25G SFP28 AOC Checker

Features

- 10Gbps，25Gbps，28Gbps BERT
- SFP status checker
- Friendly graphic user interface (GUI)
- 2 SFP28 ports
- Working independently without PC
- 5V~12V DC power supply
- Small form & full metal case
- Mini-USB connection

Applications

- Bit error rate test
- SFP+, SFP28 module, SFP+ AOC/DAC,SFP28 AOC /DAC test
- Module power measurement
- GUI Operating environment: Win XP, Win 7, Win8 and Win10

Description

The SFP28 Checker is an instrument which can help you to test SFP+, SFP28 module ,SFP + AOC/DAC, SFP28 AOC/DAC

It can help you to read the internal memory EEPROM of the modules and display details of the EEPROM (such as the Part Number, Vendor Name, description and range.), monitor all DDM information. You can change the EEPROM if you know the module passwords . In addition it can measure the power of the module.

The SFP28 Checker combines the Serial Pattern Generator, Bit Error Rate Analyzer. It provides common transmission rate for 10G, 25G and 28G,

The friendly graphic user interface (GUI) provides clear monitoring for bit error rate, bit error counter, time, status, power of the module, selection of data rate and PRBS pattern.

Working mode

1. SFP+ 10G
   In this mode, SFP+ module, SFP+ AOC/DAC can be tested. Two modules at the same time, one by one, single channel by single channel, all are supported.
   In addition, you can use two “SFP28 Checker” if the AOC or DAC can’t be inserted into one SFP28 Checker. But in this mode, two SFP28 Checkers connected to one PC is not supported.

2. SFP28_25G or SFP28_28G
   In these two modes, SFP28 module, SFP28 AOC/DAC can be tested. Two modules at the same time, one by one, single channel by single channel, all are supported.
   In addition, you can use two “SFP28 Checker” if the AOC or DAC can’t be inserted into one SFP28 Checker. But in these two modes, two SFP28 Checkers connected to one PC is not supported.

3. Without PC
   The SFP28 Checker can working independently .You can choose the work mode from the GUI and save it to the SFP28 Checker (Factory setting is 10G), then the Checker can work as you wanted. The SFP28 Checker will not change its working mode even if it is power down, you can get the main message from the four LED, such as working mode, Bit Error test is OK or NG. ,

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	16	V
Storage Temperature	Ts	-10	+70	°C

Technical Specifications

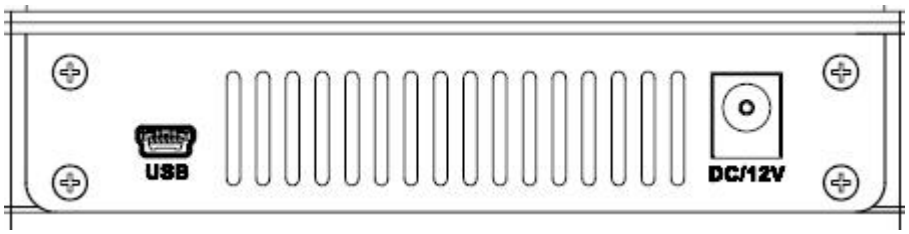
Parameter		Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	Tc	-10		+50	°C
Operating Humidity		-	5		85 non-condensing	%
Power Supply Voltage		Vcc	5	12	16	V
Physical Dimensions			160(W)x110(D) x24(H)			mm

Optical and Electrical Characteristics

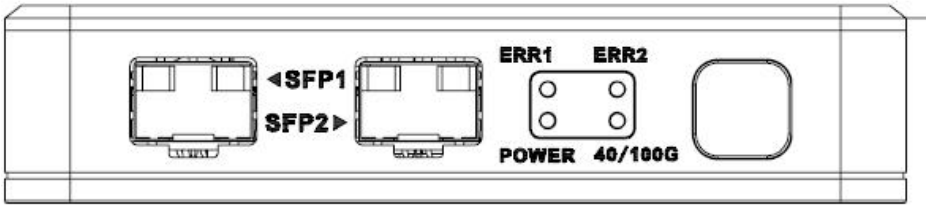
Main Frame	
SFP ports	Standard SFP 20pin with Cage
Transmission rate	10.3Gbps, 25.78125Gbps 27.9525Gbps
Pattern Generator	PRBS7, PRBS9, PRBS21, PRBS23, PRBS31
Module Power measured	
supply current	0~3000mA
Accuracy	±15%

Hardware Configuration

1. MINI USB and DC Power



2. SFP28 PORTS and work status



SFP1,SFP2: support 10G,25G,28G
KEY: Restart testing
LED:

ERR1: Indicates test result of SFP1, if any one of the four channels BER (bit error of rate) is not zero, it will be red

ERR2: Indicates test result of QSFP2, if any one of the four channels BER (bit error of rate) is not zero, it will be red

Power: two functions: one is power indicator, the other is working mode
When the working mode is SFP28_28G, it will blink

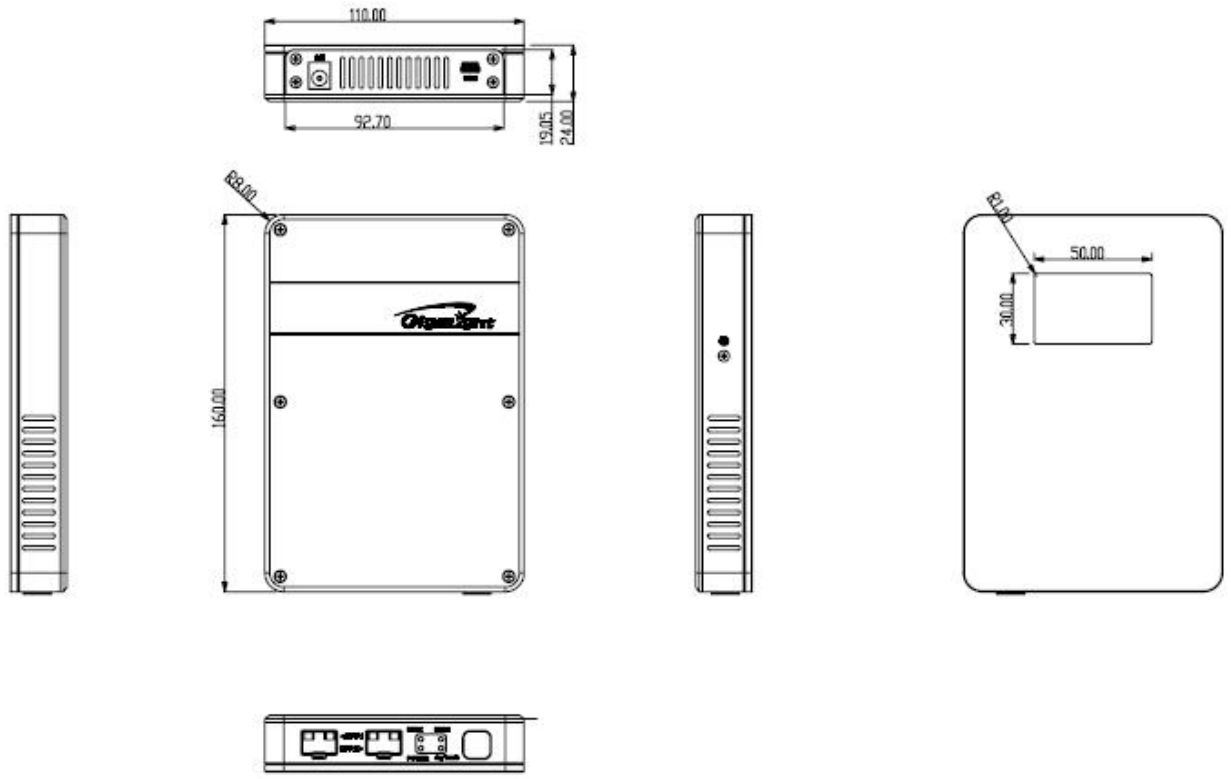
10/25/28G:

10G: OFF
25G: ON
28G: ON[1]

In 112G mode, the power led blink

ERR1，ERR2 is no function when the “Checker” is connected to PC

Mechanical Dimensions



Ordering information

Part Number	Product Description
25G SFP28 AOC CHECKER	25G SFP28 AOC CHECKER is an test instrument which combines 10Gbps,25Gbps,28Gbps Bit error rate test, DDM Checking, EEPROM coding function, etc.

Important Notice

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User Guide

Hardware Configuration

Front panel

Mode	Light
10G	Off
25G	On
28G	Flash

Note:

（1） Both ports support three data rates;

（2） Press Start to begin bit error test.

Rear panel

Device Connection

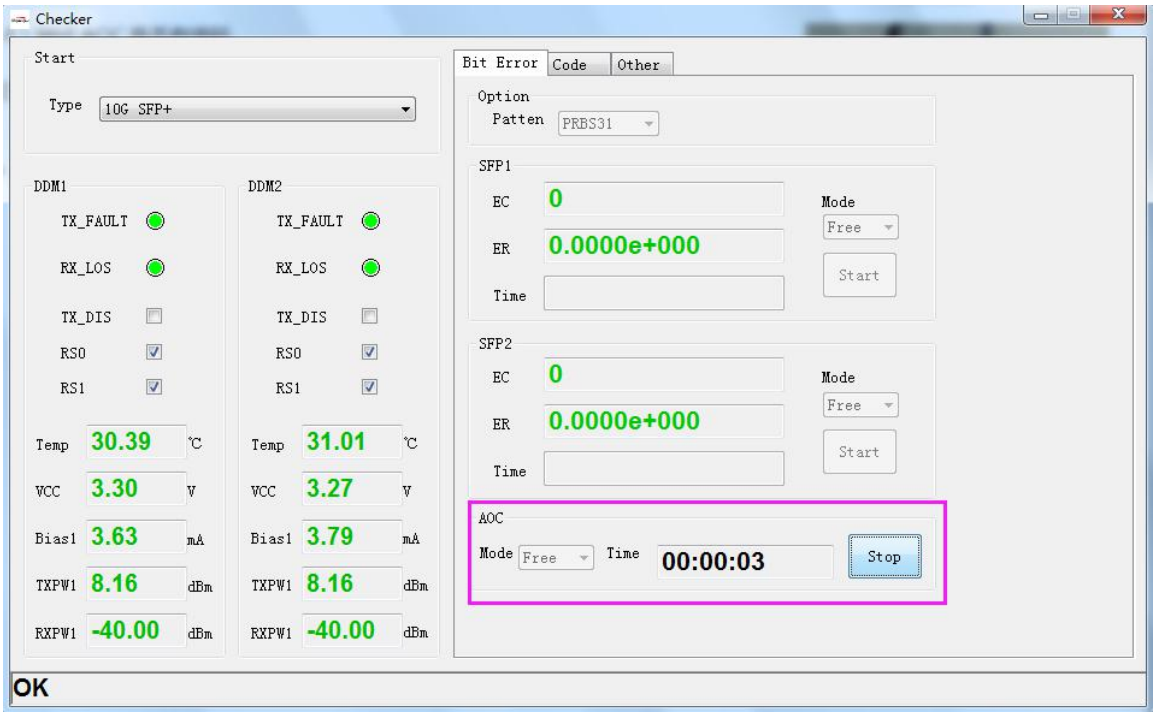
One Checker for AOC & DAC Test

Two Checkers for AOC & DAC Test

Note: One end module of AOC & DAC connected to one port of one checker, another end module connected to one port of another checker.

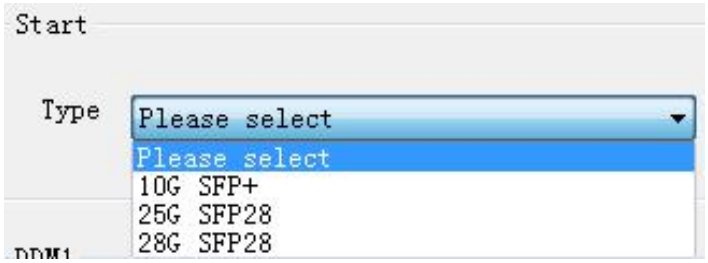
Software Function Introduction

Bit Error Test



The software interface as shown above, separately introduced as follow:

2.1.1. Data Rate Selection:



2.1.2 Test Time Mode Selection

Free -- Increasing timing
Timer -- decreasing timing

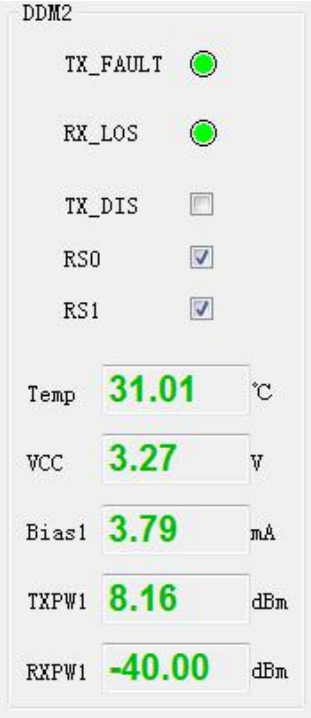
2.1.3 PRBS Type Selection

PRBS types have three options: PRBS7, PRBS15 and PRBS31, default to PRBS31.

2.1.4 DDM Display Section

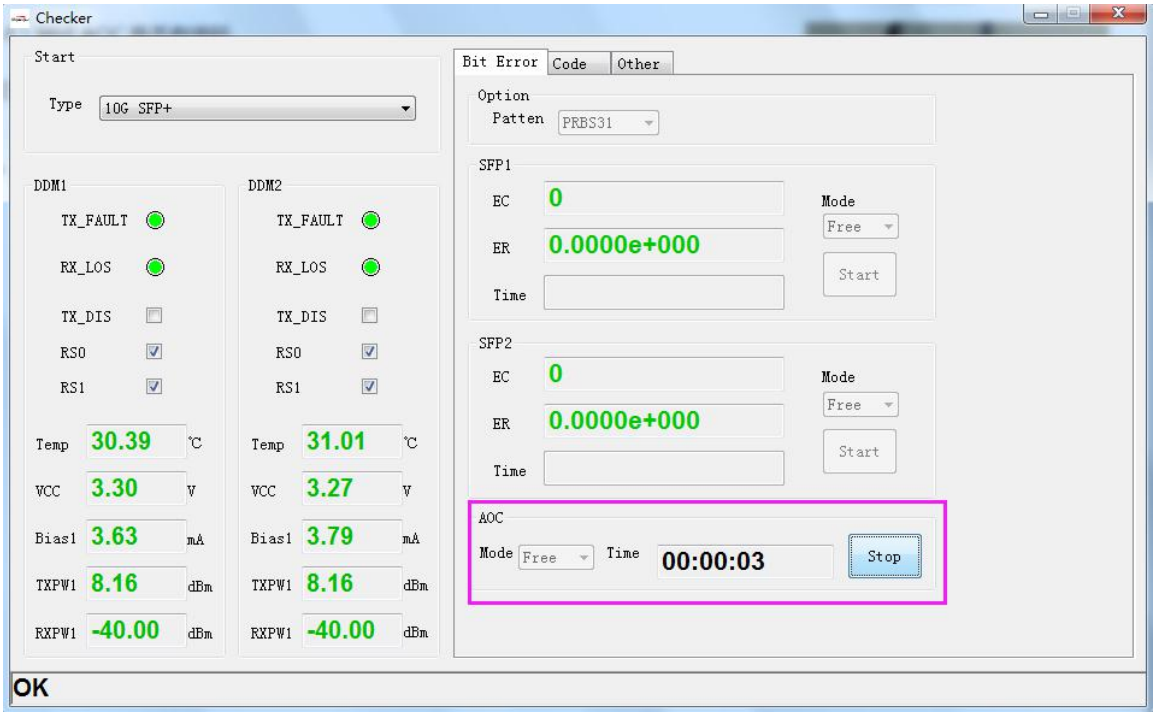
It read and display the real-time data of the transceiver internal memory, Checker and GUI do not process.

DDM includes the real-time data, as well as the transceiver mode control and the pin indicated.

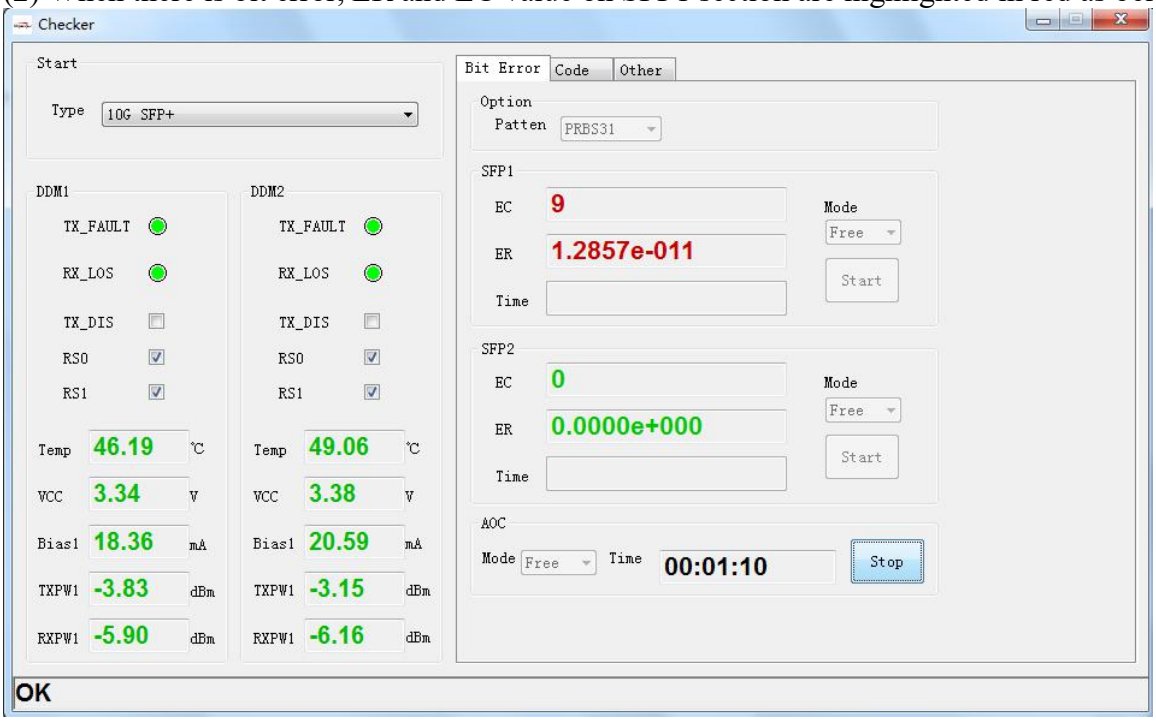


2.1.5 Bit Error Rate Test on AOC & DAC

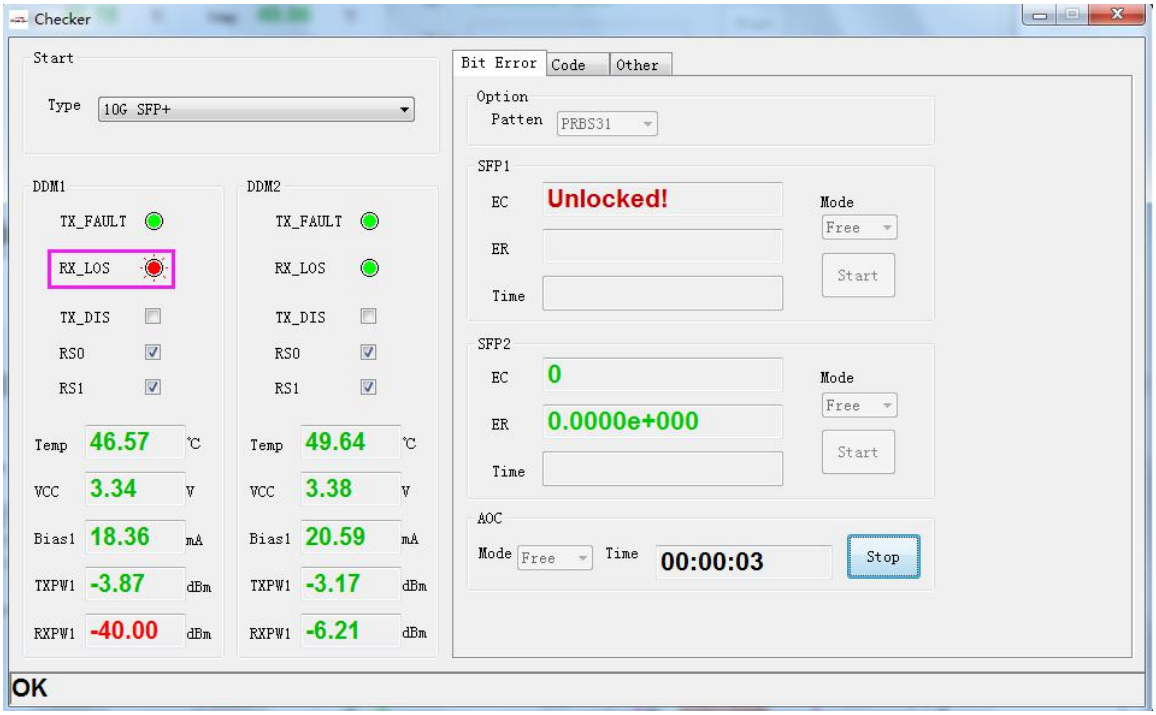
For example, 10G AOC test,
(1) when there is no bit error, ER value on SFP1 and SFP2 section are highlighted in green as below,



(2) When there is bit error, ER and EC value on SFP1 section are highlighted in red as below:

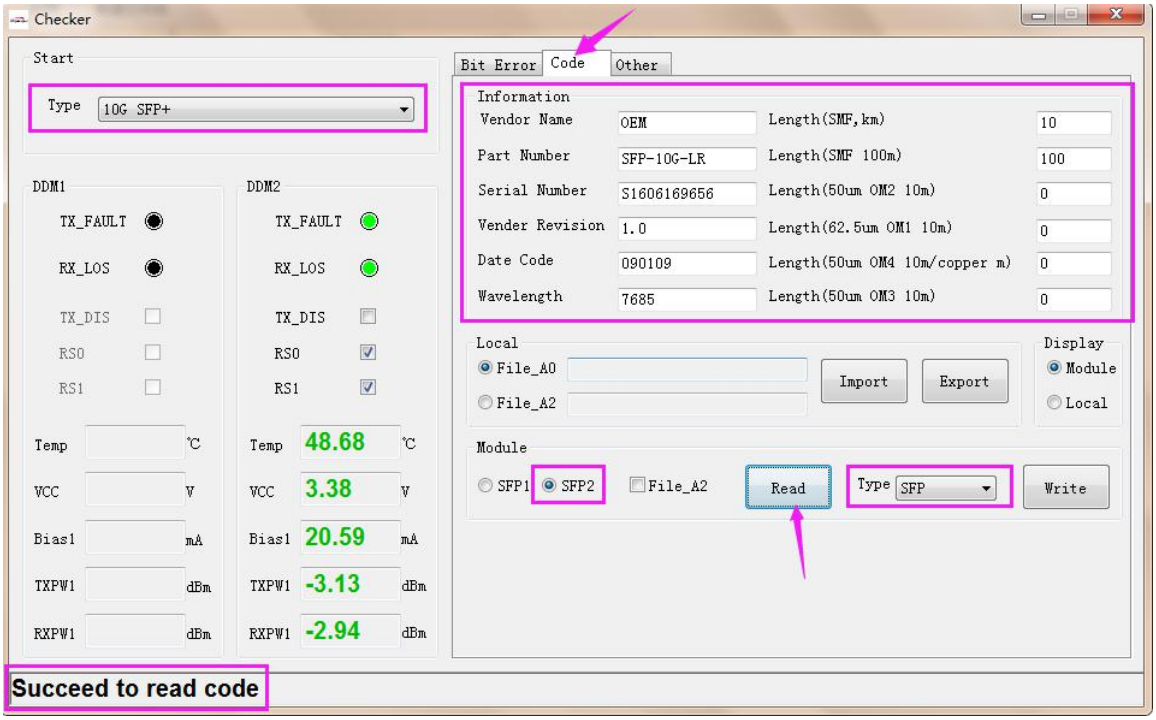


(3) When the transceiver in AOC receiving end is abnormal, it will show alarm as below:


Checker
Start
Type
10G SFP+
DDM1
TX_FAULT
RX_LOS
TX_DIS
RS0
RS1
Temp 46.57 ℃
VCC 3.34 V
Bias1 18.36 mA
TXPW1 -3.87 dBm
RXPW1 -40.00 dBm
DDM2
TX_FAULT
RX_LOS
TX_DIS
RS0
RS1
Temp 49.64 ℃
VCC 3.38 V
Bias1 20.59 mA
TXPW1 -3.17 dBm
RXPW1 -6.21 dBm
Bit Error
Code
Other
Option
Patten
PRBS31
SFP1
EC
Unlocked!
ER
Time
Mode
Free
Start
SFP2
EC
0
ER
0.0000e+000
Time
Mode
Free
Start
AOC
Mode
Free
Time
00:00:03
Stop
OK

Transceiver Code Reading/Writing

2.2.1 Code Reading

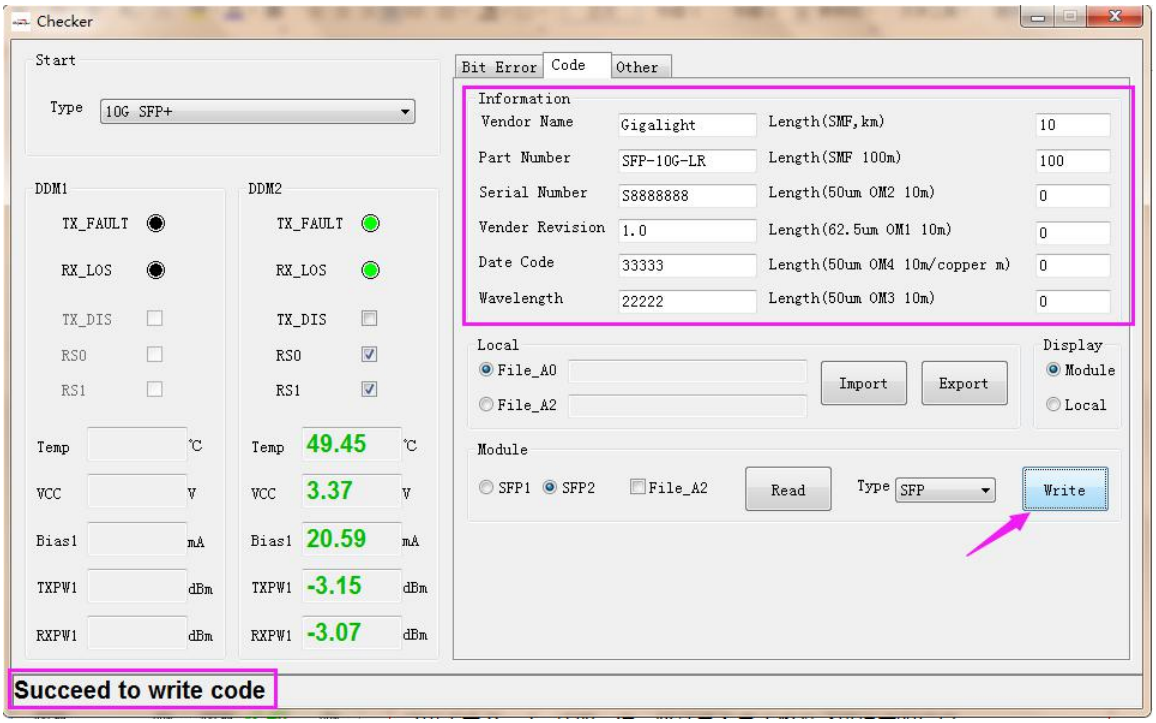


For example of 10G optical module code reading to introduce the operating steps:

1) Type chooses 10G SFP+, wait for initialization completed;
2) Click Code to enter Code function page (Module → Type default to SFP);
3) If the module inserted in SFP2 port, then choose Module → SFP2 → Read; If the module in SFP1 port, then Module → QSFP1 → Read;
4) Status bar shows Succeed to read code, and the purple box showing the module information;

For 25G/28G module, choose SFP+ on Module → Type, then do similar operation.

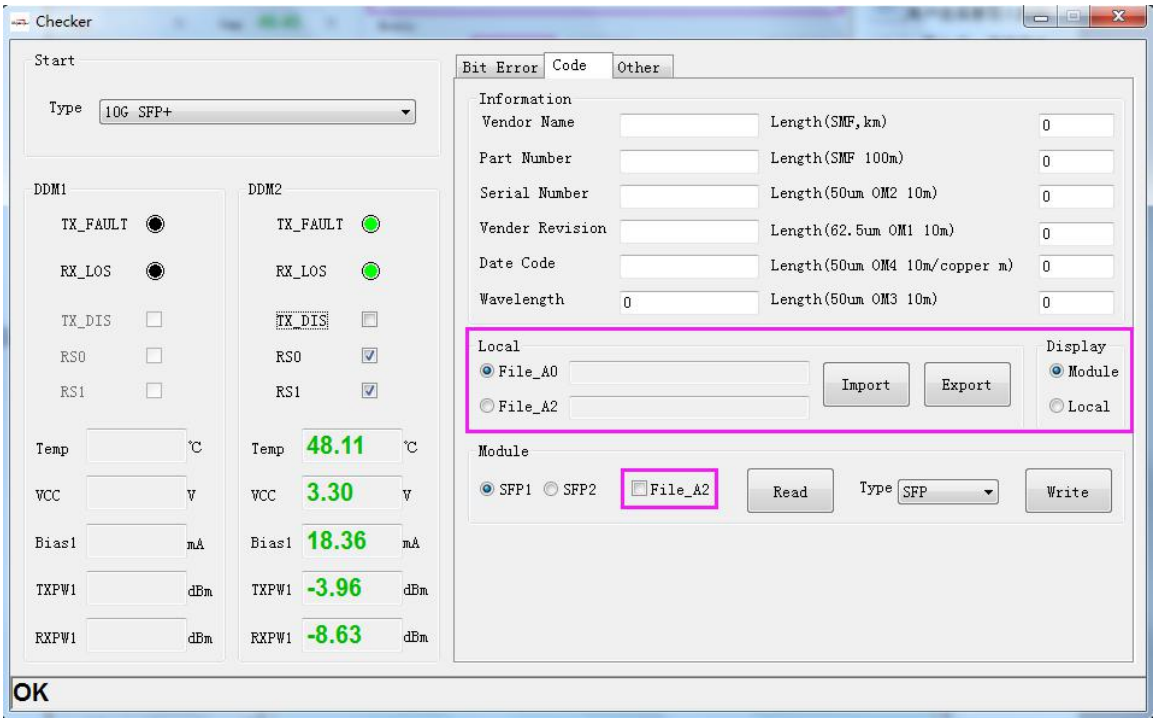
2.2.2 Code Writing



For example of 10G SFP+ code writing, the operation as follow:

1) the current module in SFP2 port, Module → SFP2, Display → Module;
2) Default to Module → A0_2, modify in the text box, input the character with correct format and number;
3) Click Write, status bar shows Succeed to write code;
4) Click Read, to check if the modified character have been input to module information.

2.2.3 Local Import/Export Code File



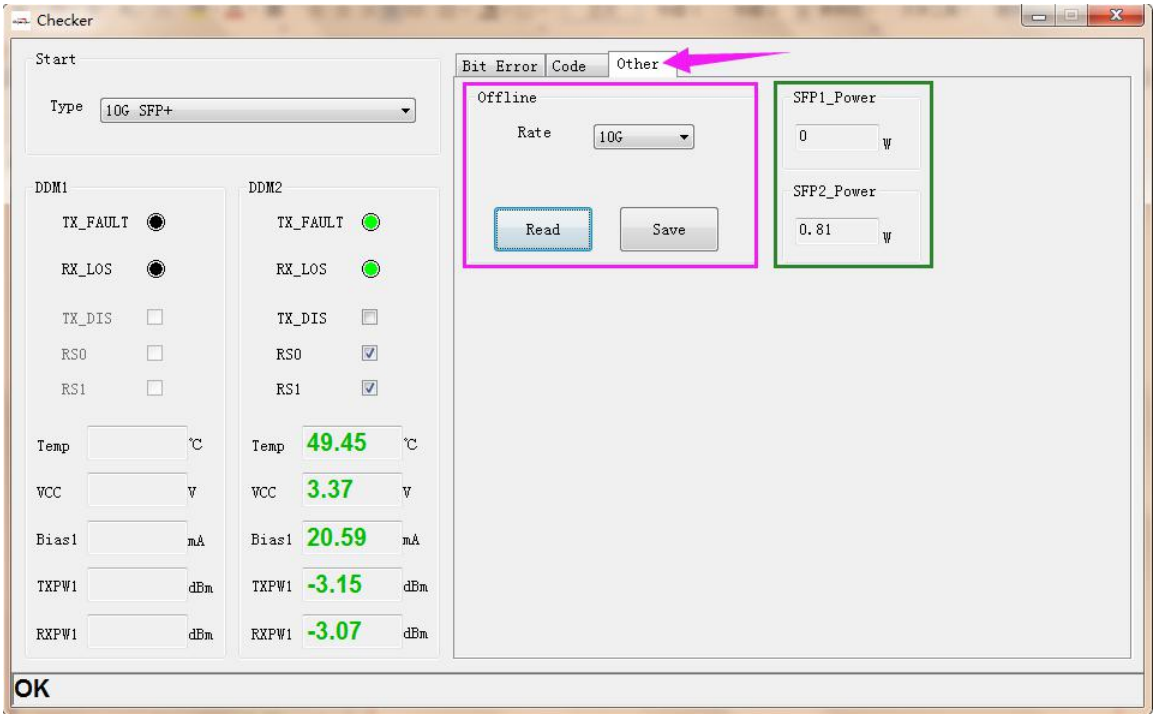
Choose Local if you want to import code file from the local computer to GUI, click Import button, then choose the local code file through the bounced window. After import, it will show directly in Information, then click Write to encode the module.

Export: to export the code file from the module.

A0_0 and A0_2 in Local refer to the page 0 and page 2 of the module A0 register, check details on the protocol. Generally speaking, password is necessary for code reading and writing, default to A0_0 register information; A0_2 is customized by manufacturer, if user wants to read and write, then choose A0_2 in Module (little purple box).

Other Function Page

Here to set up offline working rate, power dissipation display, and close Tx end on any channel of the module .



1) Type choose 10G SFP+, wait for initialization completed; click Other to enter its function page;
2) The purple box Offline -- offline mode save (data rate is saved optionally, code type all is code PRBS31);
The green box -- show power consumption of SFP1 and SFP2 (2% - 5% error);
3) click Offline → Rate, read the mode of offline rate (default rate is 10G);
4) Power consumption display: as the module inserted to the port, the value will be automatically showed (generally the value is monitoring value for reference).

Offline Working

The Checker has offline working mode.
1) In GUI you can choose the working rate of offline mode;
2) The other rate mode is set up in GUI after connecting to PC;
3) After choosing different rate mode, please click Save (note: all is code PRBS31);
4) Set up different rate and check other connect mode of optical module, users must strictly follow the guide to operate the product.