

No. 10010221-OPE/INC 15-2736

**Issued to:**

ABB Oy  
Medium Voltage Products  
Muottitie 2  
FI-65101 Vaasa  
Finland

**For the server product:**

REF611 Feeder Protection and Control Relay  
Product version: 2.0  
Software version: 2.0  
Hardware version: G

The server product has not been shown to be non-conforming to:

## IEC 61850 First Edition Parts 6, 7-1, 7-2, 7-3, 7-4 and 8-1

Communication networks and systems in substations

The conformance test has been performed according to IEC 61850-10, the UCA International Users Group Server Device Test Procedures version 2.3 with TPCL<sup>2</sup> version 1.8, the product's protocol, model and technical issue implementation conformance statements: "Protocol Implementation Conformance Statement for the IEC 61850 interface in 611 Series, revision B", "IEC 61850 ED1 Model Implementation Conformance Statement (MICS) for 611 SERIES, revision B" and "TISSUES Implementation Conformance Statement for the IEC61850 interface in 611 series, revision B" and the extra information for testing: "Protocol Implementation extra Information for Testing (PIXIT) for the IEC 61850 interface in 611 series, revision B".

The following IEC 61850 conformance blocks have been tested with a positive result (number of relevant and executed test cases / total number of test cases):

1 Basic Exchange (20/24)	9a GOOSE Publish (11/12)
2 Data Sets (3/6)	9b GOOSE Subscribe (11/11)
4 Setting Group Selection (3/3)	12a Direct Control (7/12)
4+ Setting Group Definition (7/7)	12d Enhanced SBO Control (12/19)
5 Unbuffered Reporting (17/19)	13 Time Synchronization (4/5)
6 Buffered Reporting (25/28)	14 File Transfer (6/7)

This certificate includes a summary of the test results as carried out at ABB in Vaasa, Finland with UniCA 61850 Client simulator 4.29.03 with test suite Ed1 3.29.01 and Unigrid SA 1.0.238 with test suite 1.0.0 and UniCA 61850 Analyzer 5.29.02. This document has been issued for information purposes only, and the original paper copy of the DNV GL verification report No. 10010221-OPE/INC 15-2735 will prevail.

The test has been carried out on one single specimen of the product as referred above and submitted to DNV GL by ABB. The manufacturer's production process has not been assessed. This certificate does not imply that DNV GL has approved any product other than the specimen tested.

Arnhem, November 9, 2015



**M. Adriaensen**  
Head of Department  
Operational Excellence

**Issued by:**



DNV KEMA is now DNV GL



**R. Schimmel**  
Verification Manager

<sup>1</sup> Level A - Independent test lab with certified ISO 9001 Quality System

<sup>2</sup> TPCL - Test procedures change list

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Applicable Test Procedures from the UCA International Users Group Server Device Test Procedures version 2.3 with TPCL 1.8

Conformance Block	Mandatory	Conditional
1: Basic Exchange	Ass1, Ass2, Ass3, AssN2, AssN4, AssN5 Srv1, Srv2, Srv3, Srv4, Srv5, SrvN1abcd, SrvN4	AssN3, Srv6, Srv7, Srv8, SrvN1e, SrvN1f, SrvN3
2: Data Sets	Dset1, Dset10a, DsetN1ae	
4: Setting Group Selection	Sg1, SgN1a, Sg3	
4+: Setting Group Definition	Sg2, Sg4, SgN1b, SgN2, SgN3, SgN4, SgN5	
5: Unbuffered Reporting	Rp1, Rp2, Rp3, Rp4, Rp9, Rp15, RpN1, RpN2, RpN3, RpN4, RpN8	Rp5, Rp8, Rp10, Rp11, Rp12, RpN5
6: Buffered Reporting	Br1, Br2, Br3, Br4, Br9, Br14, Br15, Br20, Br21, Br22, Br25, Br26, Br27, Br28, BrN1, BrN2, BrN3, BrN4, BrN5, BrN8	Br5, Br8, Br10, Br11, Br12
9a: GOOSE Publish	Gop2, Gop3, Gop4, Gop9, Gop10a	Gop1, Gop5, Gop6, Gop7, Gop10b, GopN1
9b: GOOSE Subscribe	Gos1a, Gos2, Gos3, GosN1, GosN2, GosN3, GosN4, GosN5, GosN6	Gos1b, Gos4
12a: Direct Control	CtlN3, CtlN8, DOns1	Ctl2, CtlN10, CtlN11, DOns3
12d: Enhanced SBO Control	Ctl3, CtlN1, CtlN2, CtlN3, CtlN4, CtlN9, SBOes1, SBOes2, SBOes3	Ctl2, CtlN10, CtlN11
13: Time Sync	Tm1, Tm2	Tm3, TmN1
14: File Transfer	Ft1, Ft2ab, Ft4, FtN1ab	Ft2c, FtN1c

All configuration file and data model tests have been successfully performed for the product variants using the same communication hardware and software version:

- REB611 Busbar Protection and Control Relay
- REM611 Motor Protection and Control Relay
- REU611 Voltage Protection and Control Relay