Operation Manual

Pulse Mask

Annex to TSW200E1's Operation Manual

Version: 1
Revision: 4
January/2010

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1 - Introduction

The Pulse Mask Module allows the monitoring of the quality of a received E1 signal. The equipment will capture the signal and display the pulse waveform within the mask as defined by ITU-T Recommendation G.703. Figure 1 shows this mask and determines the maximum Overshoot and Undershoot and it also limits rising and falling times.

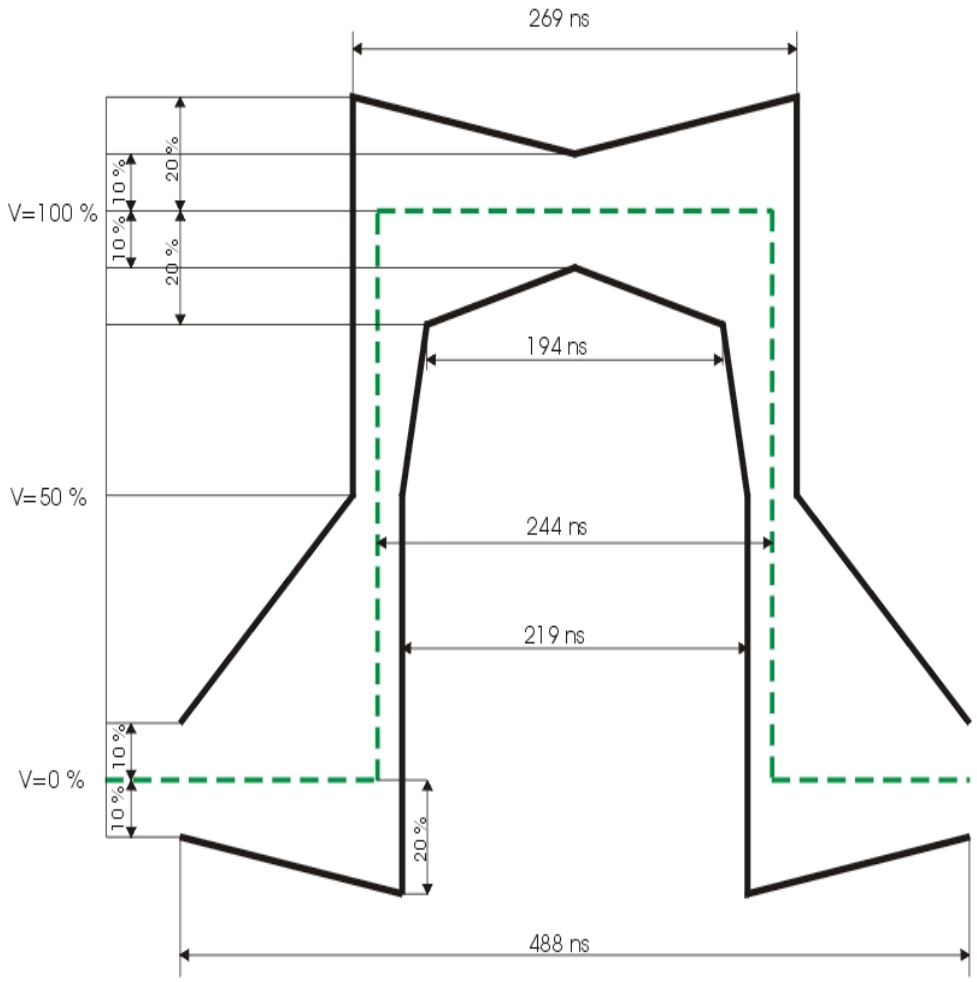

Figure 1

2 - Module Operation

Figure 2 below exemplifies the screen that is displayed when this module is selected from the second MODULE screen. It is the only screen available for configuring this module.

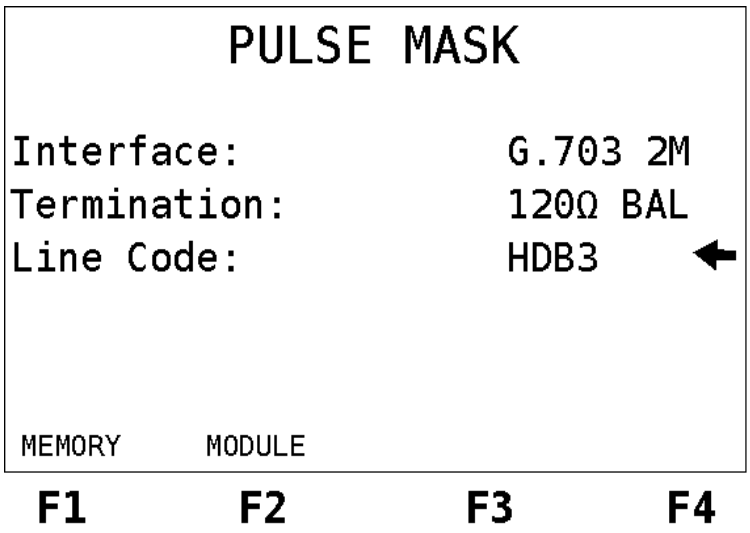

Figure 2

The module configuration is extremely straightforward, for only the termination value and the line code are user-configurable.

- **Termination:** allows the user to select the cable termination as 75 Ohms Unbal, 120 Ohms Bal, High-Z Unbal or High-Z Bal.
- **Line Code:** allows the user to choose between HDB3 or AMI.

The choice of termination depends on the way the TSW200E1 will be connected to the communication link, and it can be configured as terminal (see Figure 3) or inserted in the middle of a communication (see Figure 4). For this last case, the impedance chosen must be high (Hi-Z).

Figure 3

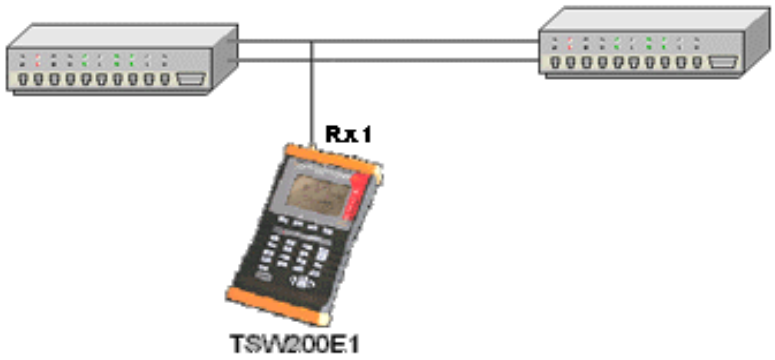

Figure 4

If the user has chosen an unbalanced termination, then the G.703 signal to be monitored must be inserted through the BNC RX1 connector.

Else, if he or she has chosen a balanced termination, the G.703 signal to be monitored must be inserted through the RJ45 (TX/RX1/RX2) connector.

When the configuration is done, press START to run the test.

An initial screen similar to the one shown below is displayed on the equipment screen.

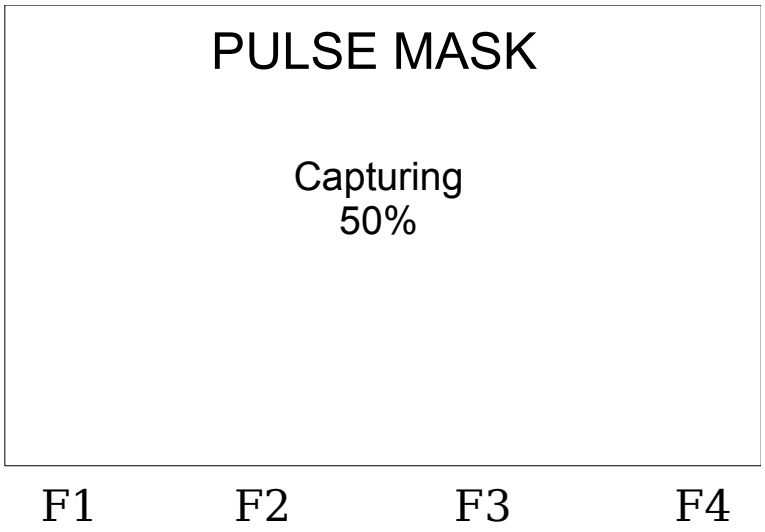

Figure 5

This screen informs the user the percentage of progress of the pulse capture process. When the pulse is captured, the screen displays the following Figure:

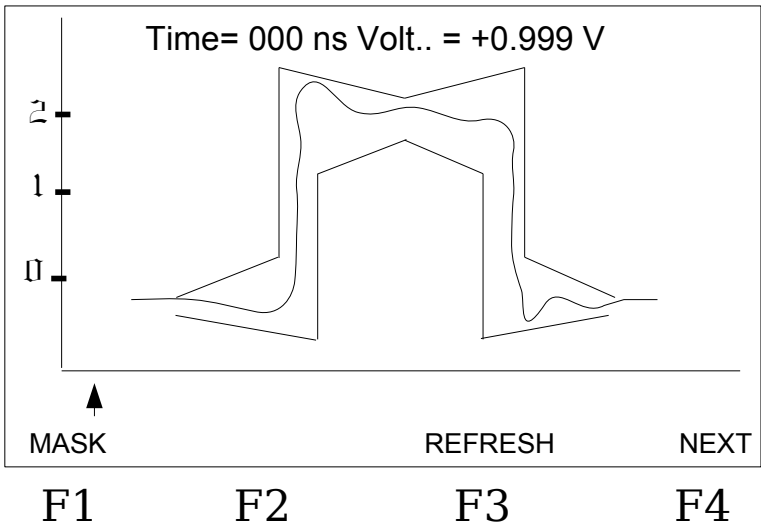

Figure 6

In the screen, it is possible to see the captured pulse and the mask inside which it must reside.

Below the graph there is a cursor, which can be moved using the direction (arrow) keys. The user can navigate over the pulse waveform. The voltage and the time corresponding to the current cursor position are displayed on the upper part of the graph.

The F1 (MASK) key toggles the displaying or hiding of the pulse mask.

After the sampling, it is possible to update the screen. To do that, press F3 (REFRESH). A new pulse will be captured and its results will be displayed on screen.

The F4 (NEXT) key takes to a second results screen. See the Figure below:

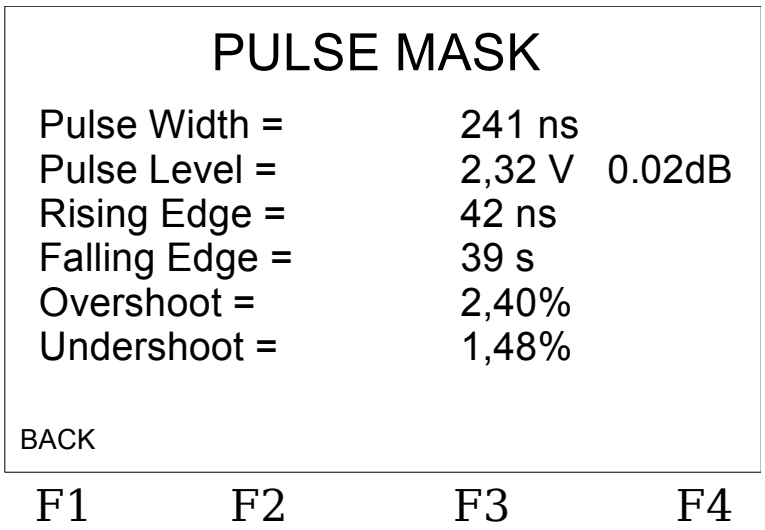

Figure 7

The following measures are taken:

- Pulse Width: measured in ns (nanoseconds);
- Pulse Level: measured both in dB and in V (volts);
- Rising Edge: rise time in ns;

- Falling Edge: fall time in ns;
- Overshoot: measures (in %) how much the pulse overshoots (exceeds) the stable value after rising;
- Undershoot: measures (in %) how much the pulse undershoots (falls below) the stable value after falling;

To end the test and go back to the configuration screen, press the STOP key.

3 - Memory and Printout

From the module's initial page (Figure 2), it is possible to access the last result by pressing <F1> (MEMORY). The results view is similar to the one made when the test was running. It is also possible to print this result by pressing <PRINT> after accessing the memory. Further information about printout configuration and procedures can be found in section *"6.3 – Memory and Printout"* at *"TSW200E1 Operation Manual"*.

The results imprint is made through the serial port, by using the hyperterminal and the values of the mask, the counters and the measured pulse points are transferred to the computer, where the graph may be rebuilt. In the screen shown in Figure 6, push the PRINT key. The screen shown below is opened.

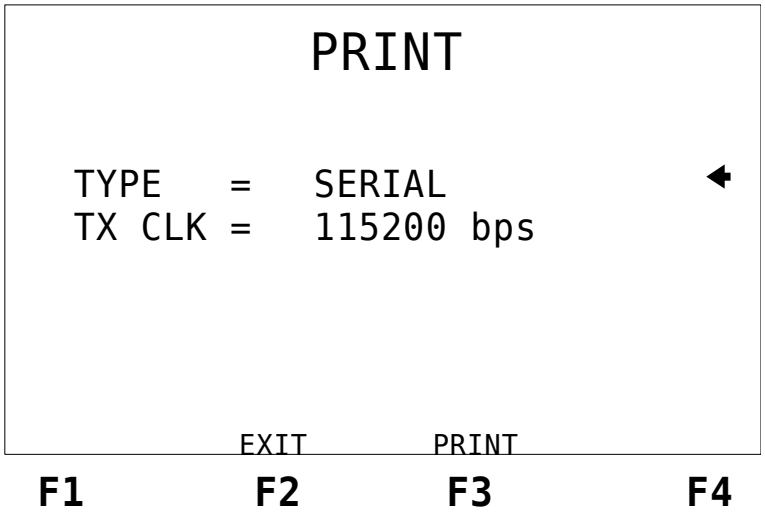

Figure 8

After setting the type of connection and the bps (bits per second) parameter, press <F3> (PRINT), in order to view the following screen. Then, choose the data to be printed (UPPER MASK, PULSE or LOWER MASK) and push <F3> (ENTER).

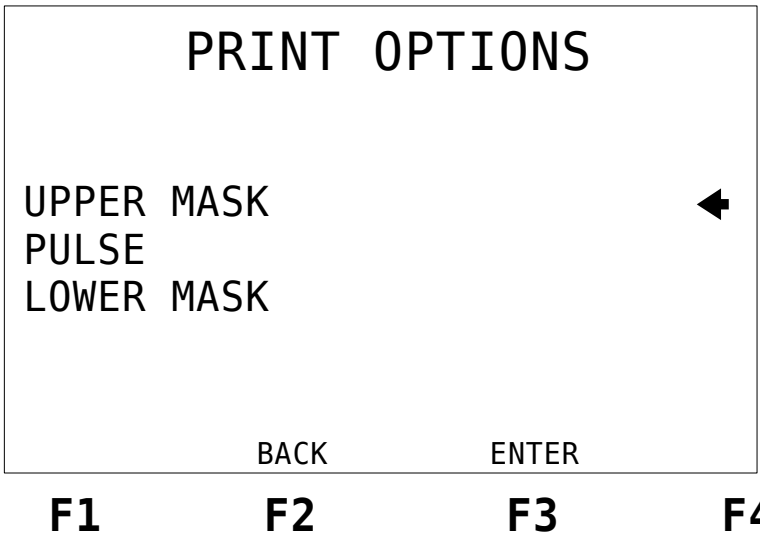

Figure 9

A column of values that describe the chosen information is obtained in the hyperterminal. It is possible to obtain data regarding both the mask and the pulse. It allows the construction of the graph shown in the test set by using a computer program. Figure 10 shows a graph that was obtained by using Microsoft Excel™.

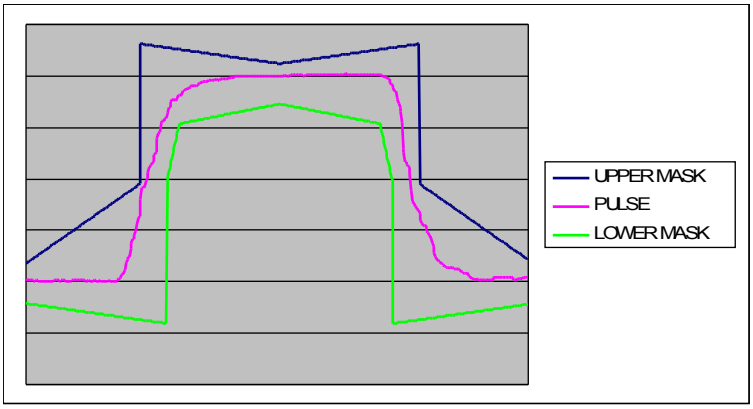

Figure 10

It is also possible to print the information depicted in Figure 7, via hiperterminal. In this screen, press the PRINT key, and the screen in Figure 8 is shown. After setting the type of connection and bps rate, push <F3> (PRINT), and the information will be shown in the hiperterminal.

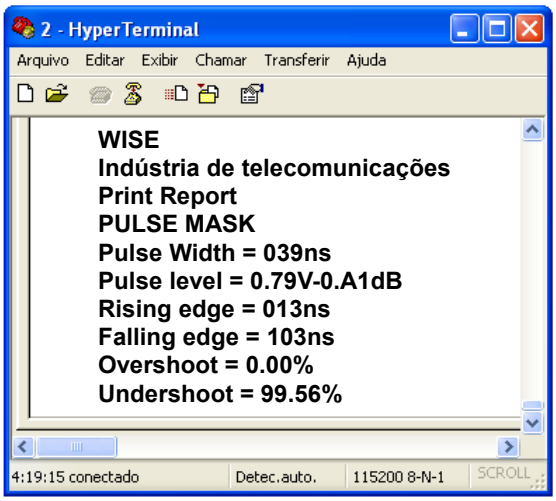
2 - HyperTerminal
Arquivo Editar Exibir Chamar Transferir Ajuda
WISE
Indústria de telecomunicações
Print Report
PULSE MASK
Pulse Width = 039ns
Pulse level = 0.79V-0.A1dB
Rising edge = 013ns
Falling edge = 103ns
Overshoot = 0.00%
Undershoot = 99.56%
4:19:15 conectado
Detec.auto.
115200 8-N-1
SCROLL

Figure 11