Requirements for Testing Files against the DPP Technical Standards for Programme Delivery

This document describes the checks set out by the DPP to test programmes delivered as files against the required technical standards. These checks are divided into three distinct types.

1. AS-11 UK DPP file format checks
2. Automated QC (AQC) content checks
3. Eyeball QC content checks

1.   AS-11 UK DPP File Format Check Requirements Version 1.1

All programmes delivered as AS-11 UK DPP HD files must pass the AS-11 UK DPP HD file format check. It forms part of the process carried out by the broadcasters on receipt of a programme file. (Note: There is currently no similar check defined for AS-11 UK DPP SD files).

This check is intended to be carried out by machine, such as an automated QC device (or "Analyser"). AQC manufactures that have implemented the required tests can apply for certification of their product and if successful can use the DPP name in the test Template. Certified AS-11 DPP Analyser devices will use the name "**AS-11 UK DPP HD**" followed by a **version number** (as shown in the table below). This Template can include additional tests beyond what is listed below.

AS-11 UK DPP Checks (terms used in this table are analogous to those defined in section 2)

Test and Version name	DPP Description	Category	DPP Reference	Fail Level	EBU Code	Required value	Tolerance	Result Reported?
AS-11 UK DPP HD V1.1*	Checks for major MXF faults in the file (against the AMWA AS-11 UK DPP HD Shim specification)	File	Analyser Part 1 – MXF Tests	Mandatory	0106W**	Pass	None	
	Checks the required Descriptive Metadata is present and formatted correctly	File	Analyser Part 2 – DM Tests	Mandatory				

* some AQC devices may have 4 audio channel and 16 audio channel options for this check
** this EBU test covers compliance of an MXF file to a particular specification, rather than defining what that specification is

Notes:

- This check confirms only that a file does not have any major MXF faults:
  - It does **NOT** carry out any audio or video content quality checks
  - It does **NOT** include any testing of the H.264 (AVC) essence stored in the file
- The DPP recommends that the check is carried out using a Certified AS-11 DPP Analyser device
- The DPP will not update the AS-11 UK DPP version number unless absolutely needed and will publish full details before any change is required

2.   DPP AQC Content Check Requirements Version 4.3

The AQC checks are linked to the requirements in DPP delivery guidelines. Each check has a link to the relevant section in the current version of the delivery document. Please check you have downloaded the latest version of the DPP Delivery Document and QC Guidelines.

All the checks the will either give a pass or a fail level.

Pass – meets the test criteria

Fail – does not meet the test criteria but is divided in to three levels;

Mandatory	Tests must be passed to meet the basic delivery standards. If a programme fails on one of these tests, it ***must*** **be fixed** before delivery to the broadcaster. When working with a post-production provider, you should ensure that they are going to deliver you a compliant file, and that they will fix any of these errors. Post-production technical support will understand the requirements for technical mandatory tests.
Technical warnings	All Technical Warnings should be **reviewed in an edit suite**, and fixed if at all possible. These problems may have a technical cause which can be fixed; if not, then you must warn the broadcaster about the problem. The online/craft editor should be able to advise on how to fix many of these errors. If any of these checks fail and cannot be repaired or are part of any intentional video or audio effect, they must be noted with timecodes in either the AQC report if possible or the Eyeball report.
Editorial warnings	Editorial Warnings indicate problems which may harm viewers' enjoyment of your content. However, they may also be unavoidable; for example the footage of the moon landings may trigger a few of these warnings, but it's still editorially justified to include this footage in your documentary on space exploration. You must **review these warnings in an edit suite** and if you decide to accept them without fixing, they must be noted with timecodes, in either the AQC report if possible or the Eyeball report.

Notes:

- Currently there is no DPP approved AQC test Template.
- AQC devices may have test Templates that merge the AS-11 UK DPP checks with the AQC checks, this does not mean the AQC checks in the template have been certified.
- The DPP Delivery Document and QC Guidelines will be updated at the same time and will always have the same version number.
- All DPP AQC checks are linked to the EBU QC Items which can be found here. The DPP will move to the EBU AQC Recommendations when they are published but until that time, AQC vendors may use the following tables for guidance.

Audio AQC for the DPP Delivery Document V4.3

Test Description	DPP Description	Category	DPP V4.3 Reference	Fail Level	EBU Code	Required value	Tolerance	Result Reported?
Audio clipping	Digital signal "overload" Audio will sound distorted.	Audio	1.2	Editorial warning	0005B		≤ 250ms (12000 samples)	If present
Audio dropout	Short unintentional digital holes in the audio.	Audio		Editorial warning	0008B		≤ 5ms	If present
Programme loudness	Integrated loudness must target –23LUFS.	Audio	3.1	Mandatory	0010B	-23 LUFS	±1 LU	Mandatory
Dialnorm to loudness mismatch	Measured loudness must match metadata.	Audio	3.1	Technical warning	0010X		± 1 LU	Mandatory
Audio phase error	Phase differences which cause audible cancellation in mono.	Audio	3.1	Mandatory	0012B	0º	± 90º	
Maximum true peak (audio) level (dBTP)	Maximum audio level allowed.	Audio	3.1	Mandatory	0084B	-1 dBTP (It is recommended that levels do not exceed -3 dBTP)	+0 LU	

Video AQC for the DPP Delivery Document V4.3

Test Description	DPP Description	Category	DPP Reference	Fail Level	EBU Code	Required value	Tolerance	Reported?
Coloured Frames (including black frames)	Warning of a full frame of colour or black for a short period.	Video	1.1	Editorial warning	0016N		≤ 2 frames	If present
Freeze frames	Warning of static shots.	Video	1.1	Editorial warning	0044N		≤ 3s (75 frames)	Mandatory
Test Patterns	Warning that test patterns (e.g. colour bars) have been detected during the programme	Video	1.1	Technical warning	0052N		0 frames	If present
Scanning (video artefacts from incorrect scanning mode)	Signal format should be Interlace but it can carry progressive of PSF video formats.	Video	1.1	Technical warning	0048B	Interlaced		Mandatory
Video dropout	Small video dropouts, such as small black squares that might appear for a frame or two.	Video	1.1	Technical warning	0039B		≤ 2% of pixels across 1 or more frames (2 or more fields)	If present
Video Signal Levels (including Colour gamut)	Makes sure video and colour levels are not too large. Errors need to be 'legalised'.	Video	2.3	Mandatory	0051B	**Luminance > 1% pixels (low pass filtered EBU R103)** HD - 10bit between 55 and 966 (-1% to 103%) SD - 8bit between 14 and 242 (-1% to 103%) **Chrominance** (RGB) **> 1% pixels (low pass filtered EBU R103)** HD - 10bit between 20 and 984 (-5% to 105%) SD - 8bit between 5 and 246 (-5% - 105%)		
Field order (video artefacts from incorrect field order)	Fields appear in the wrong order which causes unpleasant motion errors.	Video	1.1	Mandatory	0041B	Top field first		
PSE (Photosensitive Epilepsy) Testing	Three tests; Luminance flashes Red flashes Spatial patterning	Video	2.9	Mandatory	0021B		Approved testing devices	PSE Report mandatory

3. DPP Eyeball QC Content Check Requirements Version 4.3

The Eyeball checks are linked to the requirements in DPP delivery guidelines. Each check has a link to the relevant section in the current version of the delivery document. Please check you have downloaded the latest version of the DPP Delivery Document and QC Guidelines.

All the checks the will either give a pass or a fail level.

Pass – meets the test criteria

Fail – does not meet the test criteria but is divided in to three levels;

Mandatory	In the Eyeball check these QC Items are usually about programme layout, slate or clock information, audio channel order etc. These MUST be corrected before the broadcaster can accept the programme.
Technical warnings	Technical warnings are usually technical issues which cannot yet be detected by an AQC device (aspect ratio errors, poor image quality, focus errors, lip sync errors etc.). They should be fixed where ever possible but if not they should be noted in the Eyeball QC report along with the reason for not fixing.
Editorial warnings	Editorial Warnings would include silence, captions or credits spelling, pillar-box or letter-box images etc., that may be distracting. These should normally be fixed but where they are editorially justifiable, they must be noted with timecodes, in the Eyeball QC report

Notes:

- The Eyeball QC check should ideally be carried out in the edit suite or any suitable area that has good sound insulation and controllable lighting. See Section 4.

Audio "Eyeball" QC for the DPP Delivery Document V4.3

Test Description	DPP Description	Category	DPP Reference	Fail Level	EBU Code	Required value	Tolerance
Hum or Buzz	Background electrical noise and other interference e.g. from mobile phones	Audio	1.2	Editorial warning	0088B	Interference e.g. mains hum, cable crackle, FM radio mic and other audio interference should be repaired if at all possible.	If present
Silence	Sections of silence can cause automatic alarms to activate.	Audio		Editorial warning	0077B 0078B	Silence longer than 10 seconds with pictures or 5 seconds with black or a freeze frame should be specifically noted in the QC report and to the broadcaster.	Mandatory
Unclear audio (especially dialogue)	There are many complaints about unclear dialogue – remember the audience has not seen the programme and does not have a script to read	Audio	2.9.5	Editorial warning	0122B	Audio should be clear and easy to hear for a first time viewer who has no access to a script or transcript.	If present
Audio background noise and unwanted audio	Background noise that is too loud relative to dialogue. This includes added effects and added music – both of which are often perceived by members of the audience to be too loud.	Audio	1.2 & 1.3	Technical warning	0122B	Background noise such as traffic noise etc. should not interfere with the intelligibility of the dialogue.	If present
Audio clicks	Clicks and other short "sharp" audio noises can be very distracting. Very old archive audio should be cleaned whenever possible	Audio	1.2	Technical warning	0057B	Sharp, short duration audio "clicks" or "cracks" should be repaired.	If present
A/V sync (Lip Sync)	There should be no detectable Lip Sync error (mouth and speech not together)	Audio	3.6	Technical warning	0098B	AV sync should be within ±10ms.	If present
Low level audio	Audio levels, especially dialogue should not be so low that the audience needs to turn up the	Audio	1.3	Technical warning	0077B	Audio level (especially dialogue) should not cause a viewer to adjust the volume during the programme.	If present
Mono (not stereo)	Audio should normally be stereo, mono is acceptable especially for archive but should never be on one channel only	Audio	3.3	Technical warning	0124B	Dual mono audio is acceptable and is expected on archive material and often on programmes with only dialogue. New material especially music and effects should be stereo.	If present
Audio processing artefacts	Some consumer equipment (and poorly set-up broadcast equipment) can compress audio so it either becomes unclear or unpleasant to listen to	Audio	1.2	Technical warning	0125B	The audio must not show dynamic and/or frequency response artefacts as a result of the action of noise reduction or low bit rate coding systems.	If present
Audio channel layout	Layout will depend on the audio options (e.g. 2nd language)	Audio	4.4.1	Mandatory	0123B	Channel layout must be as described in the DPP delivery document section 4.4.1.	
Phase coherence (especially surround sound)	Small timing differences between the channels can cause "phasing" or even cancellation for people listening to surround programme on stereo only TVs	Audio	3.4.2	Mandatory	0012B	Surround sound should be spot-checked as a stereo down-mix to ensure there are no phasing errors, especially between the Centre and front Left and Right.	

Video "Eyeball" QC for the DPP Delivery Document V4.3

Pre Programme

Test Description	DPP Description	Category	DPP Reference	Fail Level	EBU Code	Required value	Tolerance
AV Line-up (present at correct timecode)	Line must start at 09:59:30:00	Video	4.5	Mandatory	0052B	Line up MUST be as described in section 4.5 of the DPP delivery document	
Clock correctly formatted (where used)	If a circular count down clock is used it must be circular	Video	4.5.2	Mandatory	0121B	When a countdown clock is used it should be formatted as section 4.5.2 of the DPP delivery document	
Clock/slate Information Correct	The clock or slate information must be correct and start at 09:59:50:00	Video	4.5.2	Mandatory	0119B	Clock information MUST be as described in section 4.5.2 of the DPP delivery document	
Programme Start Time	The first frame of the programme must be 10:00:00:00	Video	4.5	Mandatory	0127B	The programme must start at 10:00:00:00	

During the Programme

| Test Description	DPP Description	Category	DPP Reference	Fail Level	EBU Code	Required value	Tolerance
Blockiness (including compression artefacts)	Areas of the image especially on darker or high detail motion look like they have squares or blocks	Video	1.1	Editorial warning	0023B	There should be no visible "blocking" or edges caused by poor compression or low quality video processing.	If present
Video out of focus	Soft or blurry images	Video	1.1	Editorial warning	0050B	The point of attention should be in focus. This does not mean focus, focus pulling or having shallow depth of field cannot be used as part of the story.	If present
Captions/credits wrong	Ensure captions and credits are correct, with the correct spelling and punctuation. Also check that they actually say what you expect	Video	1.1	Editorial warning	0126B	Captions should have the correct spelling and punctuation	Mandatory
Poor colour or grading	Images, especially skin tones should look natural and be consistent	Video	1.1	Editorial warning	0087B	Grading or Colour Correction should not be so aggressive it introduces video noise or other visible errors	If present
Text out of safe areas	Many domestic TVs still cut the edges off the picture – called "overscan".	Video	2.10	Editorial warning	0120B	Captions and text that are part of the editorial content i.e. need to be read, must be within the 16:9 caption safe areas. End credits safe will depend on the broadcasters house style	Mandatory
Blanking errors (Video Frame Size)	Images should fill the screen. Some, especially analogue archive, can have black or coloured edges that can be distracting.	Video	2.4	Editorial warning	0015B	Image should fill the frame with no black or other colour or content visible at the edges of the frame	If present
Black bars	Warning that images are below a given size. Includes pillar box or letter box images.	Video	2.5	Editorial warning	0015B	Images that do not fill the screen (e.g. rostrum photos) are acceptable but sequences that have varying aspect ratios should be noted	If present
Crushed, Burnt Out or clipped Images	There should not be a loss of detail in the light or dark areas of the image	Video	1.1	Technical warning	0101B	Images should not be burnt out or crushed.	If present
Poor video up scaling (up-conversion), archive and standards conversion	Poor processing of non-HD images (when adding them to HD programmes) can cause errors and picture quality loss when compared to the original version. A converted image or sequence should not look worse that the original version	Video	2.7.2 & 2.11	Technical warning	0053B	Up converted and Standards converted shots should have no visible alias or other impairments that were not visible on the original version.	If present

During the Programme Continued							
Video noise	Grainy or "speckled" images. Can be caused by too much gain in the camera or pushing in grading. Grain must NOT be added to images – filters are added to transmitters to reduce blocking caused by noise	Video	1.1	Technical warning	0047B	Images should be free from video noise. Film grain should be minimised as much as possible.	If present
Aliasing	Straight edges look like they are moving or have double lines. Stills have "jagged edges"	Video	1.1	Technical warning	0126B	Images should not have visible jagged edges or visible patterning (alias) errors.	If present
Aspect Ratio Errors	The image must not look stretched or squashed	Video	2.5	Technical warning	0121B	Images should be the correct shape e.g. 4:3 should not be stretched to fill 16:9.	If present
Contouring	Colour or brightness graduations should be smooth and not appear to happen in steps	Video	1.1	Technical warning	0087B	Images should not have visible contours (steps) between different brightness levels or colours.	If present
Flash Frames (short shots)	Single frame shots can lead to accusations of "subliminal advertising" and can be disturbing. Very short shots should be avoided.	Video	1.1	Technical warning	0128B	Very short shots should be avoided. The use of 1 or 2 frames shots will need to be checked with the programme commissioner. Accidental "flash frames" must be repaired	Mandatory
Non de-interlaced stills	Stills taken from moving images can have stepped edges if they are not de-interlaced. This is covered under general image quality issues	Video	1.1	Technical warning	0038B	Stills (including stills from computer rostrum) should be de-interlaced when they are taken from sequences with movement to remove the "jagged" edges (unless shot using a progressive video format)	If present
Non-smooth motion	Juddery or jerky motion or camera movement should be avoided (Section 1.1 of the DPP delivery document)	Video	1.1	Technical warning	0087B	All movement should be relatively smooth. Movement should not "update" unless for special effect.	If present
Progressive rollers	Rollers or crawls should have smooth motion and not be too fast to read	Video	2.1.2	Technical warning	0087B	End credit rollers (and other moving captions) MUST be added in interlace mode to prevent judder. This does not apply to movies where the rollers speed is low enough to hide the judder	Mandatory
Ringing, hum & other artefacts	Spurious signals or artefacts, including streaking, ringing, smearing, echoes, overshoots, moiré, hum and cross-talk	Video	1.1	Technical warning	0087B	Images should not have visible video hum or ringing other visible errors. These are usually associated with analogue archive or poor compression and efforts should be made to minimise the effect.	If present
Stuck Pixels	A camera pixel that is not working causes a small square block that does not change. It can look like dust behind the lens but it is always sharp edged. This is covered under general image quality issues.	Video	1.1	Technical warning	0087B	All "stuck" pixels should be repaired, especially where they occur over moving shots	Mandatory
Transition errors	There should not normally be shot changes during transitions (mixes, wipes or other effects). This is covered under general image quality issues.	Video	1.1	Technical warning	0087B	Shot changes should not occur on either the incoming or outgoing shots of transitions (mixes, wipes video effects etc.). Transitions should have smooth motion and the incoming shot should fill the screen at the end of the transition (unless required as part of the effect).	Mandatory
End of Programme							
Lack of freeze/fade at end	Programmes must have a freeze or "living hold" to give to allow time for the transition into the next item	Video	4.5	Editorial warning	0127B	Programmes must end with a 5 seconds freeze or hold.	Mandatory

4. Eyeball Viewing Environment Guidance

The viewing should be carried out using a good quality video monitor (minimum size 24") that is regularly calibrated with broadcast monitor test signals (e.g. PLUGE, Testcard etc. There should be external high quality speakers properly positioned for stereo or surround sound monitoring. The most likely means the viewing will be done in an edit suite or a dubbing theatre with suitable quality video monitoring.

Viewing distance should be no more than 3H (3 time the height of the screen) and viewing position should directly in front of the screen preferably with the viewer's eyes perpendicular to the display horizontally and vertically.

The room should have reasonable sound dampening to minimise external interference and audio reflections Controlled lighting to minimise screen reflection
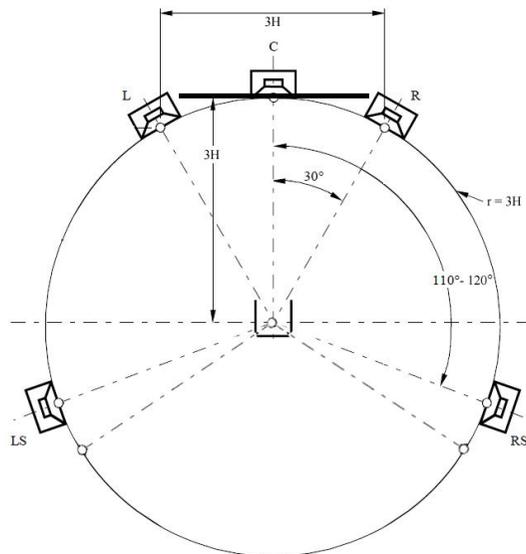
Screen Size		Approximate 3H	
24"	60cm	0.89m	
28"	71cm	1.04m	
36"	91cm	1.34m	
42"	107cm	1.57m	
47"	119cm	1.75m	
50"	127cm	1.87m	
Speaker	**Height**	**Horizontal Angle**	**Inclination**
C	1.2m*	0°	0°
L & R	1.2m	30°	0°
LS & RS	≥1.2m	110° - 120°	0° to 15° down

* Or just above the display. If greater than 1.2m, L&R speakers should match C with LS & RS ≥ to this height.

VERSION	DATE	SECTION	REQUIRED / INFORMATION	UPDATE
UK V2.0 - 2015	11 May 2015	Page 1	Required	Introduction to AS-11 DPP HD V1.1 approved test template
		Page 1	Required	Links to Compliance Programme Analyser testing documentation as definition of AS-11 UK DPP file format checks
		Page 1	Information	Note about lack of AVC tests in AS-11 UK DPP file format checks
		Page 2	Required	Introduction to AQC and Eyeball checks based on the DPP Delivery Document V4.3
		Pages 3-8	Information	Re ordering and adding DPP Delivery Document V4.3 links
		Page 9	Information	Recommendation for Eyeball area
		Page 10	Information	Addition of version control page
		All	Information	Update of all EBU links to ebu.io - Now includes EBU QC Item version numbers for use in EBU QC Templates