining operational systems through analysis and problem solving</b></p> <ul style="list-style-type: none"> <li>• Describes how they have developed a solution to a broadcast and media systems problem and how this was implemented</li> <li>• Describes the impact of their actions on site, equipment and others and any issues arising</li> </ul> <p><b>System designs and specifications</b></p> <p>Can describe key knowledge requirements such as use of Radio Frequencies and signals and provide examples of</p>	<p><b>Monitoring and maintaining operational systems through analysis and problem solving</b></p> <p>Unable to provide evidence of applying their knowledge to identify and solve problems.</p> <p><b>Testing and Maintenance</b></p> <p>Unable to provide evidence or understand the importance of testing and maintenance</p> <p><b>System designs and specifications</b></p> <p>Unable to describe key knowledge requirements, such as use of Radio Frequencies or signals.</p> <p><b>System</b></p>

	<p>achieve high performance outcomes</p> <p><b>Testing and Maintenance</b></p> <p>Can provide examples of suggestions given or changes made to improve testing processes and procedures</p> <p><b>System designs and specifications</b></p> <p>Provides evidence of an in depth understanding of systems designs and specifications and leading on the design and implementation of these</p> <p><b>System installation, communication skills and sharing technical knowledge</b></p> <ul style="list-style-type: none"> <li>• Provides evidence of an in depth understanding of the relevant broadcast and media systems engineering processes and principles relative to their occupation</li> </ul>	<p>examples of carrying out testing and maintenance and using mobile and fixed test and measurement equipment such as analysers, and acting on the results</p> <p><b>System designs and specifications</b></p> <p>Can provide examples of applying knowledge to lead on development of systems designs and specifications</p> <p><b>System installation, communication skills and sharing technical knowledge</b></p> <ul style="list-style-type: none"> <li>• Explains in detail, with supporting evidence, the range of required skills, knowledge and behaviours of the team in the broadcast and media systems engineering environment.</li> <li>• Presents advanced technical</li> </ul>	<p>assisting with system designs and specifications</p> <p><b>System installation, communication skills and sharing technical knowledge</b></p> <ul style="list-style-type: none"> <li>• Provides correct information to describe their understanding of skills, knowledge and behaviours required to undertake their role competently in the broadcast and media systems engineering environment.</li> <li>• Gives particular emphasis on understanding and describing the impact of their actions and how they interact with the wider team</li> <li>• Presents factual data, arguments and conclusions in a clear and concise manner</li> </ul>	<p><b>installation, communication skills and sharing technical knowledge</b></p> <p>Unable to describe the role they undertake within the broadcast and media systems engineering environment. Unable to use software and database management correctly.</p>
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		information clearly & concisely		
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## 4.2 Final Grade Decision

The independent assessor will combine the moderated grades from the Knowledge Test, Presentation and Professional Discussion to determine the overall apprenticeship grade in line with the grading criteria below.

## 4.3 Grading Criteria

The apprenticeship will be graded distinction, merit, pass or fail. The final grade will be determined by collective performance in the three assessment methods of the end-point assessment i.e. Knowledge Test percentage score + Presentation percentage score + Professional Discussion percentage score = overall percentage score. The three assessment grades will be weighted as per Table 1.

<b>Overall Distinction:</b>	<b>70% – 100%</b>
<b>Overall Merit:</b>	<b>60% – 69%</b>
<b>Overall Pass:</b>	<b>40% – 59%</b>
<b>Overall Fail:</b>	<b>39% or less.</b>

Apprentices also fail if they fail any element of the end-point assessment.

The end-point assessment mark will feed into the overall grading of the degree, which will be graded using Honours degree classifications for English universities. All UK universities must follow the QAA (Quality Assurance Agency for Higher Education) Code of Practice for the assurance of academic quality and standards in higher education. This ensures continued consistency across universities.

The national degree award outcomes are shown below with apprenticeship grading equivalence. These typically are as follows:

<b>Degree Award Class</b>	<b>Grading Equivalence</b>	<b>Marks Level</b>
First-class Honours (1st)	<b>Distinction</b>	<b>70+</b>
Second-class Honours, upper division (2:1)	<b>Merit</b>	<b>60–69</b>

Second-class Honours, lower division (2:2)	<b>Pass</b>	<b>50–59</b>
Third-class Honours (3rd)	<b>Pass</b>	<b>40–49</b>

## 5. Quality Assurance – Internal

End-point assessment Organisations for this EPA must:

- Provide end-point assessment guidance, where required and appropriate, to apprentices, employers and training providers in relation to the requirements of the knowledge test, presentation, professional discussion and marking of the end-point assessment elements
- Develop and maintain a single set of assessment tools that are used by all to carry out assessments
- Ensure independent assessors make consistent and reliable assessment and grade judgements through moderation once a year. EPAOs will undertake moderation of independent assessors' decisions. This will be done through observations and examination of documentation on a risk sampling basis. Subsequent sampling will be 20% per annum unless inconsistencies are identified, in which case they will return to 100% for the following 5 assessments.
- Develop knowledge tests to meet the needs of the specialised role. End-point assessment organisations may consult with representative industry experts when developing the knowledge test
- End-point assessment organisations must ensure that there is consistency and comparability in terms of the breadth and depth of the knowledge test, to ensure assessments are reliable, robust and valid and ensure competency is consistent across the industry
- Develop compensatory assessment for learners with special requirements to allow reasonable adjustments to be made to assess the knowledge, skills and competence of the apprentice through alternative assessment techniques. While these will remove barriers to participation, they must be designed to ensure judgements do not compromise health and safety and legal requirements
- Appoint and approve independent assessors for the purposes of conducting the presentation and professional discussion and grading, based on a check of knowledge, experience and independence
- Provide training for independent assessors in terms of the requirements of the operation and marking of the assessment tools and grading

- Provide training for independent assessors in undertaking fair and impartial assessment and making judgements about performance and the application of knowledge, skills and behaviours within a workplace setting
- Provide documentation and guidance in relation to the end-point assessment i.e. making reasonable adjustment, eligibility to enter end-point assessment and conflict of interest
- Hold bi-annual standardisation events for assessors to ensure consistent application of the guidance
- Ensure end-point assessment organisation moderators are trained in assessment and assurance processes and undertake regular continuing professional development
- Develop and manage a complaints and appeals procedure
- Report to the employer/training provider on any issues that arise in relation to the apprenticeship assessment process

## 6. Quality Assurance – External

The responsibility for external quality assurance of the end-point assessment will rest with QAA.

**APPENDIX 1****Assessment Method by Element of the Standard – Broadcast & Media Systems Engineer**

Key	Assessment Method
KT	Knowledge Test
PD	Professional Discussion
PR	Presentation

Where elements have more than one assessment method identified, it means that both assessment methods will be used to ensure a synoptic approach is achieved.

Knowledge	EPA	
<b>Broadcast &amp; Media Systems:</b>		
Using Radio Frequency (RF) to contribute or distribute data, TV or Radio signals	KT	PD
Electrical and optical carriage of audio, voice, data, pictures and talkback using various modulation and encoding schemes	KT	
Synchronisation and latency	KT	
<b>Audio &amp; Video Systems:</b>		
Audio and video compression techniques	KT	
Analogue systems	KT	
Principles of acoustics	KT	
Principles of lighting, vision and cameras	KT	
How to manage media through video and audio recording systems, integration of edit choices, timecode, codecs, wrappers, file formats, processing, graphics and audio packaging	KT	PD
<b>Broadcasting Software management:</b>		
The use of applications and software to control complex systems to switch or deliver a range of services such as; Electronic Programme Guides (EPG), Subtitles, Conditional Access, on Demand services, ingest of material, scheduling, delivery networks and platforms, Automated Control, remote controlled equipment	KT	PD

Functions and components of database management systems	KT	PD
Database integrity	KT	
How to interrogate data	KT	
<b>IP Networking</b>		
Including computing and number systems and protocols	KT	
Network topology	KT	
Secure and open systems for transmitting or broadcasting including, but not limited to, Local Access Networks (LANs), Wide Area Networks (WANs), Virtual networks and Cloud based networks	KT	
Video streaming protocols	KT	
<b>Security principles</b>		
How to identify physical and cyber security threats and vulnerabilities and the security practices applied to broadcast, media and communications infrastructure to protect maintain content and operations	KT	PD
<b>Electrical Engineering</b>		
Including electrical supply types and systems	KT	
The use of low and high voltage devices and circuits	KT	
Operation of heating and cooling systems	KT	
Safe working practices, including the use of appropriate safety devices on commercial and domestic premises	KT	PD
The relevant electrical engineering policies and procedures that apply to their role	KT	PD
Low power circuits, frequencies, processing and an understanding of systems components and overall architecture	KT	
<b>Health and Safety Legislation, policies and procedures</b>		
Including fire safety, electrical safety, site access, relevant permit to work requirements	KT	
Own organisations policies and procedures		PR
Completion of risk assessment and method statements and reporting procedures	KT	PD
When and how to use personal protective equipment	KT	
Individual and group responsibilities for Health and Safety	KT	PR

<b>Business, Project and Service Management</b>		
The relevant regulatory bodies and their individual content and technical requirements	PR	PD
How your business is structured and the roles involved in engineering delivery		PD
Where your business fits in the industry, your customers and suppliers, the need for business continuity	PR	PD
Internal and external customers' requirements and the Service Level Agreements (SLA) in use		PD
Service reporting, incident and problem management and escalation		PD
The professional standards and behaviours expected for the role	PR	PD
How to identify and deal with risks to service and maintain accurate records of actions taken		PD
The principles of project management	PR	PD
how to apply a logical, structured approach to identifying root causes and address technical problems		PD
Relevant environmental legislation and standards applicable to their organisation such as ISO24001, WEE		PD
Energy awareness, requirements for recycling and disposal and the impact on communities		PD
<b>Technical Skills</b>	<b>EPA</b>	
Operate and maintain technical broadcast or networking systems following defined procedures to ensure uninterrupted service	PR	PD
Isolate, diagnose and resolve faults and problems on broadcast systems and networks using appropriate tools and techniques	PR	PD
Use and maintain mobile and fixed test and measurement equipment such as analysers, and act on the results	PR	PD
Use software to monitor and maintain broadcast and network system availability and act on any issues		PD
Produce and update system designs and documentation when required	PR	PD
Use technical knowledge bases to support existing and new installations	PR	PD
Interpret and use technical documentation including circuit diagrams and data sheets when creating, installing or maintaining systems and networks		PD
Install broadcast and network systems, commission and produce appropriate technical documentation and handover to users checking these are understood		PD



Identify and specify the appropriate cables, connectors and components for the required frequencies or data rates that need to be delivered	PR	PD
Communicate clearly and concisely both verbally and in writing, taking into account the audience and possible impact on business relationships	PR	PD
Provide technical advice and guidance as required	PR	PD
Maintain a high degree of accuracy and attention to detail	PR	PD

Core Behaviours	EPA	
Personal and Professional Responsibility: Drive to achieve in all aspects of work. Demonstrate resilience and determination when managing difficult situations and able to influence the behaviour of others to meet required project outcomes. Work effectively both individually and collaboratively. Seek and adopt new opportunities underpinned by commercial acumen and sound judgement.	PR	PD
Integrity, ethics, and professionalism: Work with integrity and take an ethical approach to develop trust with stakeholders. Build and maintain positive relationships with colleagues, customers, suppliers and professional networks. Communicate and issue project-related reports and statements in an objective and truthful manner. Maintain professional conduct and develop and maintain own professional competence.	PR	PD
Innovation and Resourcefulness: Understand the bigger picture and work enthusiastically and creatively to analyse problems and develop innovative and workable solutions to problems. Have a solution focus, not a problem focus and to be positive and adaptable, responding well to feedback and the need for change.	PR	PD