digital production partnership

TEST REPORT No
R1003

DPP Compliance Programme
AMWA AS-11 DPP
Product Test Report (See note 5, on next page)

DPP Lab, BBC R&D, Centre House, 56 Wood Lane, W12 7SB, UK

OEM	Root6
Product (Note 6)	Content Agent
Product Version (Note 6)	v3.4
Test Report Date	09 September 2014

OVERALL TESTING RESULT	**PASS WITH CONDITIONS**

HD Test Artifacts Used	
Writer Functionality	**Reader Functionality**
File Conformance Test Suite	File Reader Tests
(Note 1, on next page)	(Note 2, on next page)
F1.1	**R1.0**

SD Test Artifacts Used	
Writer Functionality	**Reader Functionality**
File Conformance Test Suite	File Reader Tests
(Note 1, on next page)	(Note 2, on next page)
Not Tested	**Not Tested**

GENERIC FUNCTION CATEGORIES		**Functionality Tested**
File Writers	Products that **write** AS-11 UK DPP HD files. Tests are carried out to determine whether a file written by a device conforms to the AMWA AS-11 UK DPP HD Shim v1.1 as defined by the rules for conformance [available at the link below], as well as the requirements for Descriptive Metadata. http://www.amwa.tv/projects/rules/as-11/	**Tested**
File Readers - Players	Products that have the ability to read AS-11 DPP HD files and then **play** the contents of the file to a video and audio monitor. These devices may additionally include the ability to display Timecode, Descriptive Metadata and Programme Parting/Segmentation information. It is not a requirement that products should have all possible functionality. Products are only tested for the features that they have.	**Tested**
File Readers - Transcoders	Products that have the ability to read AS-11 DPP HD files and then **transcode** the contents to a different format. Transcoded output files are then tested following the Player testing procedure.	**Tested**

AMWA CERTIFICATION AUTHORITY
The **AMWA Certification Authority** uses these TEST REPORTS as the basis for awarding Certification. Please see the web page below. http://www.amwa.tv/certification

Template version	v1.0	09 September 2014	Release version

NOTES	
Note 1	**Writer Functionality, File Conformance Test Suite:** This identifies the tests carried out on AS-11 DPP **OUTPUTS** of the product and describes the file conformance tests used. This document is available from the DPP Compliance page on the DPP website.
Note 2	**Reader Functionality, File Reader Tests:** This identifies the File Reader Test procedure, including the list of tests carried out by the OEM on their own product, with the results to be noted. This document is available from the DPP Compliance page on the DPP website.
Note 3	**Input media used:** For **Writer** tests this identifies the **INPUT MEDIA** files and / or SDI and metadata sources to be used for the creation of output AS-11 DPP files specified.
Note 4	**Input AS-11 DPP files used:** For **Reader** tests this identifies the a set of AS-11 DPP test files that are used as **INPUTS** to the product.
Note 5	This **Product Test Report** is also known as the **TEST REPORT** for the purposes of applying for AMWA Certification.
Note 6	The test results (and any Certificate ultimately issued) will be tied to the version of the product tested. This means that an actual 'release' of a product must be submitted for testing.
Note 7	Certain faults are classed as 'warnings'; certain faults are classed as 'errors' but result in 'Pass with Conditions' rather than 'Fail'. The overall test result takes the worst case result from individual tests. That is, if any individiual test result is a 'Fail' then the overal test result is a 'Fail'.

TEST PROCEDURE - Overview	
Writer Test Procedure	**Stage 1**: Once signed up to the DPP Compliance Programme, the OEM should send some representative file samples to the DPP lab to be tested. The File Conformance Test Report then shows how they performed against the conformance criteria. Individual tests *may* have one of four outcomes: **PASS**, **WARNING**, **PASS with CONDITIONS**, and **FAIL**. Some tests may just have **PASS** or **FAIL**. If the initial files tested are a 'Fail' then new files will need to be submitted once the product has been updated with a fix for the issue. Once the files are a 'Pass', or 'Pass with Conditions' then the manufacturer can move to step 2 and formally request that the lab test the product at Certification Level. **Stage 2**: The OEM will need to provide the lab with additional information about the product's functionality and operation using the Initial OEM Product Submission Form. The Lab, in discussion with the OEM, will then agree the method(s) by which the product being tested will create files for Certification Level Testing. Once stage 2 testing has been completed and the Product Test Report (showing Pass or Pass with Conditions) is issued to the OEM. They can then go ahead and apply for Certification from the AMWA. Please note: If the device also includes '**Reader**' functionality then this will also require a 'Pass' or 'Pass with Conditions', in order for the Product Test Report to be issued.
Reader Test Procedure	File Reader testing is primarily 'self-serve'. The test procedure may be carried out by the OEM at any time. It principally involves downloading the set of AS-11 UK DPP HD Reader test files and asking the product to read each one, and the OEM recording the results. The ability to do this is assessed by The DPP Test Lab against set criteria which include checks for player functionality, and transcode functionality if present. (This is subject to change as new files and tests are included). A declaration form is to be completed and the results returned to the DPP Lab. Results are verified and if they are a 'Pass' or 'Pass with Conditions' a Product Test Report is issued to the OEM. Please note: If the device also includes '**Writer**' functionality then this will also require a 'Pass' or 'Pass with Conditions', in order for the Product Test Report to be issued.
Application to AMWA	Once a Product Test Report has been issued by the DPP, an OEM may follow the AMWA procedure to apply for Certification.

PASS or PASS WITH CONDITIONS	
What it means	The capability of version X of product Y to read and / or write AMWA AS-11 UK DPP HD Shim files has been tested by the DPP Compliance Lab and all the tests performed (as referenced in this report) under the specified "realistic" operating conditions have either "Passed" or "Passed with Conditions".
What it DOES NOT mean	a) All files produced by a Writer are always fully conformant to the "AMWA AS-11 UK DPP" Shims b) Files from Writers will always work correctly with Readers c) Files from Writers will never be rejected by UK Broadcasters d) All modes and features of the product have been tested

Overall WRITER Result	PASS WITH CONDITIONS

WRITER SUBMISSION FORM - For DPP Compliance Testing of PRODUCT to Certification Level

The OEM is to complete the following sheet and submit it to the DPP Compliance Programme, together with any output files, for testing to be undertaken.

Please see the notes section below and also comments (In grey) for guidance on what is requied.
Please adjust the size of fields as necessary.

GENERAL	OEM Name	Root6
	Product Name	ContentAgent
	Product Version	v3.4

DEVICE OPERATION	Can the product be used to **Write** AS-11 DPP HD files?	Y
	Can the product be used to **Read** AS-11 DPP HD files?	Y
	Give details of the **range** of **product features** that were used in writing these test files: from inputs used through to ouput being produced; e.g. ingest; transcode; edit metadata. Details for each individual file submitted should be provided in the table below.	ContentAgent transcoded ProRes clips to AVC-I, metadata was added using the ContentAgent interface, clips were checked using the ContentAgent player
	For these product features, please detail the **capabilities**, the and any restrictions on the capabilities	

CONFIGURATION	Details of product configuration in order to use the features: for example, output settings.	Clips were imported into ContentAgent, the ContentAgent DPP metadata schema was added by the operator to the clips, descriptive and other DPP metadata were enterted into the fields displayed in the user interface. Segmentation timecodes were also added. In the worklfow settings user can choose 4 or 16 audio tracks, re wrap or encode to AVC-Intra, use legacy or new mode for lineup start. ContentAgent's DPP workflow node was then run on the clips. AS-11 DPP files were created.
	Sufficient information must be provided to allow a configuration to be replecated by the test lab.	
	If necessary any detailed configuration settings could be attached as an appendix to this report	

AS-11 DPP FILES		List all AS-11 DPP MXF files submitted for testing, with details?				
New file name	Duration of file (hh:mm:ss:ff)	Number and duration of parts (Segmentation)	Number of audio channels	Source of DPP metdata	Source media used (File name or SDI) (DPP or OEM supplied in brackets)	Product features used to produce the file
Root6_DPP_Writer_Test_Input_A.mxf	Approx 7 mins	Single	16	Writer Test Input DM - A	DPP_Writer_Test_Input_A.mov (DPP)	ContentAgent DPP metadata tools used to enter metadata manually (including segmentation), DPP workflow node used to produce AS-11
Root6_DPP_Writer_Test_Input_B.mxf	Approx 6 mins	2 parts	16	Writer Test Input DM - B	DPP_Writer_Test_Input_B.mov (DPP)	ContentAgent DPP metadata tools used to enter metadata manually, note French language used instead of Danish (including segmentation), DPP workflow node used to produce AS-11
Root6 30 min program.mxf	Approx 30 mins	2 parts	4	Root6	DNxHD clips edited together to create 30min programme	ContentAgent DPP metadata tools used to enter metadata manually (including segmentation), DPP workflow node used to produce AS-11

NOTES	
Writer Test Procedure	Tests should use the equipment under realistic operational conditions to produce DPP files.
	The Lab will test that common workflows for the particular equipment under test are capable of producing valid DPP files.
	We're not out to trick equipment into producing non-conformant files, nor are we interested in testing every possibly configuration a piece of equipment might have.
	Equipment is not required to produce all allowed variants of AS-11 DPP files.
	The test Lab is not part of the QA process for product development.
	We're not testing the equipment's ability to analyse and validate its input.
	While we encourage OEMs to produce stable equipment that copes well in the presence of faulty input, we're not testing that here. As such, all input artefacts (audiovisual
Input artefacts	Different types of equipment will require different types of input.
	Using different input as stimulus will also test different aspects and workflows within the same equipment.
	Input content (files) will be provided by the Lab, as shown above
	Content will be provided in a variety of formats intended to represent likely operational inputs. Not all equipment is expected to utilise all available input artefacts. The
	Descriptive metadata (DM) will identify audio track layout and programme segmentation timecodes. The DM does not necessarily match the content of the media.
	SDI
	Equipment may require HD SDI as input. This is sufficiently standardised that it can be sourced locally. All files submitted to the Lab may be used to test other equipment,
Output artefacts (DPP files) to be produced	Outputs need to reflect the advertised capabilities of the equipment, and test a range of the (user-configurable, as opposed to developer-configurable) variation allowed by the specification. They should also be representative of real programmes likely to be delivered to broadcasters.

OEM	Root6
Product	Content Agent
Version	v3.4
File	Root6_DPP_Writer_Test_Input_A.mxf
File ref	166
Date	08-Sep-14

WRITER TESTING: FILE TEST REPORT

Test Result Key

P	**PASS**
W	**PASS with Warning**
C	**PASS with Conditional Error**
F	**FAIL with Critical Error**

	Fault Description	PASS / FAIL	Test	Tool	Error or Warning Category (refer to accompanying notes) Note	
1		P	Test 1	Media Player checks:		media duration
2		P				audio plays ok
3		P				video plays ok
4		P				qty of audio channels
5		P				a/v in sync and same length
6		P	Test 2	DPP Metadata tool		DPP Metadata Validation
7		P	Test 3	mxf2xml validation	c1-12	Mandated DM is present
8	Optional metadata fields have been included with empty values. These fields should be omitted if there is no information to convey.	W			c13-36	DM conditional & mandated values in range
9		P			c37-40	Line-up and Ident T/C in range, part T/Cs
10		P			c41	Timecode timebase is 25 fps
11		P			b61, b87	Exactly 1 audio channel in a track
12		P	Test 4 - 6	All the following:	a1	AVC syntax: SMPTE RP 2027:2011 Class 100
13		P	(Misc)	AQC 1	a2	SPS and PPS location
14		P		AQC 2	a3-6	Video essence: frame size, 25 fps, interlaced, 10 bit
15		P		mxf analyser	a7	Sound Essence Bytes
16		P			a8	Closed Captions
17	The ProductUID for OpenCube MXFTk (10.9c.54.40.d2.1d.b2.11.80.29.00.11.11.eb.c4.76) indicates an unknown version, 'b'.	W	Tests 4 - 6	All the following:	a12	MXF Conformance
18		P	(MXF)	AQC 1	a13	Op1a
19		P		AQC 2	a14	Header Partition Status
20		P		mxf analyser	a15	KLV Fill following Header Metadata
21		P			a16	Random Index Pack pressence
22		P			a17	KLV Alignment Grid
23		P			a18	Index Table presence
24		P			a19	Index Table location
25		P			a20	Index Table completeness
26		P			a21	Index Table correctness
27		P			a22	Essence Container
28		P			a23	Essence Container Wrapping
29		P			a24	Essence Container Location
30		P			a25	Essence Container Parent Partitions
31		P			a26	Essence Track Referencing
32		P			a27	1 Material Package Picture Track
33		P			a28	Picture Essence Elements Used
34		P			a29	4 or 16 Material Package Sound Tracks
35		P			a30	Sound Essence Elements Used
36		P			a31	Material Package Sound Track Numbers
37		P			a32	1 Material Package Timecode Track
38		P			a33	Footer Presence
39	The property BitRate in the MPEG2VideoDescriptor has the disallowed value of 100000000. Allowed values are: 113766400	C	Tests 7 - 8	All the following:	b1-112	Consolidated Essence Descriptors: Presence and Value
40	ERROR:The ColorRange property is not specified in the MPEG2VideoDescriptor. This is a problem because SignalStandard is not present either and so ColorRange is not able to default to the correct value: see SMPTE ST 377-1:2011, G.2.34.	C	(Essence Descriptors)	mxfdump, MXFDump		
41	The property BitRate should not really be used in the MPEG2VideoDescriptor because: This is not intended for use with AVC	W				
42	Details of the Container Duration could not be found in the Multiple Descriptor of the Top Level File Package. SMPTE ST 377-1:2011, 9.5.5, 17 specifically defines this property for the Top Level File Package and the table in SMPTE ST 377-1:2011 F.2 states 'A file writer should write the best value it can write' for the ContainerDuration property.	W				

OEM	Root6
Product	Content Agent
Version	v3.4
File	Root6_DPP_Writer_Test_Input_B.mxf
File ref	165
Date	08-Sep-14

WRITER TESTING: FILE TEST REPORT

Test Result Key

P	**PASS**
W	**PASS with Warning**
C	**PASS with Conditional Error**
F	**FAIL with Critical Error**

	Fault Description	PASS / FAIL	Test	Tool	Error or Warning Category (refer to accompanying notes) Note	
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OEM	Root6
Product	Content Agent
Version	v3.4
File	Root6 30 min program.mxf
File ref	167
Date	08-Sep-14

WRITER TESTING: FILE TEST REPORT

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	Fault Description	PASS / FAIL	Test	Tool	Error or Warning Category (refer to accompanying notes) Note	
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Overall READER Result (DPP Test Lab review of OEM supplied test results)	PASS

FILE READER TEST results - For DPP Compliance Testing of PRODUCT to Certification Level

6a Table 1 - GENERAL DETAILS (OEM to complete)	
OEM name	Root6
Product name	ContentAgent
Product version	v3.4
Date of tests	28th August 2014

6b Table 2 - PRODUCT DESCRIPTION and CAPABILITIES (OEM to complete)	
Brief description of product / product type	Workflow Automation Management
What are its primary functions in relation to AS-11 UK DPP Reader tests? Please list the main ones.	Transcode, metadata insertion, playback, rewrap if desired
Does the device render both video and audio from the AS-11 DPP file for use by the device?	yes
Player functionality: Does the device render to video on to a display? If so how is this presented to the display?	A player within the ContentAgent user interface can play video on the computer monitor, audio is output via computers sound card. Also an AJA card can be fitted in the PC to enable an SDI output when playing the file back in the interface
Player functionality: Is audio decoded to outputs suitable for monitoring purposes?	Yes, audio is output via sound card or via AJA card SDI embedded output.
Transcode functionality: Does the device render the AS-11 DPP video to a different file format as part of its operation?	The system can transcode to many different formats and wrappers.
Does the device perform a partial file read of video and/or audio?	Yes, sub-clips can be created if desired
Is there a display of media Timecode?	Yes, duration, start and end timecodes are displayed
Does the device read AS-11 DM (descriptive metadata) and/or UK DPP DM? If so how is this used and displayed?	Yes metadata is displayed within clip information in the user interface
Is there any display of programme segmentation / programme parting?	Yes , in a database view as text and and within a simple timeline view in the player user interface
Does the product have the capability to jog, shuttle and jump to a new T/C?	The player can allow a user to select a different point and jump, go frame by frame etc

6e NOTES (OEM to complete if there are any other relevant details)

DECLARATION	
7 DECLARATION	**The detailed test results for File Reader Tests, and the resulting overall READER result, is based on information provided by the OEM in self testing. When submitting the detailed test results the OEM representative signed the following declaration confirming that they agreed to the statement below. The details were then reviewed by the DPP Test Lab to determine the overall READER result shown at the top of this page.**
"I confirm that the information in this report has been completed honestly and is an accurate representation of the results obtained. Also, that these results provide a fair assessment of the product's ability to read and work with AS-11 DPP files in a way reasonably expected for a product of this type and functionality, and that these results were achieved when using the product in a configuration which would reasonably be regarded as normal operational use."	