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Entertainment Technology
Lightweight streaming protocol for transport of DMX512 using ACN

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Key to interest categories:

CP	Custom-market Producer
DE	Designer
DR	Dealer or Rental company
G	General Interest
MP	Mass-market Producer
U	User

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1 Introduction

1.1 Scope

This standard describes a mechanism to transfer DMX512-A [DMX] packets over an IP network using a subset of the ACN protocol suite. It covers data format, data protocol, data addressing, and network management. It also outlines a synchronization method to help ensure that multiple receivers can process this data concurrently when supervised by the same source. Sources transporting either data or synchronization packets must also advertise, via the Universe Discovery mechanism, what universes they are actively transmitting on.

1.2 Overview and Architecture

This standard can be used to transfer DMX512-A [DMX] packets of all START Codes via an ANSI E1.17 [ACN] supported network. It also defines a method by which this [DMX] data may be synchronized across multiple receivers. A simple packet wrapper approach is used whereby the data is encapsulated in a wrapper following the ACN packet structure. For the use of this standard, the ACN wrapper is carried in UDP [UDP] packets.

The wrapper is structured such that it is both compatible and meaningful to the ANSI E1.17 [ACN] standard. Readers are referred to the ANSI E1.17 [ACN] standard, particularly the “ACN Architecture” and “Device Management Protocol” documents for more information. The “Root Layer Protocol” used in this standard is described in the “ACN Architecture” document.

This standard uses multicast addressing to provide a mechanism to partition traffic for distinct universes of DMX512-A [DMX] and synchronization data. Direct unicast of DMX512-A [DMX] data is also supported.

1.3 Appropriate Use of This Standard

This standard uses a non-reliable IP transport mechanism to stream packets of data from multiple sources to multiple receivers over the ACN network. There is no acknowledgement and therefore no assurance that all packets have been received.

1.4 Classes of Data Appropriate for Transmission

This standard, E1.31, is intended to define a method to carry DMX512-A [DMX] style data and metadata over IP Networks. It is designed to carry repetitive control data from one or more sources to one or more receivers. This protocol is intended to be used to control dimmers, other lighting devices, and related non-hazardous effects equipment.

1.5 Universe Synchronization

This standard defines a mechanism by which data streamed by a single source to many receivers may be synchronized across a network. Through the use of synchronization packets, which are distinct in format from data packets, a source can declare when all of its E1.31 data has been sent and can then be acted upon synchronously.
This methodology may find most of its use in media applications, but can be expanded to a variety of environments.

1.6 Universe Discovery

This standard includes a Universe Discovery packet that sources must provide in order to enumerate the universes upon which they are transmitting. This allows other devices interested in network traffic to monitor which universes are currently active, without the need to join every multicast group to examine their individual transmissions.

