PROPOSED SMPTE STANDARD

for Television — NTSC IP and Trigger Binding to VBI

1 Scope

This document defines a standard manner for the carriage of declarative data essence (SMPTE 363M) triggers and IP packets in the vertical blanking interval of the NTSC video standard.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below.

ANSI/EIA-516-1988, Joint EIA/CVCC Recommended Practice for Teletext: North American Basic Teletext Specification (NABTS)

EIA-746-A-1988, Transport of Internet Uniform Resource Locator (URL) Information Using TEXT-2 (T-2) Service

EIA/CEA-608-B-2000, Line 21 Data Services

IETF RFC 2728, The Transmission of IP Over the Vertical Blanking Interval of a Television Signal

SMPTE 170M-1999, Television — Composite Analog Video Signal — NTSC for Studio Applications

SMPTE 357M, Television — Declarative Data Essence — Internet Protocol Multicast Encapsulation

SMPTE 363M, Television — Declarative Data Essence — Content Level 1

3 Introduction

In NTSC, IP data is broadcast by encoding bytes in the vertical blanking interval of individual video fields. Two different techniques are used for broadcasting data using transport A and transport B as defined in the content level specification (SMPTE 363M).

4 VBI line 21

Triggers are transmitted on VBI line 21 of the NTSC signal using the T-2 service as specified in EIA/CEA-608-B. This encoding is consistent with the EIA-746-A specification which describes how to send URLs and related information on VBI line 21 of an NTSC channel, without interfering with other data (e.g., closed captions) also sent on that line. The checksum described in the DDE trigger definition (SMPTE 363M) is required in the transport A binding to NTSC.

Note that, as specified in the trigger definition, triggers are encoded using ISO/IEC 8859-1 (SMPTE 363M) and not the EIA/CEA-608-B character set. (Although most characters are the same in both encodings, a few codes have different meanings.)

Trigger length should be kept as short as possible. Trigger transmissions should be limited to 25% of the total field 1 bandwidth, even if more bandwidth is available after captioning, to allow for other downstream services.

5 IP over VBI

IP datagrams shall be sent according to IETF RFC 2728. In NTSC, the NABTS (ANSI/EIA-516), rather than the WST byte encoding, shall be used.

IP streams shall be sent on the NABTS packet addresses 0x4b0 through 0x4bf. Other packet addresses may be used, but receivers are only required to handle IP datagrams arriving using packet addresses 0x4b0 through 0x4bf.

Annex A (informative)
Bibliography

ISO/IEC 8859-1:1998, InformationTechnology — 8-Bit Single-Byte Coded Graphic Character Sets — Part 1: Latin Alphabet No. 1