

**DS3 Pulse Template Measurements with Various “Stub-
Lengths” on the XRT73L03 Device***Preliminary*

May 23, 2001

Revision 1.01

1.0 INTRODUCTION

The purpose of this Applications Note is to document some measurements that were performed on the XRT73L03 DS3/E3/STS-1 LIU IC. In particular, these measurements were performed in order to determine how various “stub” lengths will affect the XRT73L03 device’s ability to comply with the Pulse Template Requirement for DS3 applications, over a cable length of 450 feet.

2.0 TEST APPROACH

The “stub-length” (mentioned in this Applications Note) was realized by connecting a “T-Connector” to one of the “Transmit Output” BNC connectors on the XRT73L03 Evaluation Board. One end of the “T-Connector” was connected to 450 feet of WECO 728A type of coaxial cable, and was ultimately routed to the Tektronix TDS-3054 Four Channel Color Digital Phosphor Oscilloscope, for pulse template measurement. One the other end of the “T-Connector” we connected a “strand” of coaxial cable ($Z_0 = 75\Omega$) of a specific length, which was allowed to “float”. This strand of coaxial cable emulated the “stub-length” in our system.

In all, we tested with 4, 6, 8 and 10 inches of stub length

3.0 LIST OF MEASUREMENTS/FIGURES

This document includes six (6) plots of the Transmit Outputs of one of the channels within the XRT73L03 device. The listing of these plots and the corresponding measurement conditions are listed below.

- Figure 1 – XRT73L03 Transmit Output pulse (with 450 feet of cable loss) – Stub Length = 0 inches.
- Figure 2 – XRT73L03 Transmit Output pulse (with 450 feet of cable loss) – Stub Length = 2 inches.
- Figure 3 – XRT73L03 Transmit Output pulse (with 450 feet of cable loss) – Stub Length = 4 inches.
- Figure 4 – XRT73L03 Transmit Output pulse (with 450 feet of cable loss) – Stub Length = 6 inches.
- Figure 5 – XRT73L03 Transmit Output pulse (with 450 feet of cable loss) – Stub Length = 8 inches.
- Figure 6 – XRT73L03 Transmit Output pulse (with 450 feet of cable loss) – Stub Length = 10 inches.



TAN-031

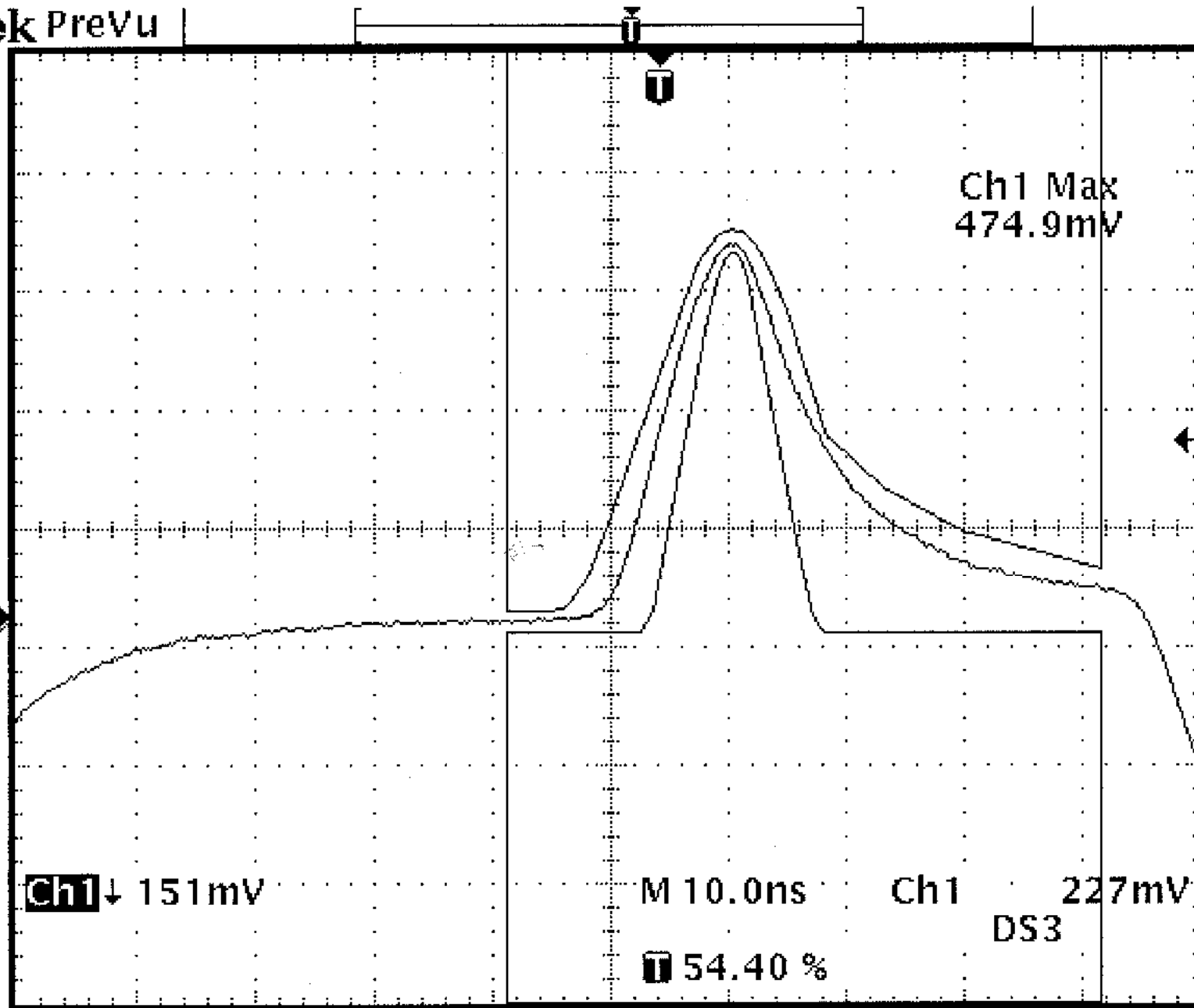
**DS3 Pulse Template Measurements with Various “Stub-
Lengths” on the XRT73L03 Device**

Preliminary

May 23, 2001

Revision 1.01

**Figure 1 – XRT73L03 Transmit Output pulse (with 450 feet of cable
loss) – Stub Length = 0 inches.**



Mask Control

Highlight Violations

On Off

Stop On Violation

On Off

Lock Mask To Waveform

On Off

Autofit Search Radius

Off

System Apps	Module Telecom	Mask Type T1.102	Current Mask DS3	Mask Control	Pass/Fail Mask Test	Show Results
-------------	----------------	------------------	------------------	--------------	---------------------	--------------



TAN-031

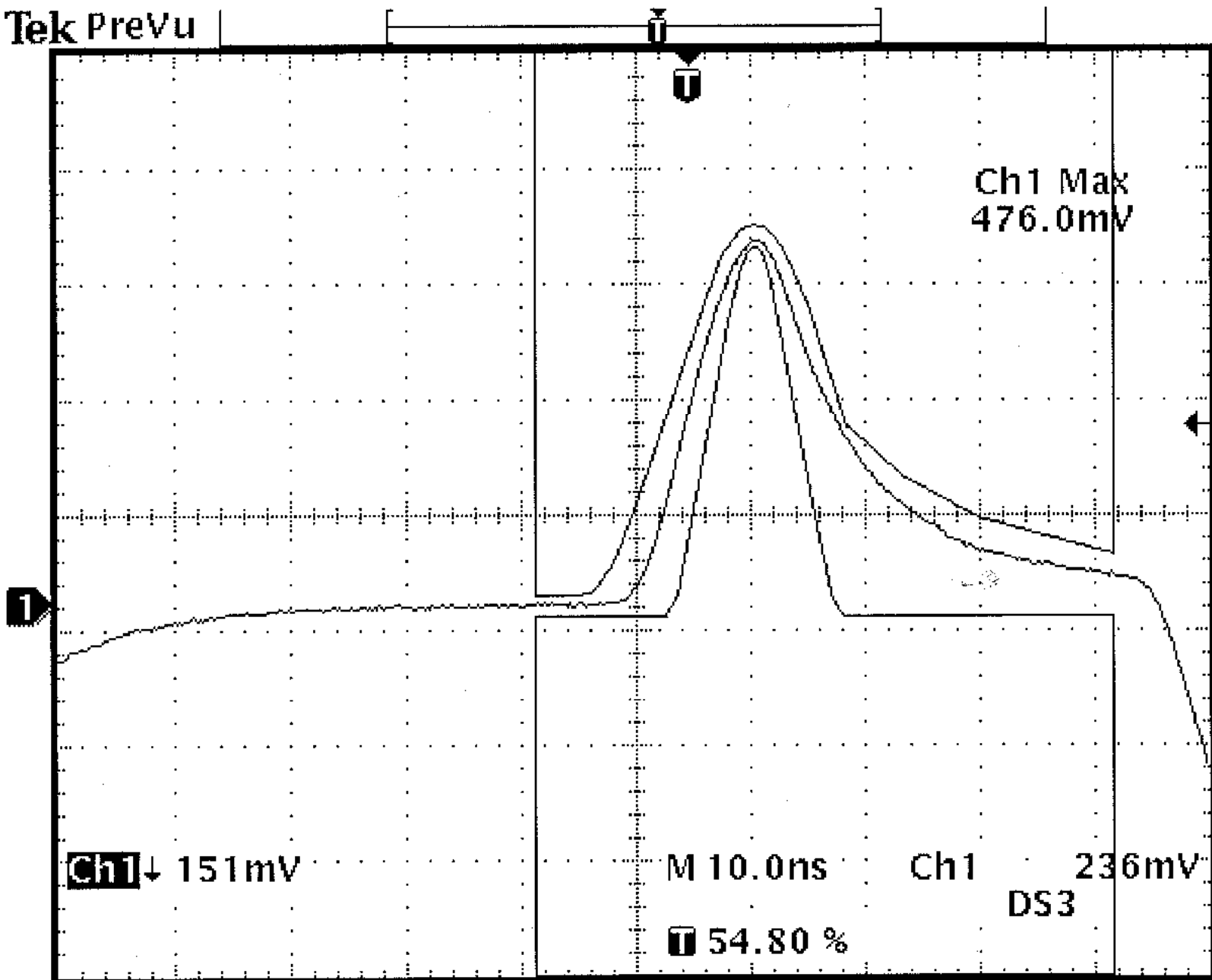
**DS3 Pulse Template Measurements with Various “Stub-
Lengths” on the XRT73L03 Device**

Preliminary

May 23, 2001

Revision 1.01

**Figure 2 – XRT73L03 Transmit Output pulse (with 450 feet of cable
loss) – Stub Length = 2 inches.**



Mask Control

Highlight Violations

On Off

Stop On Violation

On Off

Lock Mask To Waveform

On Off

Autofit Search Radius

Off

 System Apps	 Module Telecom	 Mask Type T1.102	Current Mask DS3	Mask Control	Pass/Fail Mask Test	Show Results
---	---	---	------------------	--------------	---------------------	--------------



TAN-031

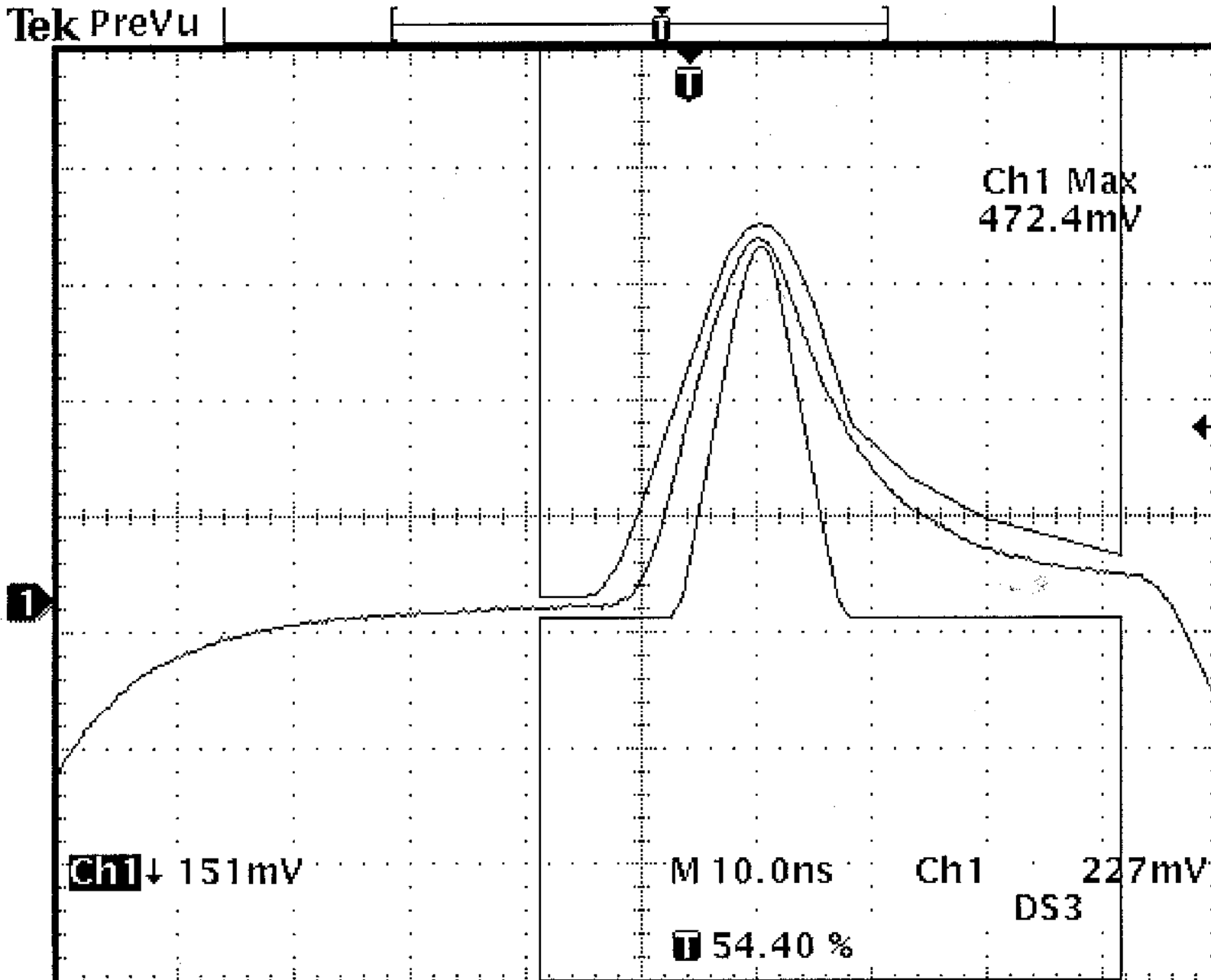
**DS3 Pulse Template Measurements with Various “Stub-
Lengths” on the XRT73L03 Device**

Preliminary

May 23, 2001

Revision 1.01

**Figure 3 – XRT73L03 Transmit Output pulse (with 450 feet of cable
loss) – Stub Length = 4 inches.**



Mask Control

Highlight Violations

On Off

Stop On Violation

On Off

Lock Mask To Waveform

On Off

Autofit Search Radius

Off

 System Apps	 Module Telecom	 Mask Type T1.102	Current Mask DS3	Mask Control	Pass/Fail Mask Test	Show Results
---	---	---	------------------	--------------	---------------------	--------------



TAN-031

**DS3 Pulse Template Measurements with Various “Stub-
Lengths” on the XRT73L03 Device**

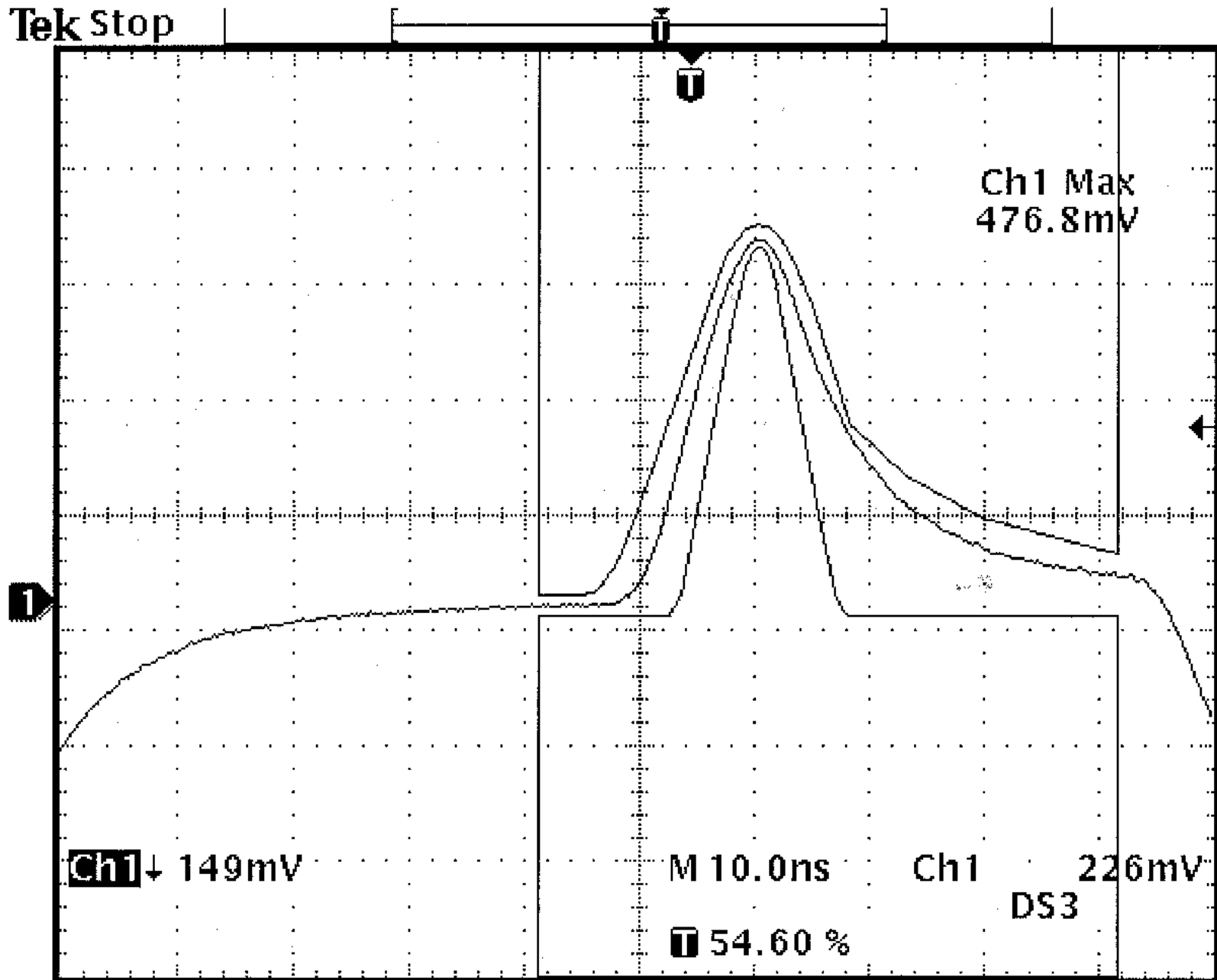
Preliminary

May 23, 2001

Revision 1.01

**Figure 4 – XRT73L03 Transmit Output pulse (with 450 feet of cable
loss) – Stub Length = 6 inches.**

Tek Stop



Mask Control

Highlight Violations
 On Off

Stop On Violation
 On Off

Lock Mask To Waveform
 On Off

Autofit Search Radius
 Off

 System Apps	 Module Telecom	 Mask Type T1.102	Current Mask DS3	Mask Control	Pass/Fail Mask Test	Show Results
--	--	--	------------------	--------------	---------------------	--------------



TAN-031

**DS3 Pulse Template Measurements with Various “Stub-
Lengths” on the XRT73L03 Device**

Preliminary

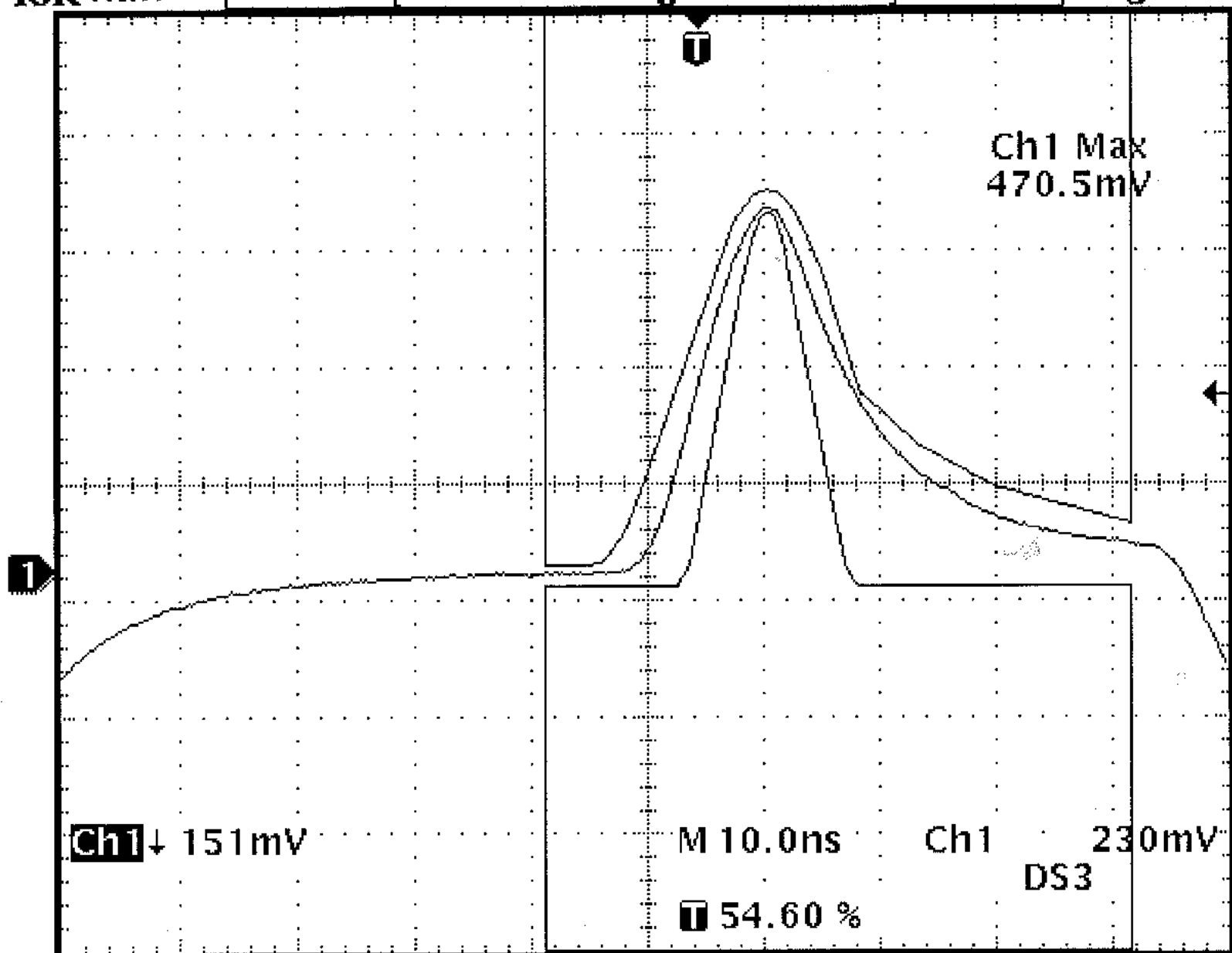
May 23, 2001

Revision 1.01

**Figure 5 – XRT73L03 Transmit Output pulse (with 450 feet of cable
loss) – Stub Length = 8 inches.**

Tek Run

Trig'd



Waveform Display

Dots Only

On

Off

Persist Time

Min s

Set to Min

Clear Persistence

Waveform Display

Backlight Intensity High

Graticule Full

XY Display Off

Color Palette Normal



TAN-031

**DS3 Pulse Template Measurements with Various “Stub-
Lengths” on the XRT73L03 Device**

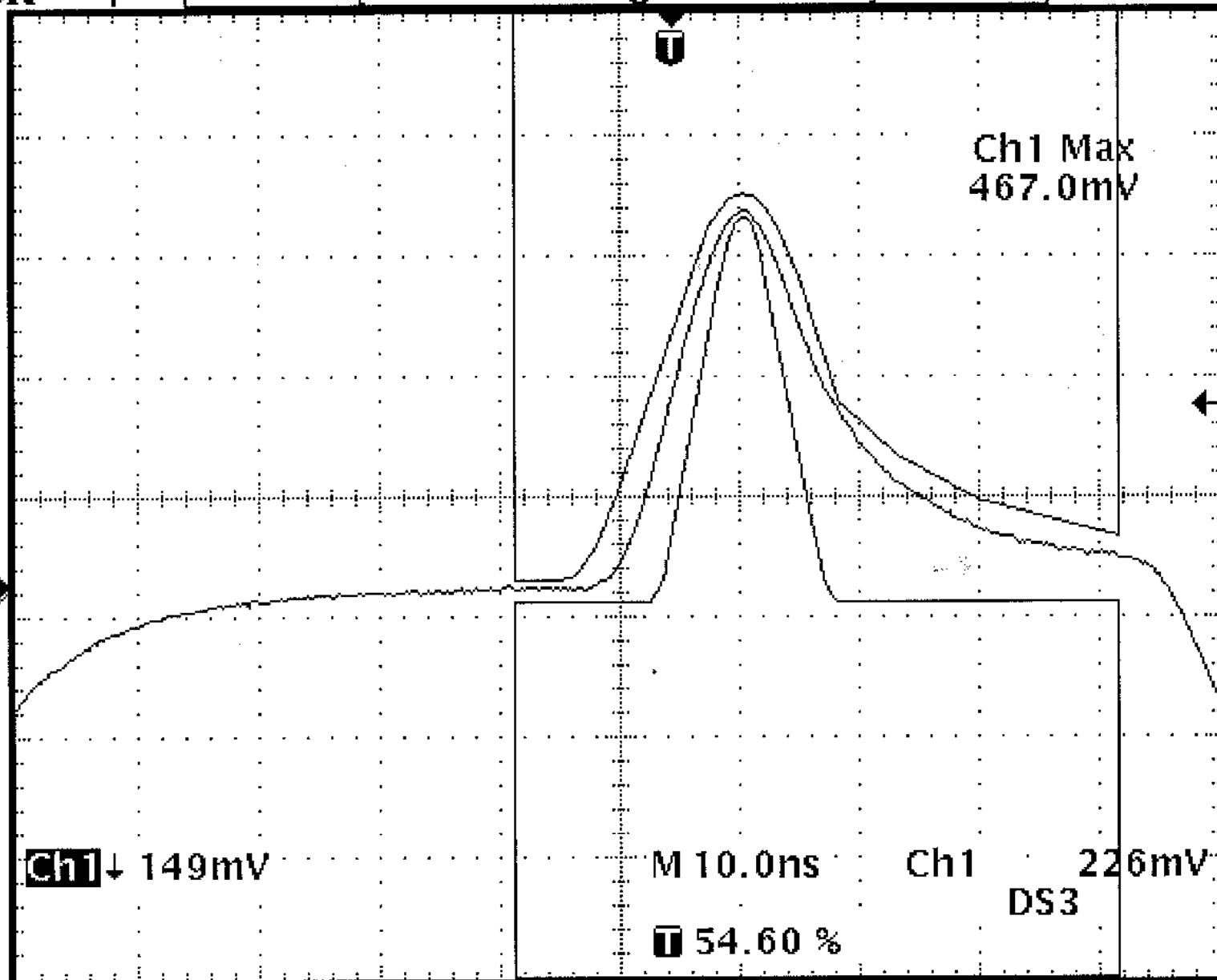
Preliminary

May 23, 2001

Revision 1.01

Figure 6 – XRT73L03 Transmit Output pulse (with 450 feet of cable loss) – Stub Length = 10 inches.

Tek Stop



Mask Control

Highlight Violations

On Off

Stop On Violation

On Off

Lock Mask To Waveform

On Off

Autofit Search Radius

Off

 System Apps	 Module Telecom	 Mask Type T1.102	Current Mask DS3	Mask Control	Pass/Fail Mask Test	Show Results
---	---	---	------------------	--------------	---------------------	--------------



TAN-031

**DS3 Pulse Template Measurements with Various “Stub-
Lengths” on the XRT73L03 Device**

Preliminary

May 23, 2001



Revision 1.01

APPENDIX A – REVISION CHANGE HISTORY

CHANGES FROM REVISION 1.00 TO 1.01

Included “Section 2.0 – TEST APPROACH”.