Anritsu Advancing beyond

Optical Transceiver (XCVR) Quick Check SEEK Scenario

Network Master Pro MT1000A/MT1040A

1. Introduction

This document explains use of scenario (xCVRQuickCheck.obcfg) for the optical transceiver (XCVR) simple check using the Network Master Pro MT1000A/MT1040A. The scenario functions are described in Section 2. The scenario is created by the SEEK (Scenario Edit Environment Kit) MX100003A. After unzip the downloaded file, whose name is xcrv_xx.zip, users can find a scenario file of xCVRQuickCheck.obcfg in the folder named as MT1000A and MT1040A.

MT1000A MT1040A

2. What is XCVR Quick Check Scenario?

XCVR Quick Check Scenario (XCVR Quick Check hereafter) is a tool for executing standalone diagnostics of XCVRs, such as the QSFP-DD, QSFP28, SFP28, etc., using the MT1000A/MT1040A. Executing this scenario fully automates all measurement, evaluation, and report output processes as one sequence.

The key measurement items are:

- Bit error measurements using optical-fiber loopback
- Read-out and confirmation of status of XCVR internal registers
- Measurement of FEC correction margin (400G only).

XCVR Quick Check helps minimize procedures by providing a function for confirming the XCVR functions and can play a role in confirming pre-deployment operation as well as in troubleshooting.

3. Applications

The scenario applications listed below.

► Confirming correct operation before installing XCVR.
XCVR data and diagnostics results can be collected and saved automatically.
The result file and integrated report are output as a pdf file.

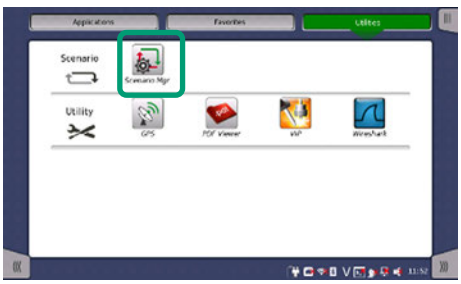
► Easy first-stage diagnostics at network fault troubleshooting.
Isolating faults using an easy XCVR test facilitates quick countermeasures, such as swapping-out the XCVR or optical cable, changing the network equipment insertion slot, etc.

4. Features

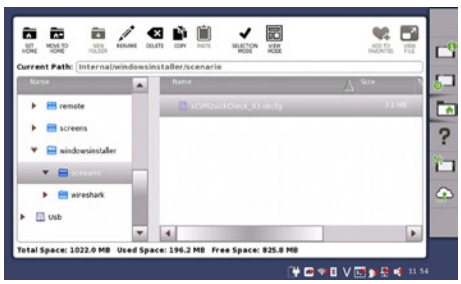
► Minimizes workloads by fully automatic settings, data collection, measurement, evaluation, and report output.
► Supports QSFP-DD, OSFP, QSFP28, CFP4, QSFP+, SFP28, SFP+ diagnostics
► Supports Ethernet (400G, 100G, 40G, 25G, 10G), and OTN (OTU4, OTU3, OTU2) bit rates
► Supports battery-powered MT1000A/MT1040A troubleshooting XCVR anywhere
► Saves diagnostics results file directly to external memory

5. Scenario Registration

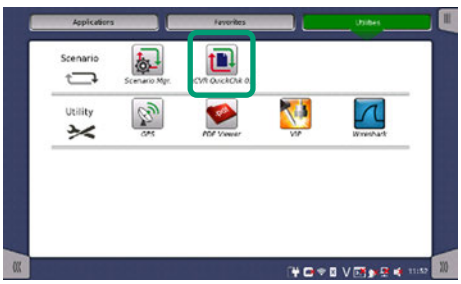
1. After unzipping the downloaded file, copy the file named *xCVRQuickCheck.obcfg* to a USB memory stick and insert the stick into the MT1000A/MT1040A.
2. Start *Scenario.Mgr* by touching the  icon on the MT1000A/MT1040A Utilities screen.
3. Select the scenario to register from the  symbol at the top right of the screen.



Starting Scenario.Mgr



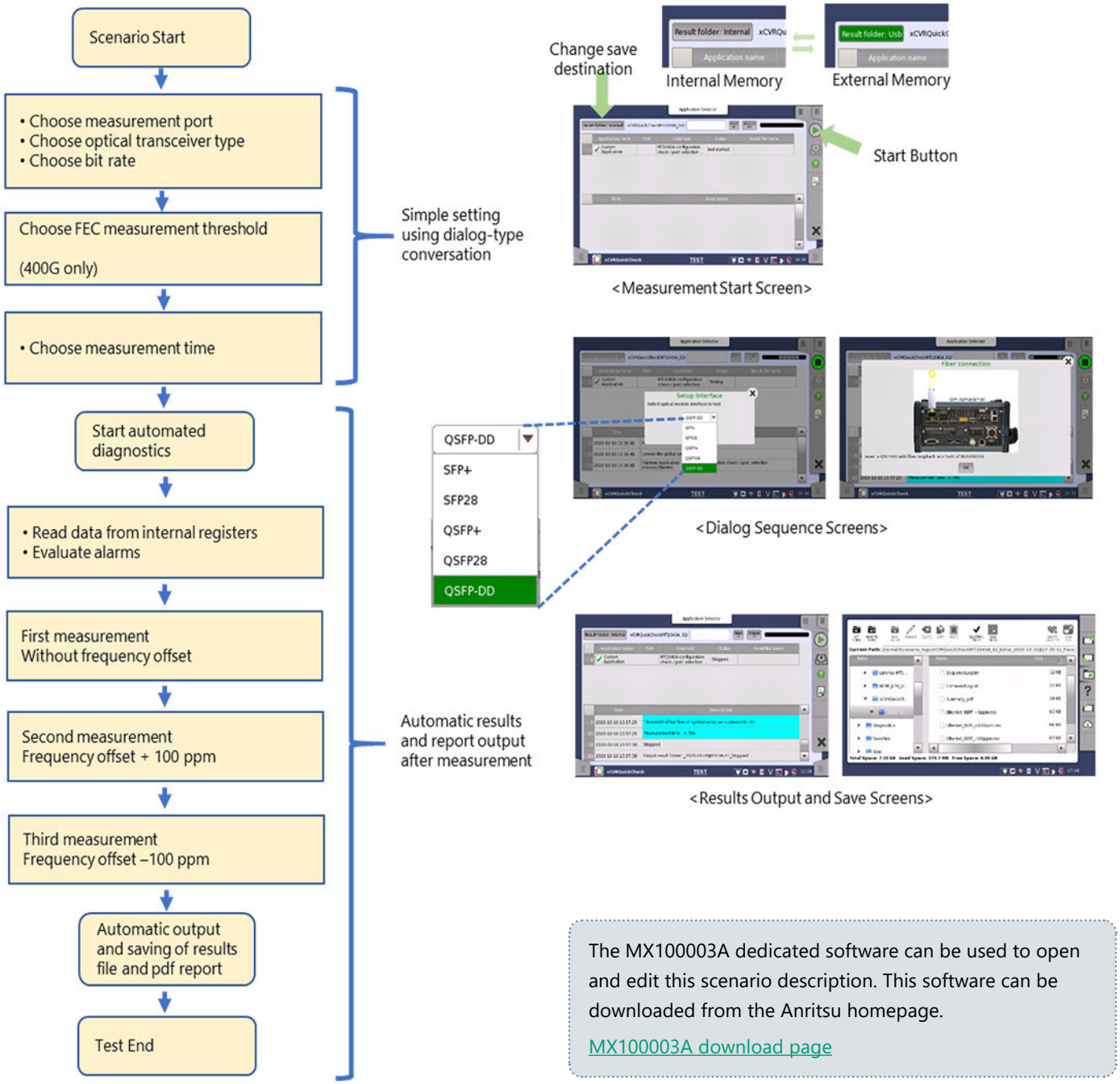
Selecting Scenario



Registering Scenario

6. Scenario Execution

The test screen is displayed by touching the scenario icon. Then, touching the start button  at the screen top-right executes the scenario automatically according to the following sequence. The type of optical module to be measured, measurement port, and measurement conditions, etc., can be changed easily by following the dialog-type conversation. In addition, connection mistakes are prevented by the explanation of measurement ports shown in the measurement diagram on the screen.



The MX100003A dedicated software can be used to open and edit this scenario description. This software can be downloaded from the Anritsu homepage.

MX100003A download page

7. Pass/Fail Conditions

Pass/Fail conditions are shown in the below table.

<table>
<tr><th colspan="2">Test Contents</th><th>Pass/Fail Conditions</th></tr>
<tr><td colspan="2">Internal Registers</td><td>♦ The following registers must be read normally.
Wavelength, Bit rate, Compliance, Vendor name, Status, Part number, Revision, Serial number, Production date, Lot code, Tx Power, Rx Power, Temperature, Vcc
♦ The following registers must not have a Fault/Alarm/Warning status.
◊ QSFP-DD, OSFP
L-Vcc3.3v, L-Temp, L-Tx1~8 Power, L-Rx1~8 Power
◊ 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
◊ QSFP28, QSFP+, SFP28, SFP+
Temp alarm/warning, Vcc alarm/warning, Rx optical power alarm/warning, Tx Bias level alarm/warning, Tx optical power alarm/warning</td></tr>
<tr><td colspan="2">Global/Programmable Alarm (CFP4 only)</td><td>There must be no Alarm status.</td></tr>
<tr><td rowspan="3">Error Measurement</td><td>Freq. Offset 0 ppm</td><td rowspan="3">► No bit errors during measurement period
► FEC measurement results must be less than the threshold values (400G only)
<Threshold defaults>
- Max. Symbol Error count per codeword: 10
- Symbol Error rate: 1.0E–04</td></tr>
<tr><td>Freq. Offset +100 ppm</td></tr>
<tr><td>Freq. Offset –100 ppm</td></tr>
</table>

8. Measurement Time

The scenario automated test measurement times are listed in the following table.

Presumed Error Rate	QSFP-DD OSFP	QSFP28/CFP4	QSFP+	SFP28	SFP+
1.0e–12	3 minutes	3 minutes	3 minutes	4 minutes	7 minutes
1.0e–13	5 minutes	7 minutes	17 minutes	22 minutes	52 minutes
1.0e–14	15 minutes	52 minutes	—	—	—

9. Output Files

The MT1000A/MT1040A generates and saves the files listed below automatically after completing measurement. Users can save output files to either internal or external memory.

Type	File Name
Measurement Results Reports	Summary_******.pdf
Measurement Results (can be viewed using MT1000A/MT1040A and dedicated software)	******.res
Scenario debugging file (not used usually)	**.txt and **.obres

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Specifications are subject to change without notice.

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