



***Society of Cable  
Telecommunications  
Engineers***

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**ENGINEERING COMMITTEE  
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AMERICAN NATIONAL STANDARD

**ANSI/SCTE 06 1999R2004**

**Composite Distortion Measurements (CSO & CTB)**

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## **1.0 SCOPE**

This document describes a test procedure for the laboratory and production measurement of composite distortion products. There are two types of composite distortions considered: Composite Second Order and Composite Triple Beat. In order to obtain a stable, repeatable measurement, this test procedure describes testing performed with continuous wave (CW) carriers. See ANSI/SCTE 96 2003 for a discussion of the selection of CW carrier frequencies.

## **2.0 DEFINITIONS**

**Discrete Second Order (DSO):** An individual, second order intermodulation product, produced when one or two carriers pass through a non-linear component.

**Composite Second Order (CSO):** The sum of all DSO products that happen to fall at the same nominal frequency in a multi-tone system. CSO is defined as the difference, in dB, between the rms voltage of the carrier measured at its peak and the rms voltage of this sum. This procedure describes a technique for measuring this difference using a spectrum analyzer (SA) in the LOG mode. For consistency with existing measurements and specifications, the results of measurements made using any other technique must be correlated with the results from this technique.

**Discrete Third Order (DTO):** An individual, third order intermodulation product, produced when one, two or three carriers pass through a non-linear component.

**Composite Triple Beat (CTB):** The sum of all DTO products in a multi-tone system that happen to fall at the same nominal frequency in a multi-tone system. CTB is defined as the difference, in dB, between the rms voltage of the carrier measured at its peak and the rms voltage of this sum. As with CSO, this procedure describes a technique for measuring this difference using a SA in the LOG mode. For consistency with existing measurements and specifications, the results of measurements made using any other technique must be correlated with the results from this technique.

Refer to the Definitions and Acronyms section of ANSI/SCTE 96 2003 for other definitions.