

No. 10080108-INC 18-2666

**Issued to:**

ABB AB  
GA Products  
S-721 59 Västerås  
Sweden

**For the server product:**

REC670 Bay Control  
Software version: 2.2.3.10  
S/N: REC670 2.2.0.27

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

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

Communication networks and systems for power utility automation

The conformance test has been performed according to IEC 61850-10 Edition 2, the UCA International Users Group Edition 2 Server Test Procedures version 1.0 with TPCL<sup>2</sup> 1.2.4 with product's protocol, model and technical issue implementation conformance statements: "Protocol Implementation Conformance Statement for the IEC 61850 Edition 2 interface in ABB 670 Series version 2.2.2, 1MRG031401", "Model Implementation Conformance Statement for the IEC 61850 Ed2 interface in ABB 670 series version 2.2.2, 1MRG031515" and "TISSUES Implementation Conformance Statement for the IEC 61850 Edition 2 interface in ABB 670 Series version 2.2.2, 1MRG031409" and the extra information for testing: "Protocol Implementation eXtra Information for Testing (PIXIT) for the IEC 61850 Edition 2 interface in ABB 670 Series version 2.2.2, 1MRG031403".

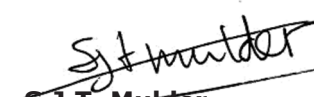
The following IEC 61850 conformance blocks have been tested with a positive result (number of relevant and executed test cases / total number of test cases):

1 Basic Exchange (23/26)	9a GOOSE Publish (9/13)
2 Data Sets (4/7)	9b GOOSE Subscribe (13/14)
3 Substitution (3/3)	12a Direct Control (12/18)
4 Setting Group Selection (4/4)	12d Enhanced SBO Control (19/28)
4+ Setting Group Definition (12/13)	13 Time Synchronization (6/7)
5 Unbuffered Reporting (18/21)	14 File Transfer (7/8)
6 Buffered Reporting (26/30)	15 Service Tracking (11/17)

This certificate includes a summary of the test results as carried out at ABB in Sweden with UniGrid SA 1.4.397 with test suite Ed2 1.0.55 and UniCA 61850 Analyzer 5.34.01. This document has been issued for information purposes only, and the archived DNV GL verification report No. 10080180-OPE/INC 18-2665 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, June 19, 2018



**S.J.T. Mulder**  
Business Leader  
Interoperability of Smart Power  
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**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 Edition 2 Server Test Procedures version 1.0 with TPCL 1.2.4

Conformance Block	Mandatory	Conditional
1: Basic Exchange	sAss1, sAss2, sAss3, sAssN2, sAssN3, sAssN4, sAssN5, sSrv1, sSrv2, sSrv3, sSrv4, sSrv5, sSrvN1abcd, sSrvN4	sAssN6, sSrv6, sSrv8, sSrv11, sSrv12, sSrv13, sSrvN1e, sSrvN1f, sSrvN3
2: Data Sets	sDs1, sDs10a, sDsN1ae	sDs15
3: Substitution	sSub1, sSub2, sSub3	
4: Setting Group Selection	sSg1, sSg3, sSgN1	sSg11
4+: Setting Group definition	sSg2, sSg4, sSg7, sSg8, sSg10, sSg12, sSgN2, sSgN3, sSgN4, sSgN5	sSg5, sSg9
5: Unbuffered Reporting	sRp1, sRp2, sRp3, sRp4, sRp5, sRp9, sRp14, sRp15, sRpN1, sRpN2, sRpN3, sRpN4, sRpN8	sRp8, sRp10, sRp11, sRp12, sRp13
6: Buffered Reporting	sBr1, sBr2, sBr3, sBr4, sBr5, sBr9, sBr14, sBr15, sBr20, sBr21, sBr22, sBr25, sBr26, sBr27, sBr28, sBrN1, sBrN2, sBrN3, sBrN4, sBrN5, sBrN8	sBr8, sBr10, sBr11, sBr12, sBr13
9a: GOOSE Publish	sGop2a, sGop3, sGop4, sGop9, sGop10, sGop11	sGop1, sGop7, sGopN2
9b: GOOSE Subscribe	sGos1, sGos2, sGos3, sGos5, sGos6a, sGos7, sGosN1, sGosN2, sGosN3, sGosN4, sGosN5, sGosN6	sGos6b
12a: Direct Control	sCtl5, sCtl10, sDOns1, sDOns2	sCtl7, sCtl13, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl21
12d: Enhanced SBO control	sCtl5, sCtl8, sCtl9, sCtl10, sCtl11, sCtl25, sSBOes1, sSBOes2, sSBOes6, sSBOes8	sCtl4, sCtl6, sCtl7, sCtl15, sCtl16, sCtl17, sCtl18, sCtl19, sCtl26
13: Time Sync	sTm1, sTm2, sTmN1	sTm3, sTm4, sTm5
14: File transfer	sFt1, sFt2ab, sFt4, sFt5, sFtN1ab	sFt2c, sFtN1c
15: Service tracking		sTrk1, sTrk2, sTrk4, sTrk7, sTrk8, sTrk9, sTrk10, sTrk11, sTrk13, sTrk14, sTrk17

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

- REB670 Busbar protection
- RED670 Line differential protection
- REG670 Generator protection
- REL670 Line distance protection
- RER670 Railway application
- RES670 Phasor Measurement unit
- RET670 Transformer protection