

ENERGINET

Energinet
Tonne Kjærvej 65
DK-7000 Fredericia

+45 70 10 22 44
info@energinet.dk
VAT no. 28 98 06 71

Date:
10 October 2017

Author:
JMI/MDA

TEST MANUAL AND CONDITIONS - RESERVES

TEST OF REGULATING POWER INSTALLATIONS

Installation:

Tested by / date:



Identification	
1	<i>GSRN no./installation name:</i>
2	<i>Balance-responsible party for production:</i>
3	<i>Contact person for installation:</i>

Ancillary service	
4	<input type="checkbox"/> FFR <input type="checkbox"/> FCR <input type="checkbox"/> FCR-N <input type="checkbox"/> FCR-D <input type="checkbox"/> mFRR <input type="checkbox"/> aFRR

Unit data		
5	U_N	
	I_N	
	P_N	
	P_{MIN}	
	P_{MAX}	
	P_{BID}	

Specification of grid connection	
6	Voltage level in point of connection:
7	Any limitations in point of connection: <input type="checkbox"/> No <input type="checkbox"/> Yes

General functional requirements.	
8	<p>General functional requirements for the different reserve types are available prequalification document for reserves, respectively:</p> <p>Specification of requirements and test of FFR Specification of requirements and test of FCR Specification of requirements and test of FCR-D Specification of requirements and test of FCR-N Specification of requirements and test of aFRR Specification of requirements and test of mFRR</p>

Regulation	
10	<input type="checkbox"/> Telecontrol from transmission system operator via the balance-responsible party <input type="checkbox"/> Telecontrol from balance-responsible party

Test	
11	<p>Test conditions</p> <p>All expenses relating to testing/performance testing will be borne by the supplier.</p> <p>A test is approved when the installation has completed the test sequences required for the specific reserve type flawlessly and with constant stable parameters, such as voltage, power, temperature and pressure etc.</p> <p>If errors occur during a test, the test must be stopped. If the error was caused by a defective component and the component can be immediately identified and replaced, an agreement may be made to redo the test. If an error occurs during retesting, the test must be stopped.</p> <p>If the error was a result of fault(s) in the installation's control and regulation system, a new test date is set, when a description of subsequent additions/changes to the regulation system is available.</p> <p>A new test date is set when it has been documented that the installation has undergone a new internal test.</p>
12	<p>Preparing for the test</p> <ol style="list-style-type: none"> a. The installation must be synchronised with the grid. b. The installation must be set up to run the reserve and status indications must be transferable to Energinet. c. The installation must be prepared for the application of a test signal as a supplement to the locally measured frequency in 5 mHz increments. Changes to the frequency set-point value must be made at a speed of minimum 100 mHz/s (only relevant for FCR services). d. Maximum possible reserve power must be set at the installation. e. It must be possible to log power control, frequency deviations and power schedule data and save this locally.
13	<p>Test sequence</p> <p>Specific test sequences for the different reserve types are available prequalification document for reserves, respectively:</p> <p>Specification of requirements and test of FFR Specification of requirements and test of FCR Specification of requirements and test of FCR-D Specification of requirements and test of FCR-N Specification of requirements and test of aFRR Specification of requirements and test of mFRR</p>

Test results	
14	<p>Data logged</p> <p>The following parameters must be logged during the test:</p> <ul style="list-style-type: none">• Online measurements of active power.• Additional frequency signal is applied (only FCR services).• Power schedule (only FRR services).
15	<p>Result format</p> <p>Test results must be formatted as either;</p> <ul style="list-style-type: none">• CSV files• Excel files• SCADA print* or• Other formats may be agreed. <p>*Only accepted if resolution and time scaling is of a quality that makes verification of the technical requirements for the ancillary service possible.</p>

Comments on the test	
16	