

ANSI/SCTE 170 2020

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S T A N D A R D S

Interface Practices Subcommittee

AMERICAN NATIONAL STANDARD

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Preparing an MDU Amplifier Extender Specification

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1.0 SCOPE

This document is identical to SCTE 170 2010 except for informative components which may have been updated such as the title page, NOTICE text, headers and footers. No normative changes have been made to this document.

This document provides guidance for preparing an MDU Amplifier requirements specification, independent of manufacturer and type.

2.0 INFORMATIVE REFERENCES

Test Procedures used to establish, verify or characterize line extenders should conform to established SCTE requirements. The following test procedures apply when specifying line extender performance.

| | |
|--|--------------------|
| Test Procedure for Measuring Transmission and Reflection | ANSI/SCTE 144 2007 |
| Test Procedure for Hum Modulation | ANSI/SCTE 16 2007 |
| Measurement Procedure for Noise Figure | ANSI/SCTE 62 2007 |
| Composite Distortion Tests (CSO & CTB) | ANSI/SCTE 06 2009 |
| AM Cross Modulation Measurements | ANSI/SCTE 58 2007 |
| Test Method for AC to DC Power Supplies | ANSI/SCTE 46 2007 |
| Surge Withstand Test Procedure | ANSI/SCTE 81 2007 |
| Test Method for Group Delay | ANSI/SCTE 45 2007 |
| Carrier to Noise (C/N), Carrier to Intermodulation Noise (CIN) | ANSI/SCTE 17 2007 |
| Test Point Accuracy | ANSI/SCTE 75 2007 |
| Test Method for Low Frequency and Spurious Disturbances | ANSI/SCTE 82 2007 |
| Measurement Procedure for Noise Power Ratio | ANSI/SCTE 119 2006 |
| Test Method for Downstream Bit Error Rate | ANSI/SCTE 121 2006 |

3.0 DATA FORMAT

Amplifier performance information should specify units and tolerances presented in a clear tabulated format. Ambiguous specification should include explanation notes. Notes should clarify deviation from SCTE test procedures and configuration.

Specification data should include a statement outlining manufacturer's recommended operating settings.

4.0 MDU AMPLIFIER SPECIFICATION NOTES

1. All specifications should include a brief overview of the technology and features incorporated in the product.
2. Unless otherwise specified, this specification represents worst-case performance for all parameters within the stated operating conditions.
3. Gain and distortion specifications should clearly outline setup and description of specific accessories used in product qualification.
4. Noise figure (NF) specifications are within the specified amplifier operating pass-band with specified accessory (pads and equalizers) values and at operational gain as specified in section 5.0.
5. Distortion characteristics should apply to all channels, covering the specified operational temperature range with the amplifier configured for normal operation.
6. MDU Amplifier Specifications should include but are not limited to all SCTE requirements. Product specification may include additional information over and above SCTE minimum requirements.
7. All test points should be labeled directional or non-directional and referenced to a port or other location (input/output).

5.0 DATA TEMPLATE

| PRODUCT MODEL # | | | | | |
|-----------------------------------|-------------------|-------|-------|---------|---------|
| PARAMETER | | Notes | Units | Forward | Reverse |
| Technology | | | | | |
| Passband | | | MHz | | |
| Flatness | | | +/-dB | | |
| Minimum Full Gain | | | dB | | |
| Operational Gain | | | dB | | |
| Manual Control Range | Gain | | dB | | |
| | Slope | | dB | | |
| Pilot Operating Frequency | | | MHz | | |
| Pilot Operating Levels | AGC | | dBmV | | |
| AGC Range (for +/- 0.5dB hold) | | | +/-dB | | |
| Noise Figure | | | dB | | |
| Channel Loading | Analog | | # | | |
| | Digital | | # | | |
| Rated Output Level | F_{min}/F_{max} | | dBmV | | |
| Distortion (@ Rated Output Level) | CTB | | dBc | | N/A |
| | XM | | dB | | N/A |
| | CSO | | dBc | | N/A |
| | CIN | | dBc | | N/A |
| Forward BER | | | | | N/A |
| Dynamic Range @ 54dB C/N+IM | | | dB | N/A | |

| PARAMETER | Notes | Units | Forward | Reverse |
|---|----------|--------|---------|---------|
| Forward Group Delay (Channel Carrier to Chroma) | | | | |
| 1st Analog above bandedge | | nSec | | |
| 2nd Analog above bandedge | | nSec | | |
| 3rd Analog above bandedge | | nSec | | |
| Reverse Group Delay | | | | |
| Lower bandedge to 1.5MHz above | | ns/MHz | | |
| 1.5 MHz above to 3.0MHz above | | ns/MHz | | |
| 3.0MHz above to 4.5MHz above | | ns/MHz | | |
| 4.5MHz below Upper bandedge to 3.0MHz below | | ns/MHz | | |
| 3.0MHz below to 1.5MHz below | | ns/MHz | | |
| 1.5MHz below to upper bandedge. | | ns/MHz | | |
| Test Point | Accuracy | +/-dB | | |
| Directional | Yes? No | dBc | | |
| Input | | | | |
| Directional | Yes? No | dBc | | |
| Output | | | | |
| Return Loss | Input | dB | | |
| | Output | dB | | |
| Return Loss | Input | dB | | |
| | Output | dB | | |

| PARAMETER | Notes | Units | | |
|---|---|-----------|--|--|
| Hum Modulation | | dBc | | |
| DC Voltage (B+) | | Vdc | | |
| Current DC | | mA | | |
| DC Ripple | | mV | | |
| Power Consumption | | W | | |
| AC Input Voltage | | V | | |
| AC Current | Fully loaded | A | | |
| Mains Interconnect Plug Type | | | | |
| Fire and Electrical Safety Rating | UL 1950 CSA 22.2 | | | |
| Should reference a National Standard such as those listed: | IEC 950 EN60950 and National variants | | | |
| Operating Temperature Range | | ° F (° C) | | |
| Operating Humidity Range | | % | | |
| Operating Altitude | | f(m) | | |
| Weight | | lb(kg) | | |
| Dimensions | | in(mm) | | |