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ENGINEERING COMMITTEE
Interface Practices Subcommittee

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Test Point Accuracy

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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

"SHALL"	This word or the adjective "REQUIRED" means that the item is an absolute requirement of this specification.
"SHALL NOT"	This phrase means that the item is an absolute prohibition of this specification.
"SHOULD"	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.
"SHOULD NOT"	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.
"MAY"	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.

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.

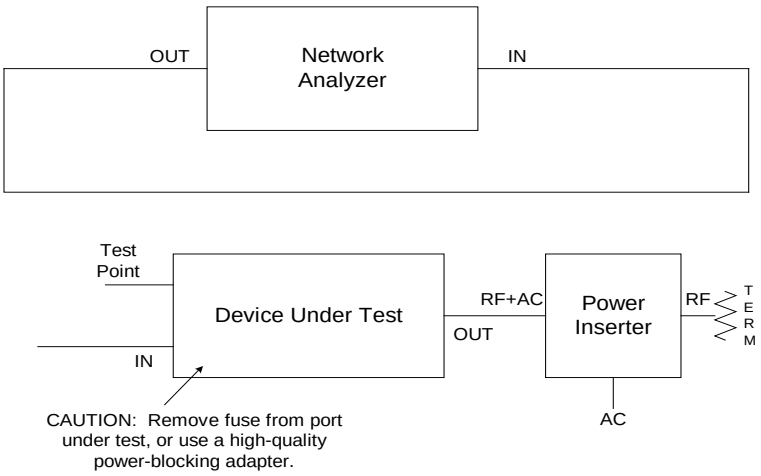

Figure 1 – Input Port Normalization

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.

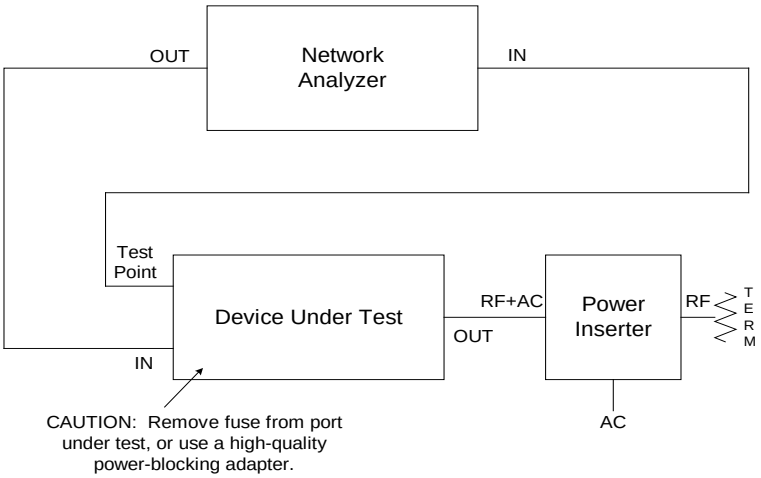

Figure 2 – Input Port Test Point Measurement

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.

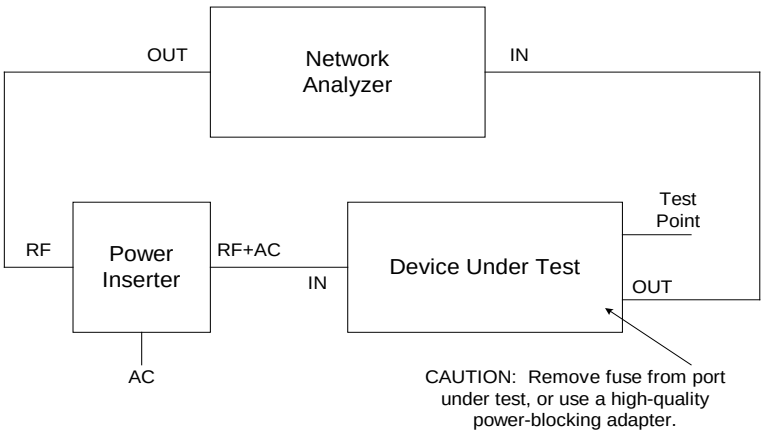

Figure 3 – Output Port Normalization

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.

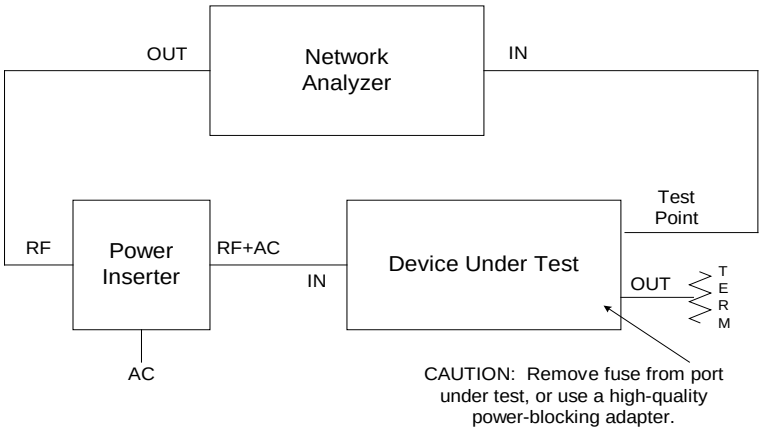

Figure 4 – Output Port Test Point Measurement

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

Device Under Test

Device Type:		**Manufacturer:**	
Model Number:		**Serial Number:**	

Test Equipment

Device	Manufacturer	Model Number	Serial Number	Last Cal Date

RF Level Measurement

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

Tested By	Date of Test