

FCC Requirments

- (12) Video programming provider. Any video programming distributor and any other entity that provides video programming that is intended for distribution to residential households including, but not limited to broadcast or nonbroadcast television network and the owners of such programming.
- (b) Requirements for closed captioning of video programming—(1) Requirements for new English language programming. Video programming distributors must provide closed captioning for nonexempt video programming that is being distributed and exhibited on each channel during each calendar quarter in accordance with the following requirements:
- (iv) As of January 1, 2006, and thereafter, 100% of the programming distributor's new nonexempt video programming must be provided with captions.



FCC Requirements

- (c) Obligation to pass through captions of already captioned programs; obligation to maintain equipment and monitor for captions. (1) All video programming distributors shall deliver all programming received from the video programming owner or other origination source containing closed captioning to receiving television households with the original closed captioning data intact in a format that can be recovered and displayed by decoders meeting the standards of this part unless such programming is recaptioned or the captions are reformatted by the programming distributor.
- (2) Video programming distributors shall take any steps needed to monitor and maintain their equipment and signal transmissions associated with the transmission and distribution of closed captioning to ensure that the captioning included with video programming reaches the consumer intact. In any enforcement proceeding involving equipment failure, the Commission will require video programming distributors to demonstrate that they have monitored their equipment and signal transmissions, have performed technical equipment checks, and have promptly undertaken repairs as needed to ensure that equipment is operational and in good working order.
- (3) Each video programming distributor shall maintain records of the video programming distributor's monitoring and maintenance activities, which shall include, without limitation, information about the video programming distributor's monitoring and maintenance of equipment and signal transmissions to ensure the pass through and delivery of closed captioning to viewers, and technical equipment checks and other activities to ensure that captioning equipment and other related equipment are maintained in good working order. Each video programming distributor shall maintain such records for a minimum of two years and shall submit such records to the Commission upon request.



FCC Requirements

- (2) The video programmer will make reasonable efforts to employ live display captioning instead of real-time captioning for prerecorded programs if the complete program can be delivered to the caption service provider in sufficient time prior to airing.
- (iii) Monitoring and Remedial Best Practices. Video programmers adopting Best Practices will take the following actions aimed at improving prompt identification and remediation of captioning errors when they occur.
- (A) Pre-air monitoring of offline captions. As part of the overall pre-air quality control process for television programs, conduct periodic checks of offline captions on prerecorded programs to determine the presence of captions.
- (B) Real-time monitoring of captions. Monitor television program streams at point of origination (e.g., monitors located at the network master control point or electronic monitoring) to determine presence of captions.
- (D) Recording of captioning issues. Maintain a log of reported captioning issues, including date, time
 of day, program title, and description of the issue. Beginning one year after the effective date of the
 captioning quality standards, such log should reflect reported captioning issues from the prior year.
- (B) The intended message of the spoken dialogue is conveyed in the associated captions in a clear and comprehensive manner.
- Electronic Code of Federal Regulations
- http://www.ecfr.gov/cgi-bin/textidx?SID=72eb5a624e8dc043293819a5663dff41&node=47:4.0.1.1.6.1.1.1&rgn=div8=47

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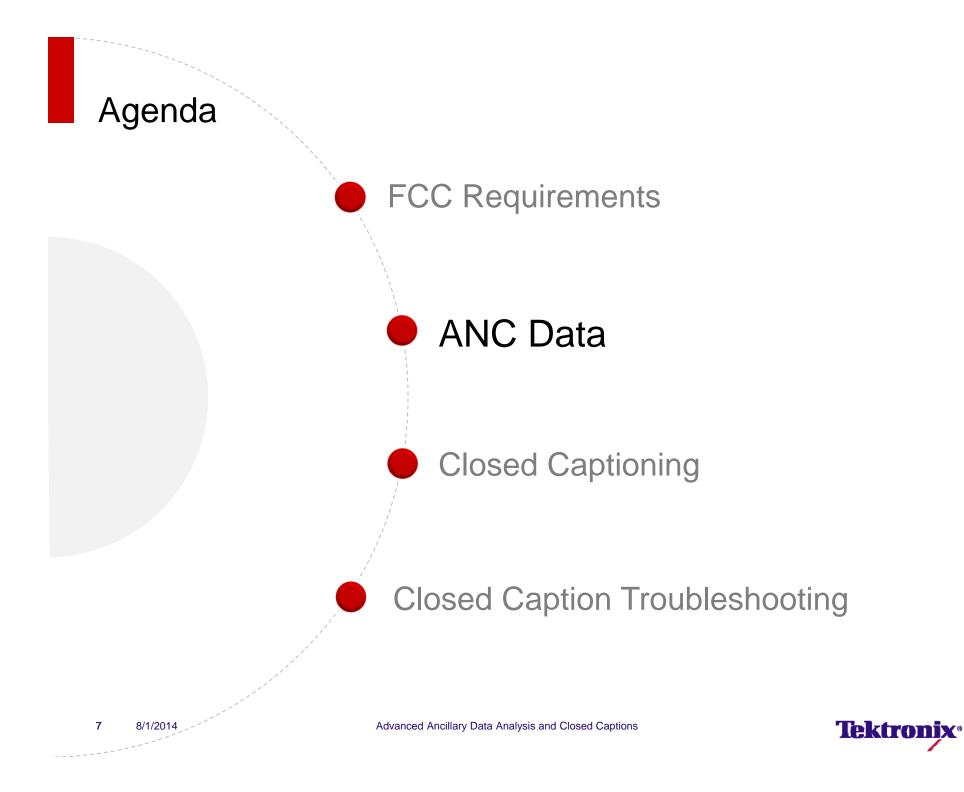


Places to monitor

- Original content production SDI
- Completed files transferred in MPEG & SDI
- Files ready for transmission MPEG & SDI
- Programing leaving the broadcaster or MSO

✓8VSB, QAM-B, IPTV





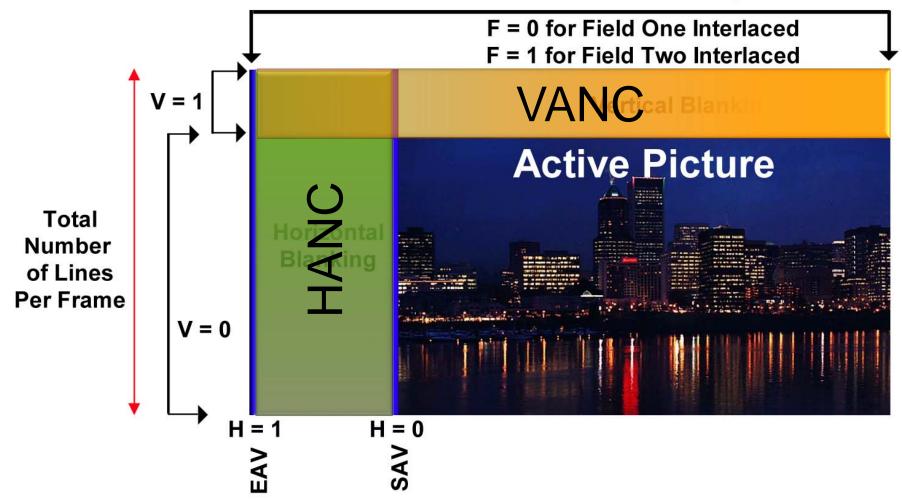
SMPTE Standards

- SMPTE 291M Ancillary Data Packet and Space Formatting
 - Defines format of ANC Data Packet
 - Defines location and spacing of ANC Data
- SMPTE RP291 Assigned Ancillary Identification Codes
 - Defines DID and SDID for various ANC Data Packets



Ancillary Data Space







How big are the VANC and HANC spaces?

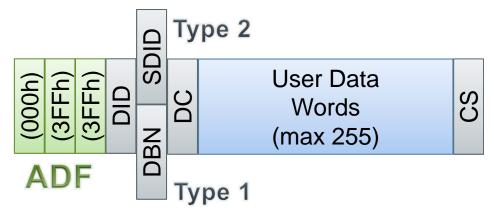
• Consider HD-SDI formats, all at 1.485 Gb/s bit rate:

Bits/word	10	10	10	10	10
× Words/sample	2	2	2	2	2
× Samples/line	2200	2640	2750	1650	1980
× Lines/frame	1125	1125	1125	750	750
× Frames/sec	30	25	24	60	50
= Bits/sec	1.485×10 ⁹				

VANC size is fixed for each format (4% of total lines)

- 1125-line systems have 1080 lines of active video plus 45 lines of VANC
- 750-line systems have 720 lines of active video plus 30 lines of VANC
- HANC size depends on frame rate per format
 - 536 words @ 1080i59.94 (~12% of line)
 - 1376 words @ 720p50 (~35% of line)
 - etc.

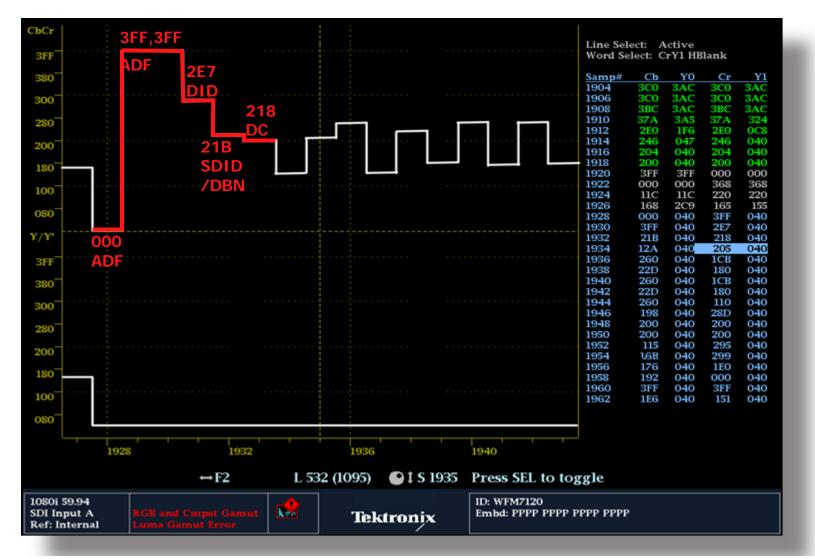
Ancillary Data Format



- ADF Ancillary Data Flag $000_h, 3FF_h, 3FF_h$
- DID Data Identification Word
- DBN Data Block Number for Type I
- SDID Secondary Data Identification for Type 2
- DC Data Count
- User Data Words up to a maximum of 255 words
- CS Checksum

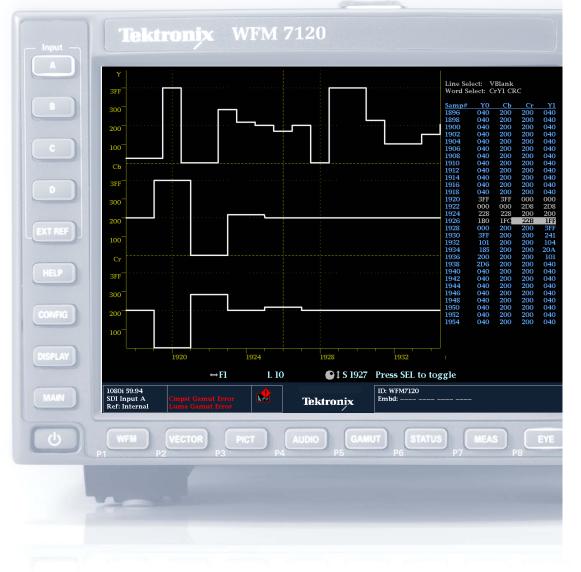


Ancillary header flag with examples





Ancillary Data Format - DataList



PILIE PEL		DIAIIK		
Word Se	lect: C	rYl CR	C	
Samp#	YO	СЬ	Cr	Y1
1896	040	200	200	040
1898	040	200	200	040
1900	040	200	200	040
1902	040	200	200	040
1904	040	200	200	040
1906	040	200	200	040
1908	040	200	200	040
1910	040	200	200	040
1912	040	200	200	040
1914	040	200	200	040
1916	040	200	200	040
1918	040	200	200	040
1920	ЗFF	ЗFF	000	000
1922	000	000	2D8	2D8
1924	228	228	200	200
1926	1B0	1FC	22B	1FF
1928	000	200	200	3FF
1930	3FF	200	200	241
1932	101	200	200	104
1934	185	200	200	20A
1936	200	200	200	101
1938	2D6	200	200	040
1940	040	200	200	040
1942	040	200	200	040
1944	040	200	200	040
1946	040	200	200	040
1948	040	200	200	040
1950	040	200	200	040
1952	040	200	200	040

Line Select: VBlank

Advanced Ancillary Data Analysis and Closed Captions



8/1/2014

SMPTE RP 291 Examples

Defines a variety of standard DID and SDID used in Standards Today

Standard	Description	DID	DBN / SDID	DC
SMPTE 291M	Undefined Data	00 _h (200 _h)	xxx / 00 _h (200 _h)	
SMPTE 291M	8 Bit Application	04 _h (104 _h)	10 _h (110 _h)	xxx
SMPTE 291M	Packet Marked for Deletion	80 _h (180 _h)	xxx / 00 _h (200 _h)	XXX
SMPTE 291M	Start packet	88 _h (288 _h)	xxx / 00 _h (200 _h)	
SMPTE 291M	End Packet	84 _h (284 _h)	00 _h (200 _h)	00 _h (200 _h)
SMPTE 291M	User Defined	C0 _h (2C0 _h)	ххх	ххх
SMPTE 291M	Metadata Packet	F0 _h (2F0 _h)	XXX	XXX
SMPTE 291M	LTC Timecode	F5 _h (2F5 _h)	00 _h (200 _h)	08 _h (108 _h)
SMPTE 352M	Payload Identification	41 _h (141 _h)	01 _h (101 _h)	04 _h (x04 _h)
RP188 VANC	Timecode (ATC)	60 _h (260 _h)	60 _h (260 _h)	10 _h (110 _h)
RP196 HANC	Timecode (LTC)	64 _h (164 _h)	64 _h (164 _h)	8 _h (108 _h)
RP196 HANC	Timecode (VITC)	64 _h (164 _h)	7F _h (17F _h)	9 _h (209 _h)
RP165	EDH (Error Detection Handling)	F4 _h (1F4 _h)	00 _h (200 _h)	10 _h (110 _h)



Ancillary Data Inspector

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S299M Ctrl Grp 1 E3/ Present OK Field 1 / Line 9 S299M Aud Grp 1 E7/ Present OK Field 1 / Line 62 S12M-2 ATC 60/60 Present OK Field 1 / Line 10 Config Watch List Type WatchList Type WatchList Type ARIB E27 CC \$299M Ctrl \$299M Audio \$272M Ctrl RPI65 EDF \$272M Audio \$272M Ext \$353M MPEG(II) \$305M SD-SI \$353M MPEG(II) \$305M SD-SI \$348M HD-SDTI \$427 Link Enc \$352M VPID \$2016-3 AFD-Ear \$2016-3 PanS RP2010 SCTE 104 \$2031 SCTE VBI TTU-R ETL685 RDD8 047 SDP RDD8 047 M S346M RP214 KLV(V) RP214 KLV(H) RP232 UNID \$2020-1 A M RP215 Film Xfer ARIB E37 Aba ARIB E35 ARIB E35 S12M-2 ATC \$334-1 CDP(708) \$334-1 EL668 \$334-1 Teletxt \$334 SDE	Name	DID/SDID	Presence	• Status		NC Data Insp
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RP2010 SCTE 104 S2031 SCTE VEI ITU-R ET.I685 RDD8 0P47 SDP RDD8 0P47 SDP S346M RP214 KLV(V) RP214 KLV(H) RP223 UMID S2020-1 Ad N RP215 Film Xfer ARIB E37 Mob ARIB E37 Ana ARIB E37 SD ARIB E37 SD ARIB TR-E22 ARIB TRE23(2) ARIB TRE23(1) ARIB E35 ARIB E35 S12M-2 ATC S334-1 CDP/708) S334-1 ELA608 S334-1 Teletxt S334 SDE S334/RP207 S334-1 Future S334/RP208 RP196 LTC RP196 VT User Types SELECT ALL CLEAR ALL RESET TO DEFAULT R005 (59.94 10801 59.94 SDI Input A Cmpst Gamut Bror ID: WFM7120 Embd: PPPP						
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1080i 59.94 SDI Input A Compat Gamut Error Rectron ix Embd: PPPP						
SDI Input A Compst Gamut Error Toktronix Embd: PPPP		turn				
	SDI Input A Cmpst (Gamut Error	Tektroniy	E	mbd: PPPP	

Advanced Ancillary Data Analysis and Closed Captions

Watch List

- Easily identifies all ANC Data present within the signal
- Provides Error Checking
- Press MAG
 - Displays ANC data packet information
- Supports All ANC Data types



Ancillary Data Inspector - Capture

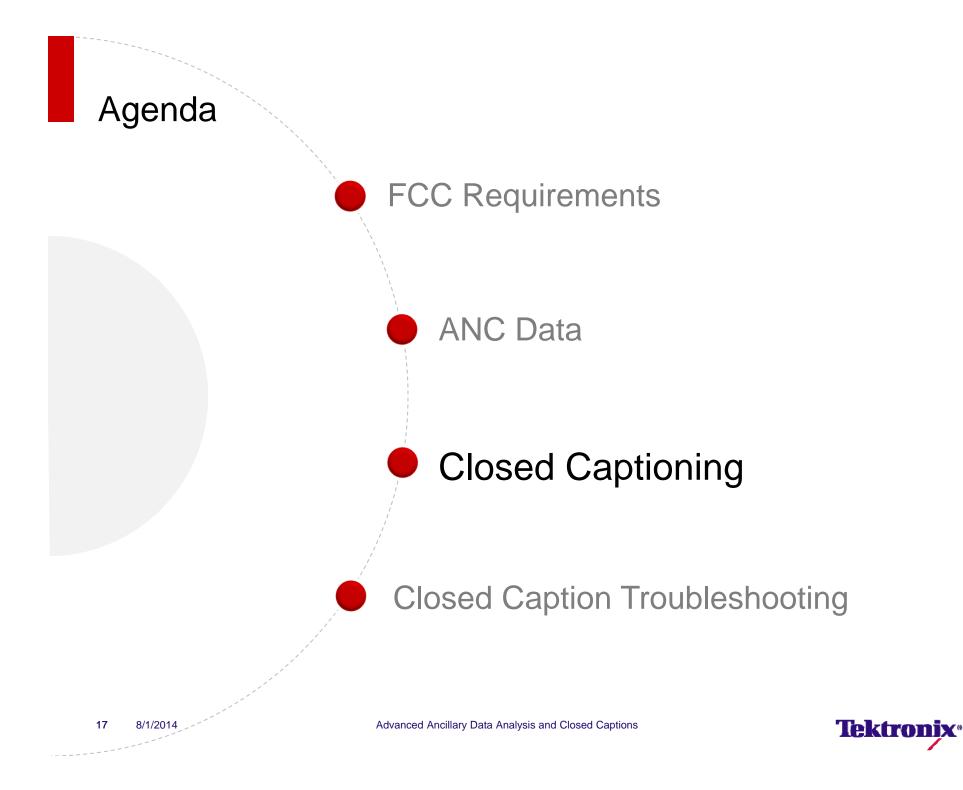


CaptureVu

- Captures 1 Frame of Data
- Allows review of each ANC Data Packet for all present ANC Data

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Closed Caption Standards

- Closed Caption is defined by the following standards
 - CEA 608 for standard definition analog NTSC
 - CEA 708 for Digital Television (DTV)
 - SMPTE 334-1
 - Vertical Ancillary Data Mapping of Caption Data and Other Related Data
 - SMPTE 334-2
 - Caption Distribution Packet (CDP) Definition
 - SMPTE EG 43
 - System Implementation of CEA 708 and CEA 608 Closed Captioning
- Standard available from <u>www.ce.org</u> and <u>www.smpte.org</u>



Analog NTSC Closed Caption

- CEA 608 defines analog Closed Captioning
- Data added to Line 21 of Field 1 and Field 2
- Signal contains clock and two data bytes
- Data rate of 120 Bytes per second or 960 bits per second
- CEA 608 can carry services CC1-4 and TXT 1-4
- In SD-SDI analog signal can be digitized as part of the active video or carried as ANC Data Packet.



Tektronix

Advanced Ancillary Data Analysis and Closed Captions

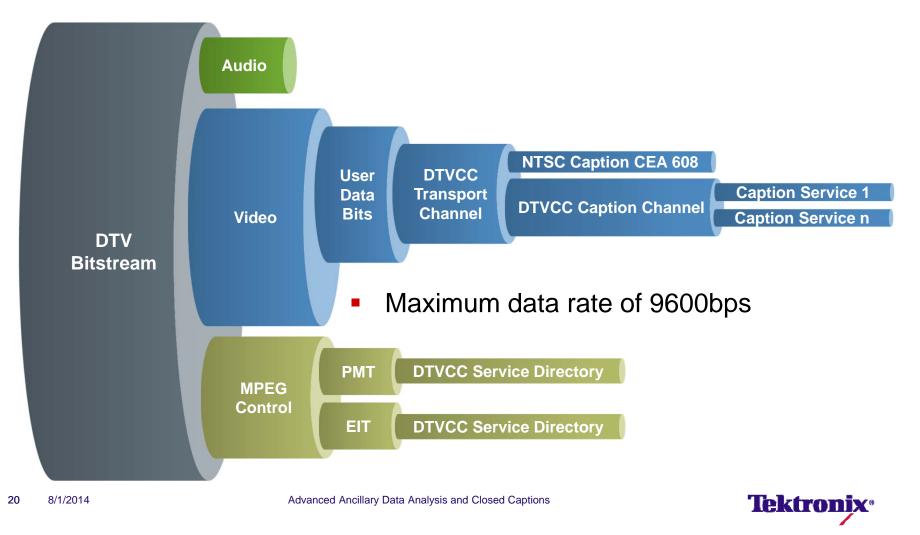
NTSC Cmpst Input E

Tektronix[.]

ID: WFM7120 Audio Input: Analog B

Digital Television Closed Caption

- CEA 708 defines Digital Television Closed Captions
- Supports backward compatibility with CEA 608



Closed Caption ANC Data

- CEA 608 ANC Data
 - DID 161h (0x61h)
 - SDID 102h (0x02h)
 - Active line portion of VANC at least 2 lines after switching point
- Relatively Simple contains a Line and the 2 bytes of data per field
- CEA 708 ANC Data
 - DID 161h (0x61h)
 - SDID 101h (0x01h)
 - Active line portion of VANC at least 2 lines after switching point Line 9 of Field 1 or 2.
- Multiple types of data can be present within data stream

				4	ANC Data Inspector
Name	DID/SDID	Presence	Status	Location	
S272M Ctrl Grp 1	EF/	Present	ок	Field 2 / Line	12
S272M Aud Grp 1	FF/	Present	ОК	Field 2 / Line	44
S334-1 CEA608	61/02	Present	ОК	Field 2 / Line	12
Detail	View Mode: Wa	tch List	Time Elap	sed Since Last I	Reset: 0 d, 00:08:57
Format: SMPTE 334				Presence:	
DID: 61 (161)		Field: 2	Line: 12	Sample:	
SDID: 2 (102) Exp/Act Chksum: 27	DC: 3 (203) 15 / 275	Link: Error: <mark>OK</mark>	Stream: Y		
000 20f 200 016 032	200				-
525i 59.94 SDI Input B RGB Gam	ut Error	7	ID: WFM	17120 nput: Analog B	

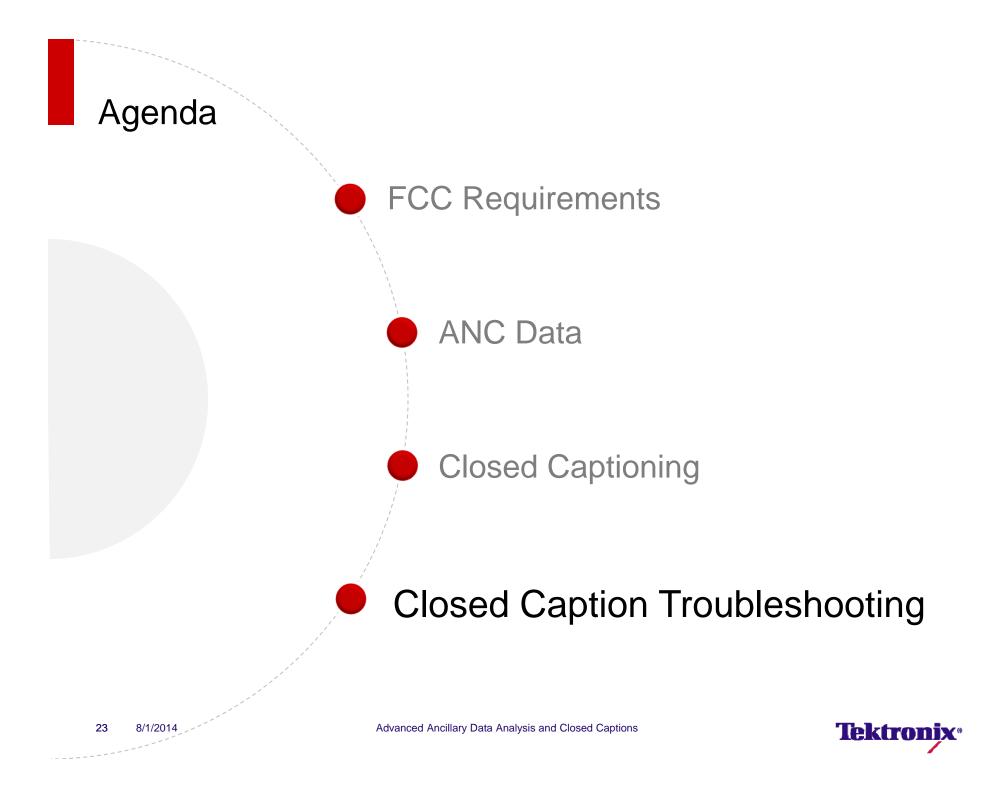
														ANC	Data	nspec	tor
Name				DID/	SDID		Preser	nce	o St	atus	I	locati	on				
S299M Ctr	l Grp 2	2		E2/			Presen		ок			Field	2 / Lin	e 8			
S299M Ctr	I Grp 1			E3/			Presen	t	ок			Field	2 / Line	e 8			
S299M Au	d Grp	2		E6/			Presen	t	ок			Field	2 / Lin	e 73			
S299M Au	d Grp	1		E7/			Presen	t	ок			Field	2 / Lin	e 73			
S334-1 CD	P(708)			61/01								Field	1 / Line	e 9			
S334-1 CE	A608			61/02	2		- resen	t									
Detail			V	iew M	ode: V	Vatch	List		٦	ime E	lapse	d Sine	e Las	t Rese	et: 1 d	, 01:07	:34
Format: DID: SDID:	61 (16	1)	Туре:				Field: Link:	: 1 		.ine: s Strean			ence: ple:				
Exp/Act	Chksu	m: 2a	b / 2a	b			Error										
000	296	269	149	14f	143	20c	2dd	272	1f4	2fc	180	180	1fd	180	180	2fa	-
016	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	
032	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	
048	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	
064	200	200	2fa	200	200	274	20c	2dd	2ed								
080																	
096																	
112																	•
080i 59.94 DI Input A sef: Internal						•	Tek	tron	jx	Au	WFM712 lio Inp LTC:	20 ut: Anai	og B				

Tektro

Closed Caption Data Stream

- SMPTE 334 CDP 708 stream can contain the following data types
 - CDP Header
 - (required) 0x9669 (296h, 269h)
 - Timecode
 - (optional) 0x71 (271h)
 - CDP CC Service Information
 - (optional) 0x73 (173h)
 - CDP Footer Section
 - (required) 0x74 (274h)
 - CDP CC Data Section
 - (optional) 0x72 (272h)
 - Closed Caption data types
 - CEA 608 field 1 0xFC (2FCh)
 - CEA 608 field 2 0xFD (1FDh)
 - CEA 708 DTVCC Packet Data 0xFE (1FEh) CC 1 Valid
 - CEA 708 DTVCC Packet Start 0xFF (2FFh) CC 1 Valid
 - CEA 708 DTVCC Packet Data 0xFA (2FAh) Invalid 0

														ANC	Data I	nspec	tor
Name				DID/S	SDID		Preser	ıce	O St	atus		Locati	on				
S299M Ctr	l Grp 2	2		E2/		F	Presen	t	ок			Field	2 / Lin	e 8			
S299M Ctr	l Grp 1			E3/	,	F	Presen	t	ок			Field	2 / Lin	8			
S299M Au	d Grp	2		E6/		F	Presen	t	ОК			Field	2 / Line	e 73			
S299M Au	d Grp	1		E7/		F	Presen	t	ОК			Field	2 / Lin	e 73			
S334-1 CD	P(708))		61/01	1							Field	1 / Line	9			
S334-1 CE	A608			61/02	2	F	resen	t									
Detail			V	iew M	ode: V	/atch	List		Т	ime E	lapse	d Sind	e Last	Rese	et: 1 d	, 01:07	:34
	61 (16 : 1 (10	1) 1)	Type: DC: 7	2 73 (149			Field: Link: Error:		5	ine: 9 Stream			ence: ple:	Pres			
000	296	269	149	14f	143	20c	2dd	272	1f4	2fc	180	180	1fd	180	180	2fa	
016	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	
032	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	
048	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	200	200	2fa	
064	200	200	2fa	200	200	274	20c	2dd	2ed								
080																	
096																	
440																	
112																	



- Picture Display not decoding Closed Captions
 - Verify that CC is enabled and the correct service is selected





- Picture Display not decoding Closed Captions
 - Verify that CC is enabled and the correct service is selected
 - Check Aux Data Status for presence of Closed Captions
 - Verify that there is not more than one caption being inserted
 - Verify the order of the Caption inserter in the food chain
- Does the frame rate of closed caption match video frame rate
 - Mismatches in frame rate can cause encoder problems
- May need to delve into the ANC data packet or MPEG



	Auxiliary Data Status
Anc Data:	Y and C Present
CEA608: \$334 CD	P (ANC) Services: CC1-3- TXT XDS: Present
	P (ANC) Services: CC1 RP207:
Teletext: None	
CDP: Present	Frm Rate: 59.94 Data Count 608: 2 708: 6
V–Chip Rating: TSID: Absent	(US TV) TV-G CGMS-A: Missing Broadcast Flag: Missing
SMPTE 2016 AFD:	16:9_8 - Code is 1000 - AR is 16:9
Desc:	Full Frame 16:9
Bar 1:	No valid Bar data found
P 9.	No valid Bar data found



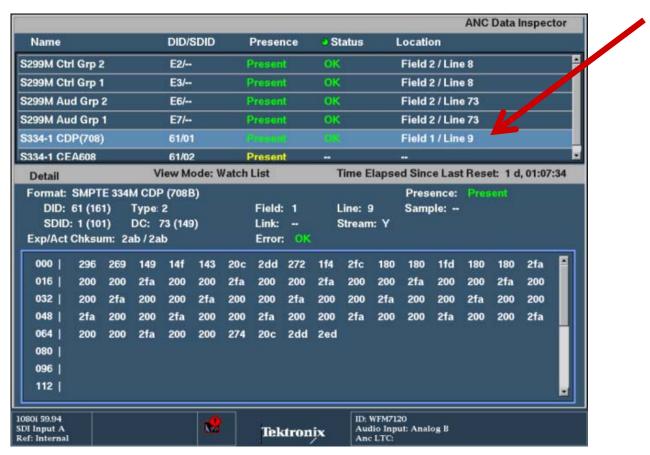
Picture Display not decoding Closed Captions

- Check Aux Data Status for presence of Closed Captions

	Auxiliary Data Status
Anc Data:	Y and C Present
	(ANC) Services: CC1-3- TXT XDS: Present (ANC) Services: CC1 RP207:
V-Chip Rating:	Frm Rate: 59.94 Data Count 608: 2 708: 6 (US TV) TV-G CGMS-A: Missing Broadcast Flag: Missing
Bar 1:	16:9_8 - Code is 1000 - AR is 16:9 Full Frame 16:9 No valid Bar data found No valid Bar data found
	 Aux Data Status



- Picture Display not decoding Closed Captions
 - Verify that there is not more than one caption being inserted



ANC Data Inspector



- Does the frame rate of closed caption match video frame rate
 - Mismatches in frame rate can cause encoder problems
 - 720p must be 59.94 and 2
 - 1080i must be 29.97 and 4

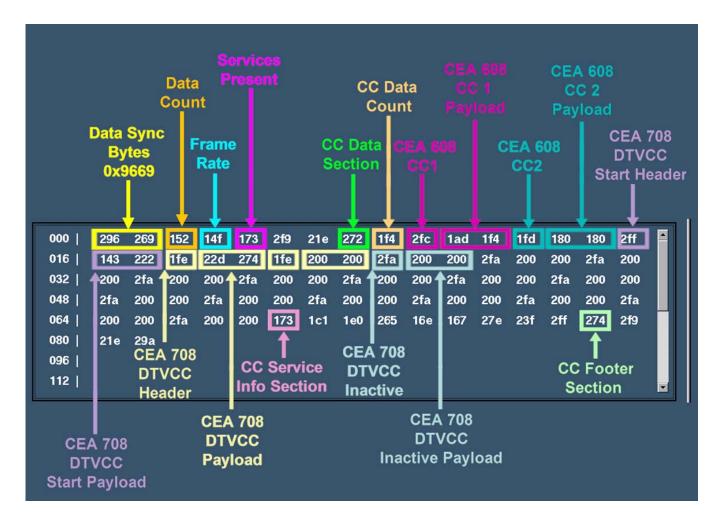
				Auxiliar	y Data Sta	atus		
Anc Data:		and C Pre	sent					
CEA608: CEA708: Teletext: CDP: V-Chip Rat TSID: CGMS-A:	Not d	P (ANC) cted V) TV–PG letected letected	S	ervices: ervices: Frm Rate:	CCI	cast Flag: 🚿		Present 708: 0
			ne 16:9 (a Bar data	IIII – AR i It 4:3 cent i found	s 16:9			ata: 00000000
1080i 59.94 SDI Input A Ref: Internal	li ngal (ri	mit Brok		Tek	tronix	ID: MODEL_ Audio In: De Anc LTC:	WFM8300 olby 2/AES A1-2 02:49:24:08	3 30 fps DF

Rate	608	708-Max
23.98	4/6	46/44
24	4/6	46/44
25	4	44
29.97	4	36
30	4	36
50	2	22
<u>59.9</u> 4	2	18
60	2	18

Aux Data Status



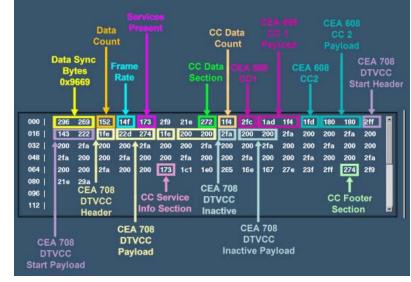
May need to delve into the ANC data packet or MPEG





Interpreting Closed Caption Data Stream

- Data Sync 296 269 (0x9669h)
- CC Data Section 272 (0x72h)
- CEA 608 CC1 2FC (0FCh)
- CEA 608 CC2 1FD (0xFDh)
- CEA 708 DTVCC Start Header 2FF (0xFFh)
- CEA 708 DTVCC Header 1FE (0xFEh)
- CEA 708 DTVCC Inactive 2FA (0xFAh)
- Services Information Section 173 (0x73h)
- CC Footer Section 274 (0x74h)
- Timecode 171 (0x71h)





Tools to use for Troubleshooting Closed Caption

Alt Obtain inspector Hanne DID/SDD Prosence & Status Location S299M Chi Gep 2 E22- Present OK Field 1 / Line 3 S299M Chi Gep 2 E22- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 1 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 2 / Line 7 S299M Aul Gep 2 E62- Or Present OK Field 2 / Line 7 S200F Corresent OK Field 1 / Line 7 S200F	Issue DID/SDID Presence Status Location 3239M CH Grg 1 EX2 Presence Status Location 3239M CH Grg 1 EX2 Present Ch Gob X34 CDP (ANC) Services: CC1-3-TXT	Hame DID/SDID Presence 4 Status Location 3229M CH Gp 2 EZ- Present 0K Field 1 / Line 3 3229M CH Gp 2 EZ- Present 0K Field 1 / Line 3 3229M CH Gp 1 EZ- Present 0K Field 1 / Line 3 3229M CH Gp 1 EZ- Present 0K Field 1 / Line 71 3239M Aut Gp 1 EZ- Present 0K Field 1 / Line 71 3239M Aut Gp 1 EZ- Present 0K Field 1 / Line 71 3239M Aut Gp 1 EZ- Present 0K Field 1 / Line 71 S3341 CDP(708) S101 Ymm N Present Sing Dreadcast Field N Notation Verw Mode: Watch List Tome Elapsed Since Last Reset: 64, 051352 Ear 2: No valid Ear data formal SWEEP MAG Use 1: Fin Ait 1 Tite Tite Tite Tite Tite Tite Tite Tite	Issue DID/SDID Presence @ Status Inc. Status tocation 3229M Cut Gp 2 EX- Presenti OX Field 1 / Line 3 3229M Cut Gp 2 EX- Presenti OX Field 1 / Line 3 3229M Cut Gp 2 EX- Presenti OX Field 1 / Line 3 3229M Cut Gp 2 EX- Presenti OX Field 1 / Line 3 3229M Cut Gp 2 EX- Presenti OX Field 1 / Line 3 32341 CDP/CBD 6101 Status Field 1 / Line 3 OX Field 1 / Line 3 3241 CDP/CBD 6101 Status Field 1 / Line 4 OX Field 1 / Line 3 OX Field 1 / Line 3 Wir Mode: Watch Liet Time Expand Size Last Reset: 6 4, 061352 OX Field 1 / Line 4 OX Field 1 / Line 3	spector Auxiliary Data Status	SEL
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2293M Aud Grp 2 E64- Present 0X Feld 1 / Line 71 3293M Aud Grp 1 E7/- Present 0X Feld 1 / Line 71 S334-1 CDP(708) 61/01 Feld 1 / Line 71 Fill	Z295 Maid Grp 2 E64- Present 0X Field 1/Line 71 S283M Aud Grp 1 E7/- Present 0X Field 1/Line 71 S34:1 CDP(700) 61.01 Present 0X Field 1/Line 71 S34:1 CDP(700) 61.01 Present 0X Field 1/Line 71 Wer Mode: Watch List Time Empsed Since Last Reset: E 4, 05:13:52 Field France 1659 Bro 4atx found Wer Mode: Watch List Time Empsed Since Last Reset: E 4, 05:13:52 Field France 1659 Bro 4atx found WEEP Use: Store ALL THE THK Time Empsed Since Last Reset: E 4, 05:13:52 Field France 1659 Bro 4atx found WEEP Use: Store Coll FAXING Since Coll	Z293M Aud Grp 2 E6/- Present 0/k Field 1 / Line 71 S23M Aud Grp 1 E7/- Present 0 k Field 1 / Line 71 S3441 COP(706) 61.01 Organization Field 1 / Line 71 S3441 COP(706) 61.01 Organization Field 1 / Line 71 We Wodd: Watch List Field 1 / Line 71 Field F	R29M Aud Grp 2 E6 Present 0% Reld 1 / Line 71 R29M Aud Grp 1 E7 Present 0% Reld 1 / Line 71 R334-1 COP(700) 61.01 Present Findel 1 / Line 71 R34-1 COP(700) 61.01 Present Findel 1 / Line 71 R34-1 COP(700) 61.01 Present Findel 1 / Line 71 R400: Watch List Time Experied Since List Reset: E d, 051352 Auto List Time Experied Since List Reset: E d, 051352 Auto List Finder Time Experied Since List Reset: E d, 051352 Auto List Finder Time Experied Since List Reset: E d, 051352 Auto List Finder Time Experied Since List Reset: E d, 051352 Auto Color Sinter Finder Finder Finder Vict Lot IM Auto Finder Finder Vict Lot IM Auto Finder Finder Vict Lot IM Auto Finder Finder Vict Lot IM Auto Finder Finder Finde	CEA608: \$334 CDP (ANC) Services: CC1-3- TXT XDS: Pres CEA708: \$334 CDP (ANC) Services: CC1 RP207:	ent
3293M Aud Grp 1 E//- Pressnill 0:X Field 1 / Line 71 334-1 CDP(700) 61.01 Field 1 / Line 4 Field 1 / Line 4 V-Chip Rating: CDS TV) TV-0 Field 1 / Line 4 SWEED SWEED Wew Mode: Watch List Time Etapsed Since Last Reset: 6 d, 05:13:52 Dex: fail Frame 100 -Ak is 160 Vew Mode: Watch List Time Etapsed Since Last Reset: 6 d, 05:13:52 Dex: fail Frame 100 -Ak is 160 UsE I.M. ALL THE TIME TO AVOID FAXIOR CHARCES USE * EM ALL THE TIME TO AVOID FAXIOR CHARCES USE * EM ALL THE TIME TO AVOID FAXIOR CHARCES USE * EM ALL THE TIME TO AVOID FAXIOR CHARCES CURSOR	S293M Aud Grp 1 F7/- Present 0.0. Field 1 / Line 7 S341 CDP(70b) 61.01 Field 1 / Line 4 V-Chip Rating: (US TV) TV-0 S341 CDP(70b) 61.01 Field 1 / Line 4 V-Chip Rating: (US P-Code 16.9) Dex: (US P-Code 16.9) Bar 2: No volid Bar dets found Verw Mode: Watch List Time Elapsed Size Last Reset: 5.4 (05.13-52) ATD: 16:9_8 - Full Frame Use: Interframe Use: Not List True Flapsed Size Last Reset: 5.4 (05.13-52) AtD: 16:9_8 - Full Frame Interframe Use: Interframe Use: Interframe Use: Not List True Flapsed Total Color Action Color	S293M Aud Grp 1 F//- Pressnit OX Field 1 / Line 7 S3341 CDP(708) Field 1 / Line 4 V-Chip Rating: COS TV) TV-C Boodcast Flag: Missing Wew Mode: Watch List Time Elapsed Since Last Reset: 64, 05:1352 AFD: 165:25 - Full Frame Field 1 / Line 4 MAG Use: Field 1 / Line 4 Field 1 / Line 4 Wew Mode: Watch List Time Elapsed Since Last Reset: 64, 05:1352 AFD: 165:25 - Full Frame Field 1 / Line 4 Field 1 / Line 4 MAG Use: Field 1 / Line 4 Field 1 / Line 4 Field 1 / Line 4 Wew Mode: Watch List Time Elapsed Since Last Reset: 64, 05:1352 AFD: 165:25 - Full Frame Field 1 / Line 4 Field 1 / Line 4 Field 1 / Line 4 Use: Field 1 / Line 4 Field 1 / Line 4 Field 1 / Line 4 Watch List Time Elapsed Since Last Reset: 64, 05:1352 Use: Field 1 / Line 4 Field 1 / Line 4 Field 1 / Line 4 Use: Field 2 / Line 4 Field 2 / Line 4 Currot </td <td>S29M Aud Grg 1 F/- Pressuit 0.0X Field 1 / Line 1 S3341 CDP(700) Field 1 / Line 1 Field 1 / Line 1 Field 1 / Line 1 S3341 CDP(700) Field 1 / Line 1 Field 1 / Line 1 Field 1 / Line 1 Field 2 / Line</td> <td>Teletext: None</td> <td>6</td>	S29M Aud Grg 1 F/- Pressuit 0.0X Field 1 / Line 1 S3341 CDP(700) Field 1 / Line 1 Field 1 / Line 1 Field 1 / Line 1 S3341 CDP(700) Field 1 / Line 1 Field 1 / Line 1 Field 1 / Line 1 Field 2 / Line	Teletext: None	6
S334-1 CDP(708) 61/01 maximum Field 1 / Line 4 TSID: Absent CGMS-Ac Missing Breadcast Flag Missing SNPTE 2016 AFD: 16:5.8 - Code is 1000 - Ak is 16:9 Bar 2: No valid Bar data found SWEEP Wew Mode: Watch List Time Elapsed Since Last Reset: 6 d, 05:13:52 AFD: 16:9.3 - Full Frame MAG UsE - 1M ALL THE TIME Tome Code account of the time The time Curson Curson UsE - 1M ALL THE TIME Tome Code account of the time Curson Curson Curson UsE - 1M ALL THE TIME Tome Code account of the time Curson Curson Curson	S334-1 CDP(700) 61.01 Field 1 / Line 4 ISD: Absent: CCMS-A: Missing: Broadcast Flag: Missing: SMPTE 2016 A12: ISD: Absent: CCMS-A: Missing: Broadcast Flag: Missing: Wew Mode: Watch List Time Elapsed Since Last Reset: Ed. District Common Air Since Common SWEEP Wew Mode: Watch List Time Elapsed Since Last Reset: Ed. District Common Missing Middle Since Common I Use: I: Missing ArtD: 16:9: S - Full Frame Middle Since Common	S3341 CDP(708) E1/01 Field 1 / Line 4 TSD. A beent CONS-A: Missing Broadcast Flag: Nissing SWTE 2016 AFD. 169.8 - Code is 1000 - AR is 189 Broadcast Flag: Nissing Wew Mode: Watch List Tone Elapsed Since Last Reset: 6 4, 05:12:52 AFD: 169.8 - Full Frame SWEEP Mag AFD: 169.8 - Full Frame Mag Use: Find ALL THE TIME Tone Elapsed Since Last Reset: 6 4, 05:12:52 Mag Mag Use: I. Use: I. Use: I. Use: I. Use: I. Use: I. Use: Use: I. Use: CARNO Z00p 59:94 SDI Input A Takteontive ID: WFM7120 Embd: PRESET PRESET	B3341 CDP(700) B101 Bedd 1 / Line 4 Fibl Fibl 7 / Line 4 Fibl Fibl 7 / Line 4 Fibl Fibl 7 / Line 4 Fibl 7 / Line 4 Fibl 7 / Line 4 Fibl		
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Were Watch List The Expeed Since Last Reset: 6 4, 05:13:22 AFD2 16:9, 3 - Full Frame Use - 1M ALL THE THE USE - 1M ALL THE THE USE - 1M ALL THE TIME USE - 1M ALL THE TIME	Total Spand Total Lange Image: Spand Span	Total Spin Park Total Spin Park Z20p Spin Park Total Spin Park Z20p Spin Park Total Spin Park	Yow Mode: Watch List The Eapsed Since Last Reset: £ 4, 05:13:21 AED: 16:0; S - Full Frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrained of the full frame Image: Constrain	SMPTE 2016 AFD: 16:9_8 - Code is 1000 - AR is 16:9 Desc: Full Frame 16:9	
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- In-Picture closed caption decode
 - Check V-Chip rating
- Aux Data Status
 - Shows presence
 - Shows Number of services
- ANC Data Inspector
 - Shows presence of ANC data packets

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ANC Data Inspector and Closed Caption Data

			ta Inspector
Name	DID/SDID Presence	Status Location	
S299M Ctrl Grp 2	E2/ Present	OK Field 2 / Line 8	
S299M Ctrl Grp 1	E3/ Present	OK Field 2 / Line 8	
S299M Aud Grp 2	E6/ Present	OK Field 2 / Line 73	
S299M Aud Grp 1	E7/ Present	OK Field 2 / Line 73	
S334-1 CDP(708)	61/01 Freedom	Field 1 / Line 9	
S334-1 CEA608	61/02 Present		
Detail	'iew Mode: Watch List	Time Elapsed Since Last Reset: 1	
Format: SMPTE 334M CDP DID: 61 (161) Type: SDID: 1 (101) DC: 7 Exp/Act Chksum: 2ab /2al	2 Field: 1 73 (149) Link:	Presence: Present Line: 9 Sample: Stream: Y	
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- Select one of the tiles and press MEASURE button
- Push and Hold MEASURE button to access menu
- Navigate to Display Type and select ANC Data Display
- Press Full to display ANC Data Display
- Navigate to Closed Caption data and press MAG

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What about MPEG TS Captioning?

- Many manufactures indicate presence
- New tools becoming available
- MTS4EA V7.1 Elementary Stream Analyzer
- For when you need to know what went wrong
- And send it to your CC vendor
- Nothing beats facts



More Information



