

I722a Time Code in Media Clock Streams

April 16 2013

Jeff Koftinoff <jeff.koftinoff@ieee.org>

Time Code

- A time code correlates a presentation time with a media time measurement
- AM824 supports sample counts and SMPTE time

AM824 sample count

- Sample count is a 48 bit unsigned integer
- AM824 label 0x8e is used to transport the upper 24 bits
- AM824 label 0x8f is used to transport the lower 24 bits
- Label 0x8c means no data, 0x8d is reserved

AM824 SMPTE time

- Transports a SMPTE 12-1 time code, either LTC (longitudinal time code) or ViTC (vertical interval time code)
- SMPTE times are often used in audio installations to synchronize audio devices and pyrotechnics and lighting, even when there is no video involved
- SMPTE time code for 29.97 video are either not continuous (drop frame mode) or not “real time” (1/1.001 speed ratio)

SMPTE 12-1 contents

- Measures the time since the media started with Binary coded decimal values:
 - Hours (0 to 23)
 - Minutes (0 to 59)
 - Seconds (0 to 59)
 - Frames (0 to 23, 24, or 29)
 - 8 binary groups (32 bits) - used by SMPTE 309 to hold date and daylight savings time
 - flags (drop frame, colour frame, etc)

AM824 SMPTE transport

- Label 0x80 = no data
- Label 0x81 = BCD frames,seconds,minutes
- Label 0x82 = BCD hours, groups 1,2,3,4
- Label 0x83 = groups 5,6,7,8
- Total payload is 64 bits

Proposal

- Modify Media Clock Streams (MCS) to allow for:
- A small field to distinguish between “audio sample count” time code versus “media time in nanoseconds”
- A 64 bit field containing the time code, either in samples or nanoseconds of media time
- This allows media times to be associated with a gPTP presentation time