AMERICAN NATIONAL STANDARD

ANSI/SCTE 75 2012

Test Point Accuracy
NOTICE

The Society of Cable Telecommunications Engineers (SCTE) Standards are intended to serve the public interest by providing specifications, test methods and procedures that promote uniformity of product, interchangeability and ultimately the long term reliability of broadband communications facilities. These documents shall not in any way preclude any member or non-member of SCTE from manufacturing or selling products not conforming to such documents, nor shall the existence of such standards preclude their voluntary use by those other than SCTE members, whether used domestically or internationally.

SCTE assumes no obligations or liability whatsoever to any party who may adopt the Standards. Such adopting party assumes all risks associated with adoption of these Standards, and accepts full responsibility for any damage and/or claims arising from the adoption of such Standards.

Attention is called to the possibility that implementation of this standard may require the use of subject matter covered by patent rights. By publication of this standard, no position is taken with respect to the existence or validity of any patent rights in connection therewith. SCTE shall not be responsible for identifying patents for which a license may be required or for conducting inquiries into the legal validity or scope of those patents that are brought to its attention.

Patent holders who believe that they hold patents which are essential to the implementation of this standard have been requested to provide information about those patents and any related licensing terms and conditions. Any such declarations made before or after publication of this document are available on the SCTE web site at http://www.scte.org.

All Rights Reserved

© Society of Cable Telecommunications Engineers, Inc. 2012

140 Philips Road

Exton, PA 19341
# TABLE OF CONTENTS

1.0 SCOPE AND DEFINITIONS ................................................................. 3
2.0 COMPLIANCE NOTATION ................................................................. 3
3.0 EQUIPMENT ..................................................................................... 4
4.0 SET-UP .......................................................................................... 4
5.0 PROCEDURE ................................................................................... 5
6.0 RECORDING RESULTS ................................................................. 7
7.0 APPENDIX 1 – TEST REPORT ......................................................... 7

## LIST OF FIGURES

- FIGURE 1 – INPUT PORT NORMALIZATION ................................. 5
- FIGURE 2 – INPUT PORT TEST POINT MEASUREMENT ............. 5
- FIGURE 3 – OUTPUT PORT NORMALIZATION ............................. 6
- FIGURE 4 – OUTPUT PORT TEST POINT MEASUREMENT .......... 6
1.0 SCOPE AND DEFINITIONS

1.1 This document describes a procedure for evaluating the accuracy of internal and external RF test points as used to monitor input and output ports of Cable Telecommunications equipment.

1.2 A Test Point is any accessible connection that represents the actual signal to be measured. The test point has isolation, which allows viewing of the signal at a reduced level without interaction.

2.0 COMPLIANCE NOTATION

<table>
<thead>
<tr>
<th>“SHALL”</th>
<th>This word or the adjective “REQUIRED” means that the item is an absolute requirement of this specification.</th>
</tr>
</thead>
<tbody>
<tr>
<td>“SHALL NOT”</td>
<td>This phrase means that the item is an absolute prohibition of this specification.</td>
</tr>
<tr>
<td>“SHOULD”</td>
<td>This word or the adjective “RECOMMENDED” means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighted before choosing a different course.</td>
</tr>
<tr>
<td>“SHOULD NOT”</td>
<td>This phrase means that there may exist valid reasons in particular circumstances when the listed behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.</td>
</tr>
<tr>
<td>“MAY”</td>
<td>This word or the adjective “OPTIONAL” means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.</td>
</tr>
</tbody>
</table>
3.0 EQUIPMENT

3.1 Network Analyzer, Agilent ENA E5062A or equivalent.

3.2 For cable-powered equipment, a power inserter of suitable frequency range and current capacity for the DUT (device under test).

3.3 Cables, adapters, and terminations as required.

4.0 SET-UP

4.1 Follow the calibration procedure recommended by the analyzer manufacturer.

4.2 Allow adequate warm-up and stabilization time prior to calibration.

4.3 Apply power to the DUT and allow it to warm up for at least 15 minutes.

CAUTION: For all succeeding measurements, be certain to remove any powering fuses from ports being measured or use a high-quality power-blocking adapter.

NOTE: In the following Sections, the terms “Input” and “Output” are with reference to the direction of signal flow for the path being measured. Thus, a port that is an output for a forward-path measurement will be an input when measuring return path characteristics.
5.0 PROCEDURE

5.1 Input Ports

5.1.1 First measure the actual level of the signal applied to DUT as shown in Figure 1. Normalize the analyzer to this level.

\[\text{Network Analyzer}\]

\[\text{Power Inserter}\]

\[\text{Device Under Test}\]

\[\text{CAUTION: Remove fuse from port under test, or use a high-quality power-blocking adapter.}\]

Figure 1 – Input Port Normalization

5.1.2 With the analyzer normalized, measure the signal at the corresponding test point as shown in Figure 2.

5.1.3 Record the maximum positive and negative deviations from the nominal test point level over the frequency range of measurement.

\[\text{Network Analyzer}\]

\[\text{Power Inserter}\]

\[\text{Device Under Test}\]

\[\text{CAUTION: Remove fuse from port under test, or use a high-quality power-blocking adapter.}\]

Figure 2 – Input Port Test Point Measurement
5.2 Output ports

5.2.1 First measure the actual level of the DUT output signal as shown in Figure 3. Normalize the analyzer to this level.

5.2.2 With the analyzer normalized, measure the signal at the corresponding test point as shown in Figure 4. The output port must be terminated, and the termination protected from power, as shown.

5.2.3 Record the maximum positive and negative deviations from the nominal test point level over the frequency range of measurement.

5.3 Repeat 5.1 and/or 5.2 for all test points on the DUT in a similar manner.
6.0 RECORDING RESULTS

6.1 Although the exact form of the recorded data may vary, it should include as a minimum:
- Identity of device tested
- Date of test
- Identity of test equipment
- Test results
- Identity of person performing the test

6.2 A typical test report is shown below as Appendix 1.

7.0 APPENDIX 1 – TEST REPORT

<table>
<thead>
<tr>
<th>Device Under Test</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Type:</td>
<td>Manufacturer:</td>
<td></td>
</tr>
<tr>
<td>Model Number:</td>
<td>Serial Number:</td>
<td></td>
</tr>
</tbody>
</table>

| Test Equipment | | | | |
|----------------|-----------------|----------|
| Device         | Manufacturer    | Model Number | Serial Number | Last Cal Date |
|                |                  |            |              |               |

| RF Level Measurement | | | | |
|----------------------|-----------------|----------|
| Test Point (TP)      | Frequency Range | Nominal TP Level (-dB) | Max Positive Deviation, dB | Max Negative Deviation, dB |
| Identification       |                 |                       |                          |                          |
|                      |                 |                       |                          |                          |
|                      |                 |                       |                          |                          |
|                      |                 |                       |                          |                          |

<table>
<thead>
<tr>
<th>Tested By</th>
<th>Date of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>