

IEC 61850 Certificate Level B¹

Issued to:
ABB AB
SA Products
S_721 59 Västerås, Sweden

For the product:
REC650 Bay Control
Firmware Version: 2.1
Ordering Nr. 1MRK008514-BF
Serial Number: T1611053

Issued by: ABB Switzerland Ltd, Power Systems, SVC Baden

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

IEC 61850-5 Edition 2 Performance class P1(3ms)


The performance test has been performed according to the UCA International Users Group GOOSE performance Test Procedures version 2.5 with product's protocol implementation conformance statements: "1MRG021052, ABB 650 & 670 series version 2.1 Ed2 - PICS", and product's extra information for testing: "1MRG021053, ABB 650 & 670 series version 2.1 Ed2 - PIXIT".

The test has been carried out on one single specimen of the product as referred above and submitted to SVC Baden by ABB AB, SA Products. The manufacturer's production process has not been assessed. This certificate does not imply that SVC Baden has certified or approved any product other than the specimen tested.

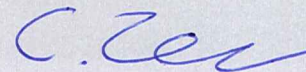
This Certificate summarizes test results as carried out at SVC in Switzerland with *Omicron Test Universe V3.01* and *Nethunter V2.2.33*. This document has been issued for information purposes only, and the original paper copy of the test report: No."1KHL050092_IEC61850ConformanceTestProcedures_Goperfed2_Rev2.5_ABB REC650 2.1" will prevail.

The GOOSE performance has been measured with Boolean and Double Point information's.

Baden 2016-05-06



S. Gerspach
Responsible Test Manager



C. Zehnder
Responsible Test Engineer

¹ ISO 9000 certified test lab, allowed to issue UCA® level B

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GOOSE Performance Measured Results:

Performance class = P1 (3ms)

Goose Performance Benchmark summary results (compensated for scan cycle delays if any)

Test ID	Large dataset	Correlated subscribed	Back-ground	Minimum Transfer time [ms]	Maximum Transfer time [ms]	Average Transfer time [ms]
Gpf1	-	-	-	0.59	0.60	0.49
Gpf2	X	-	-	0.79	0.80	0.60
Gpf3	-	X	-	0.79	2.20	0.48
Gpf4	X	X		0.79	1.60	0.52
Gpf5	-	-	X	0.69	0.70	0.54
Gpf6	X	-	X	0.79	0.90	0.60
Gpf7	-	X	X	0.69	1.80	0.48
Gpf8	X	X	X	0.79	0.70	0.55