Optical Transceiver Simple Check xCVR Quick Check SEEK Scenario

Network Master Pro MT1000A

These materials are the User Guide for the xCVR Quick Check SEEK (Scenario Edit Environment Kit) scenario (xCVRQuickCheck_xx.obcfg) stored on the Network Master Pro MT1000A during the MT1000A software installation process. This User Guide provides a description of the scenario features, applications, and behavior in a straightforward and simple way.

The xCVR Quick Check SEEK scenario (xCVR Quick Check hereafter) is a scenario run on the MT1000A for simple confirmation of the operation of optical transceivers, such as the QSFP28, SFP+, etc.
Registering and executing as a SEEK scenario on the MT1000A performs BER measurements, reads-out data in the optical transceiver internal registers, displays the measurement results, and performs PASS/FAIL evaluation of the status data. A report file is also created and output when the scenario is completed.
This tool provides a comprehensive check of the optical transceiver with minimal operation input required from the user, allowing quick and early separation of faults and confirming the optical transceiver condition before installation.

xCVR Quick Check is provided free-of-charge along with the MT1000A software installer. (The scenario file is stored to "Internal¥windowsinstaller¥scenario" folder in the MT1000A after installing the software.

■ Features

➢ Settings, Measurement, Decision, and Report generation are executed with minimal operator input required.

➢ Supports diagnosis of the QSFP28, CFP4, QSFP+, SFP28+, SFP+.

➢ Support bitrate of :
  -Ethernet (100GbE, 40GbE, 25GbE, 10GbE)
  -OTN (OTU4, OTU3, OTU2)

➢ Freedom to complete the optical transceiver testing anywhere, using the MT1000A SEEK GUI, including battery operation.

➢ Ability to save diagnostic results files directly to USB memory if required

■ Applications

➢ Quick, simple and complete diagnosis provided instantly

  - Faults can be quickly isolated to a problem in the optical transceiver, supporting prompt exchange of either the optical transceiver, or optical cable or network equipment configuration/slot.

➢ Confirm correct operation before installation of the optical transceiver and ability to acquire and save the optical transceiver details in the fielded.

  - Measurement results and data are saved in one PDF file for easy results reporting and archiving.

■ xCVR Quick Check Workflow
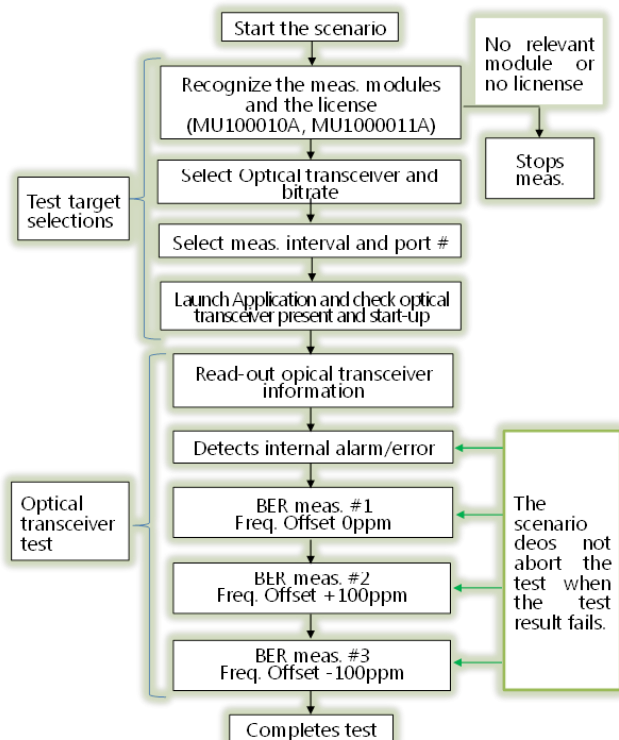
■ SEEK Scenario Execution and Registration

By registering a SEEK scenario into the MT1000A, many tests can be executed with a single operation. Please refer to section 4.2.1 Registering Scenario in the SEEK Operation Manual for details on how to register the scenario.

■ Measurements and Diagnostic Contents

The following applications are activated for measurement of the optical transceiver at the required bit rate, selected by the scenario and executed via the screen.

Target Optical Transceiver	Application	Required Option License	
		MU100011A	MU100010A
CFP4 QSFP28	NoFrame (20Lane BER, PRBS31)	-015 -055	N/A
QSFP+	NoFrame (4Lane BER, PRBS31)	-013 -053	N/A
SFP28	NoFrame (PRBS31)	-017	N/A
SFP+	ETH-BERT (Unframed, PRBS23) OTN-BERT (OTU2-PRBS, PRBS31)	-001 or -003	(ETH) -011 or -012 (OTN) -051 or -052

Data in the internal registers of the following optical transceivers are read and saved as the optical transceiver operation status. These data are not the target for PASS/FAIL evaluation.

	SFP+ /SFP28	QSFP+ /QSFP28	CFP4
Wavelength	✓	✓	✓
Bit rate	✓	✓	✓
Compliance	✓	✓	✓
Vendor name	✓	✓	✓
Status	✓	✓	✓
Part number	✓	✓	✓
Revision	✓	✓	✓
Serial number	✓	✓	✓
Production date	✓	✓	✓
Lot code	✓	✓	✓
Tx Power	✓	✓ Total/Lane	✓ Total/Lane
Rx Power	✓	✓ Total/Lane	✓ Total/Lane
Temperature	✓	✓	✓
Vcc	✓	✓	✓

PASS / FAIL alarms are indicated based on the following test decision.

PASS/FAIL Evaluation Test Contents		PASS Criteria
Global/Programmable alarm (CFP4)		No Alarm status
Fault/Alarm/Warning/Status		No Fault, Alarm, Warning status and no abnormal status
BER	Freq. Offset 0 ppm	No bit error during BER test.
	Freq. Offset +100 ppm	
	Freq. Offset –100 ppm	

Details of the Fault/Alarm/Warning/Status evaluation items are listed below. The data in the internal registers of the optical transceiver are read and the evaluation result is PASS if there are no Fault, Alarm, and Warning status conditions as well as no abnormal status condition.

Test Target Optical Transceiver	Measurement
CFP4	Bias level
	Tx optical power
	Laser Temp alarm/warning
	Rx optical power
	TEC fault
	Wavelength unlocked fault
	APD power supply fault
	TX_LOSF (Loss of Signal Func.)
	TX_LOL (Loss of Lock)
	RX_LOS (Loss of Signal)
	RX_LOL (Loss of Lock)
	RX_FIFO error
QSFP+ /QSFP28 SFP+ /SFP28	Temp alarm/warning
	Vcc alarm/warning
	Rx optical power alarm/warning
	Tx Bias level alarm/warning
	Tx optical power alarm/warning

In addition, the standard measurement times (total scenario execution time) are as follows.

| Estimated Error Rate	QSFP28 /CFP4	QSFP+	SFP28	SFP+
	100G	40G	25G	10G
0.0e-12	2 min	3 min	4 min	7 min
0.0e-13	7 min	17 min	22 min	52 min
0.0e-14	52 min	-	-	-

■ Results Display and Created Report Files

During measurement, the measurement items, results, and progress over time are displayed as a log on the MT1000A screen.
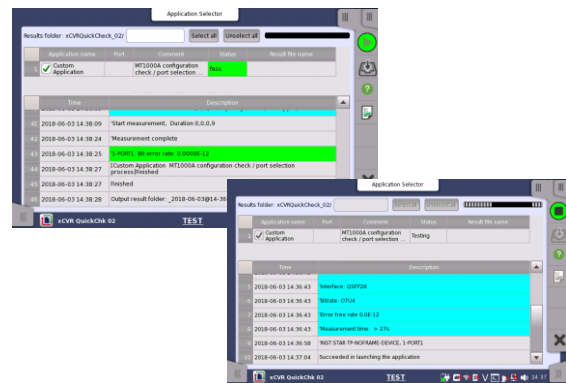
On completion of the measurement, the PASS/FAIL evaluation result is displayed on the screen and a report files are created automatically.

- The folder to save the report files :
  Files are automatically generated in the specified folder during scenario execution, the file name includes the execution date and PASS / FAIL result.
- Also possible to use USB memory as a save location.
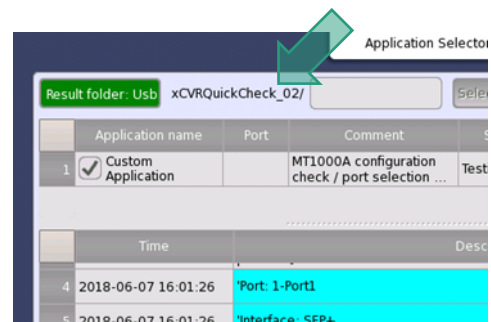
-        Types of generated report files

Type	File Name
Scenario execution results summary	Summary_.pdf
Measurement results (can be accessed using MT1000A and dedicated software)	OTN_BERT_xxx.res ETH_BERT_xxx.res
Other SEEK debugging files	**.txt **.obres

The total size of all files created by executing the scenario one time varies with the measurement time and number of ports.
Approximate Reference Size:
    min 120 kB @ 100G 0.0e-12
    max 1 MB @ 10G 2-port simultaneous   0.0e-13

■ MX100003A Scenario Edit Environment Kit

Viewing and editing the xCVR Quick Check sequence and programing is available, allowing full customization, by downloading the PC SW and opening the (xCVRQuickCheck_xx.obcfg) file.
The software is freely available from website.
https://www.anritsu.com/en-AU/test-measurement/support/downloads?model=MT1000A