

BU Series

Bit Error Rate Test (BERT)

Function

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Information contained in this document is subject to change without prior notice.

1. Overview

The signal quality is one of the most important things in USB3.0 application.

Toshiba Teli USB3 Vision Camera BU series assure the signal quality of USB3.0 SuperSpeed.

Its signal quality was proved in USB3.0 Physical Layer Compliance Test.

At the same time, cable selection also has to be taken into consideration in USB3.0 application.

Toshiba Teli has the measuring equipment to evaluate cable quality in its own laboratory.

We can suggest the best combination of cables for customers' application.

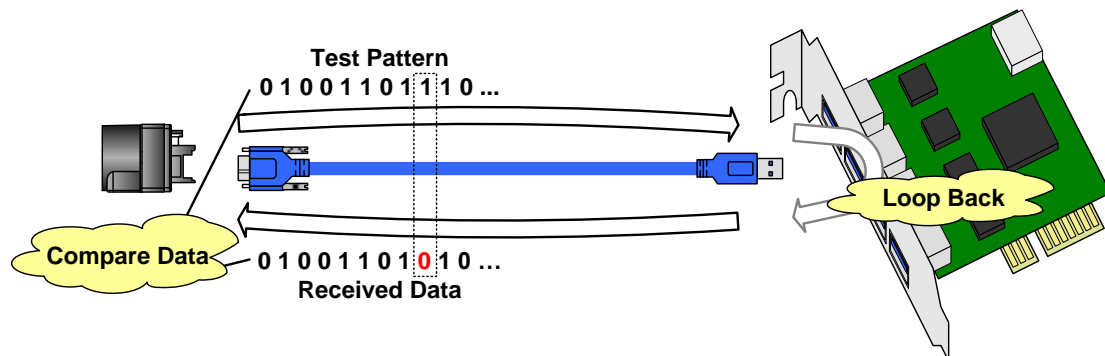
In addition, BU series have a quite unique function to measure the cable quality.

It is called 'BERT (Bit Error Rate Test)' function. It is implemented in the latest CMOS models.

In the BERT mode, camera generates a test pattern and host controller enters the loopback mode.

Bit Error Rate is accumulated in the camera by comparing loopback data with generated test pattern.

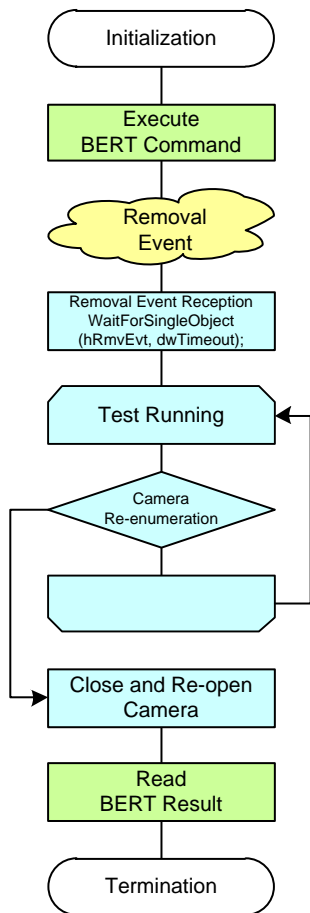
You can evaluate the cable quality before installing it in your system.



2. How to use

2.1. Application Flow

You can implement this function in your application. Or you can request sample application to our sales representative. The application flow of BERT is shown below.



- Initialization
Initialize API and open a camera.
- Execute BERT Command
Write the value to BERT Count register.
Write '1' to BERT Command register.
- Removal Event
After executing BERT Command, removal event will happen.
Wait this removal event by WaitForSingleObject.
- Test Running
BERT starts.
Wait until API re-enumerates the camera.
(by TeliCamAPI Sys_GetNumOfCameras).
- Close and Re-open Camera
Close all handles and re-open.
Because all handles had become invalid.
- Read BERT Result
- Termination
Close the camera and terminate API.

2.2. Registers

Register	Address	Access	Description
BERT Count	0x21E03C	R/W	BERT Count determines the number of bits to be sent during a test. The number of bits = $10 \wedge (\text{BERT Count})$ Considering USB3.0 bit rate (5Gps). Test time will be Test time (sec) = $0.02 \times 10 \wedge (\text{BERT Count})$ [8]: Minimum value of BERT Count [12]: Maximum value of BERT Count
BERT Command	0x21E05C	R/W	[0]: No operation / Test is completed. [1]: Execute BERT.
BERT Result	0x21E07C	R	BERT Result indicates the number of bit errors. (up to 65535 bits) Signal quality is suspicious if there are some bit errors.

Table 1. BERT Function Registers