

**ENSAYOS PARA LA VERIFICACIÓN DE INVERSOR FV DE
ACUERDO CON:
UNE 217001:2015 IN : “REQUISITOS Y ENSAYOS PARA SISTEMAS
QUE EVITEN EL VERTIDO DE ENERGÍA A LA RED DE
DISTRIBUCIÓN”
ANEXO I DEL ITC-BT-40: “SISTEMAS PARA EVITAR EL VERTIDO DE
ENERGÍA A LA RED”, (RD 244/2019)**

Procedure: PE.T-LE-62

Report Number : 2220/0343
Type..... : Hybrid Inverter
Trade mark : 
Tested Model..... : HYD 5KTL-3PH, HYD 6KTL-3PH,
HYD 8KTL-3PH, HYD 10KTL-3PH,
HYD 15KTL-3PH (*), HYD 20KTL-3PH;

(*) All models have been tested only according to point 4.1 to evaluate the behavior except model HYD 15KTL-3PH which has been fully tested according all points of the standard.

APPLICANT

Name : SGS Tecnos, S.A. (Certification Body)
Address : C/ Trespaderne, 29 - Edificio Barajas 1
28042 MADRID (España)
Hired by : Shenzhen SOFAR SOLAR Co., Ltd.
Address : 401, Building 4, AnTongDa Industrial Park, District 68,
XingDong Community, XinAn Street, BaoAn District, Shenzhen
City, Guangdong Province, P.R. China

TEST LABORATORY

Name : SGS Tecnos, S.A. (Laboratorio de Ensayos)
Address : C/ Trespaderne, 29 - Edificio Barajas 1
28042 MADRID (España)

Conducted (tested) by : Roger Hu
(Project Engineer)



Approved by : Jacobo Tevar
(Technical Reviewer)

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Test Report Historical Revision:

Test Report Version	Date	Resume
2220/0343	29/10/2020	First issuance

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1 SCOPE

SGS Tecnos, S.A. (Electrical Testing Laboratory) has been contracted by SGS Tecnos, S.A. (Certification body), in order to perform the testing according the following standard:

- UNE 217001 IN with title “Requerimiento y ensayos para sistemas que eviten el vertido de energía a la red de distribución” dated October 2015 and,
- Anexo I de la ITC-BT-40: “Sistemas para evitar el vertido de energía a la red” modified according to RD 244/2019.

2 GENERAL INFORMATION

2.1 TESTING PERIOD AND CLIMATIC CONDITIONS

The necessary testing has been performed along between 30th July and 28th September of 2020

All the tests and checks have been performed in accordance with the reference Standard (the tests are done at ≈ 25 °C).

SITE TEST

Name: Shenzhen SOFAR SOLAR Co., Ltd.
 Address: 401, Building 4, AnTongDa Industrial Park, District 68, XingDong Community, XinAn Street, BaoAn District, Shenzhen City, Guangdong Province, P.R. China

2.2 EQUIPMENT UNDER TEST

Apparatus type/ Installation.....: Hybrid Inverter / Fixed (permanent connection)
 Manufacturer/ Supplier/ Installer.....: Shenzhen SOFAR SOLAR Co., Ltd.
 Trade mark.....:



Model/ Type: HYD 5KTL-3PH, HYD 6KTL-3PH, HYD 8KTL-3PH, HYD 10KTL-3PH, HYD 15KTL-3PH, HYD 20KTL-3PH;

Serial Number-1: With Electricity meter: Acrel / ACR10R-D24TE4 or CHINT / DTSU666
 SP1ES015L86139
 (Configured for models: HYD 10KTL-3PH, HYD 15KTL-3PH, HYD 20KTL-3PH, the Equipment parameters are changed by software)

Serial Number-2.....: SP1ES008L86133
 (Configured for models: HYD 5KTL-3PH, HYD 6KTL-3PH, HYD 8KTL-3PH, the Equipment parameters are changed by software)










Software Version.....: V2.00
 Control element for self-consumption.....: Internal (integrated in the SW of the PV inverter)
 Nominal characteristics of the inverter: Refer to page 8 and 9

Date of manufacture: 2020

Particularities of the elements tested

Input: PV, AC and Batteries
 Output: 3~N/PE
 Electrical hazard protection class: Class I
 Degree of protection against moisture: IP 65
 Type of connection to the main source: Three phase - Fixed installation
 Cooling group: Fans:(Model HYD 20KTL-3PH, HYD 15KTL-3PH, HYD 10KTL-3PH);
 Heatsink:(Model HYD 8KTL-3PH, HYD 6KTL-3PH, HYD 5KTL-3PH)
 Internal Transformer: No
 Modular: No

Copy of marking plate(representative):

SOFAR SOLAR	
Hybrid Inverter	
Model No:	HYD 15KTL-3PH
Max.DC Voltage	1000V
MPPT Voltage Range	180-960V
Max. Input Current	25/25A
Max.PV Isc	30/30A
Battery Type	Li-Ion
Battery Voltage Range	180-800V
Battery Max. Charging Current	25/25A
Battery Max. Discharging Current	25/25A
Nominal Grid/Back-up Voltage	3/N/PE, 380/400V
Nominal Grid/Back-up Frequency	50/60Hz
Max. Current Output to Grid	24A
Max. Power Output to Grid	16500VA
Max. Current from Grid	44A
Max. Power from Grid	30000VA
Back-up Max. Output Current	24A
Back-up Max. Output Power	16500VA
Power Factor	1 (adjustable +/-0.8)
Operating Temperature Range	-30~+60°C
Ingress Protection	IP65
Protective Class	Class I
Inverter Topology	Non-isolated
Overvoltage Category	AC III, DC II
Manufacturer : Shenzhen SOFAR SOLAR Co.,Ltd.	
Address : 401, Building 4, AnTongDa Industrial Park,	
District 68, XingDong Community, XinAn Street,	
BaoAn District, Shenzhen, China	
SAA	VDE0126-1-1, VDE-AR-N4105
G98, G99, EN50438, AS4777, UTE C15-712-1	
	
	
	
	

Note:

1. The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
2. Label is attached on the side surface of enclosure and visible after installation
3. Labels of other models are as the same with **HYD 15KTL-3PH**'s except the parameters of rating.

Tested model:

- HYD 5KTL-3PH (*)
- HYD 6KTL-3PH (*)
- HYD 8KTL-3PH (*)
- HYD 10KTL-3PH (*)
- HYD 15KTL-3PH
- HYD 20KTL-3PH (*)

(*) marked models have been tested only according to point 4.1 to evaluate the behavior. Model HYD 15KTL-3PH has been fully tested according all points of the standard.

- The self-consumption kit has been verified in accordance with the procedures and limits established by the reference standard.
- The results obtained apply only to the particular sample tested that is the subject of the present test report. The most unfavorable result values of the verifications and tests performed are contained herein.

The variants models have been included in this test report without tests because the following features don't change regarding to the tested model:

- Same topology of power stages.
- Same class of insulation (low frequency transformer, high frequency transformer or transformerless).
- Same AC connection regime (single-phase or three-phase).
- Nominal alternating current + 50% and –80% with respect to the generator type tested.
- Same control algorithms referring to each of the requirements contemplated in this document.
- The groupings of several power stages (modular systems) will be considered valid, without the need to repeat tests.

The parameter of each model as following:

Model	HYD 5KTL-3PH	HYD 6KTL-3PH	HYD 8KTL-3PH
PV String Input Data			
Recommended Max.PV power	7.5KW	9KW	12KW
Max. DC voltage	1000V		
Start-up operating voltage	200V		
MPPT voltage range	180V~960V		
Full power MPPT voltage range	250V~850V	320V~850V	360V~850V
Nominal DC voltage	600V		
No. of MPP trackers	2		
No. of strings per MPP tracker	1	1	1
Max. input current	12.5A/12.5A	12.5A/12.5A	12.5A/12.5A
Max. short current	15A/15A	15A/15A	15A/15A
Battery Input Data			
No. of battery input	1	1	1
Battery voltage range	180V~800V		
Battery voltage range for full load	200V~800V	240V~800V	320V~800V
Nominal charging/discharging power	5000W	6000W	8000W
Max. charging/discharging current	25A	25A	25A
AC Output Data (On-grid)			
Nominal grid voltage	3/N/PE, 230/400Vac		
Nominal grid frequency	50Hz		
Nominal AC power	5KW	6KW	8KW
Max. AC power output to utility grid	5.5KVA	6.6KVA	8.8KVA
Max. AC power from utility grid	10KVA	12KVA	16KVA
Max. AC current output to utility grid	8A	10A	13A
Rated. AC current output to utility grid	7.2A	8.7A	11.6A
Max. AC Current from utility grid	15A	17A	24A
Output power factor	~1(0.8 leading to 0.8 lagging)		
AC Output Data (Back-up)			
Nominal grid voltage	3/N/PE, 230/400Vac		
Nominal grid frequency	50Hz		
Nominal output power	5KW	6KW	8KW
Max. output power	5.5KVA	6.6KVA	8.8KVA
Max. output current	8A	10A	13A
Output power factor	~1(0.8 leading to 0.8 lagging)		
Feature			
Operating temperature range	-30°C~60°C		
Protection degree	IP65		
Protective class	Class I		
Cooling method	Heat sink		

Model	HYD 10KTL-3PH	HYD 15KTL-3PH	HYD 20KTL-3PH
PV String Input Data			
Recommended Max.PV power	15KW	22.5KW	30KW
Max. DC voltage	1000V		
Start-up operating voltage	200V		
MPPT voltage range	180V~960V		
Full power MPPT voltage range	220V~850V	350V~850V	450V~850V
Nominal DC voltage	600V		
No. of MPP trackers	2		
No. of strings per MPP tracker	2	2	2
Max. input current	25A/25A	25A/25A	25A/25A
Max. short current	30A/30A	30A/30A	30A/30A
Battery Input Data			
No. of battery input	2	2	2
Battery voltage range	180V~800V		
Battery voltage range for full load	200V~800V	300V~800V	400V~800V
Nominal charging/discharging power	10000W	15000W	20000W
Max. charging/discharging current	50A(25A/25A)	50A(25A/25A)	50A(25A/25A)
AC Output Data (On-grid)			
Nominal grid voltage	3/N/PE, 230/400Vac		
Nominal grid frequency	50Hz		
Nominal AC power	10KW	15KW	20KW
Max. AC power output to utility grid	11KVA	16.5KVA	22KVA
Max. AC power from utility grid	20KVA	30KVA	40KVA
Max. AC current output to utility grid	16A	24A	32A
Rated. AC current output to utility grid	14.5A	21.7A	29A
Max. AC Current from utility grid	29A	44A	58A
Output power factor	~1(0.8 leading to 0.8 lagging)		
AC Output Data (Back-up)			
Nominal grid voltage	3/N/PE, 230/400Vac		
Nominal grid frequency	50Hz		
Nominal output power	10KW	15KW	20KW
Max. output power	11KVA	16.5KVA	22KVA
Max. output current	16A	24A	32A
Output power factor	~1(0.8 leading to 0.8 lagging)		
Feature			
Operating temperature range	-30°C~60°C		
Protection degree	IP65		
Protective class	Class I		
Cooling method	Fan		

2.3 REFERENCE VALUES

The values presented in the following table have been used for calculation of referenced values (p.u.; %) though the report if not otherwise indicated.

Reference Values	
Rated power, P_n in kW	15.0
Rated apparent power, S_n in kVA	15.0
Rated wind speed (only WT), v_n in m/s	N/A
Rated current (determined), I_n in A	21.7
Rated output voltage, (phase to phase) U_n in Vac	230/400
Note: In this report p.u. values are calculated as follows: -For Active & Reactive Power p.u. values, are referenced to P_n . -For Currents p.u. values, the reference is always I_n . -For Voltages p.u. values, the reference is always U_n .	

Note: The reference values detailed in the table only apply to the fully tested model **HYD 15KTL-3PH**, other models can refer to the above table.

2.4 DEFINITIONS

EUT	Equipment Under Testing	Hz	Hertz
A	Ampere	V	Volt
Un	Nominal Voltage	p.u	Per unit
In	Nominal Current	Pn	Rated Active Power
Ia	Active Current	Qn	Rated Reactive Power
Ir	Reactive Current	Sn	Rated Apparent Power
fn	Nominal frequency	ms	Millisecond
RMS	Root Mean Square	s	Second
AC	Alternating Current	min	Minute
Pmax	Maximum active power	P	Active Power
PA	Available active power	Q	Reactive Power
Meas.	Measured	PF	Power Factor
Des.	Desired	Nr.	Number
PGU	Power Generating Unit	POC	Point of Connection
Smax	Maximum apparent power		

2.5 LIST OF TEST EQUIPMENT

From	No	EQUIPMENT	MODEL	CODE	Equipment calibration duration date
SOFAR SOLAR	1	Temperature and Humidity Meter	TH101B / Anymetre	ZB-WSDJ-001	2020/01/14 to 2021/01/13
	2	Power analyzer	PA3000 / ZLG	PA3005-P0005-1246	2020/01/14 to 2021/01/13
	3	Power analyzer	PA3000 / ZLG	PA3004-P0004-1422	2020/01/14 to 2021/01/13
	4	Power analyzer	PA5000H / ZLG	C820290908200 2110001	2020/03/02 to 2021/03/01
	5	Power analyzer	PA6006H / ZLG	PA6006H-P0600-1456	2019/11/07 to 2020/11/06
	6	Digital oscilloscope	DSOX 3014A / KEYSIGHT	MY58491772	2020/01/14 to 2021/01/13
	7	Digital oscilloscope	DSOX 3014T / KEYSIGHT	MY57231269	2020/01/14 to 2021/01/13
	8	Voltage probe	SI-9110 / SANTINT	111152	2020/01/14 to 2021/01/13
	9	Current clamp	CP1000A / CYBERTEK	C181000922	2020/01/14 to 2021/01/13
	10	Current clamp	CP1000A / CYBERTEK	C181000925	2020/01/14 to 2021/01/13
	11	Current clamp	CP1000A / CYBERTEK	C181000929	2020/01/14 to 2021/01/13
SGS	12	True RMS Multimeter	187 / Fluke	GZE012-8	2019/12/05 to 2020/12/04

2.6 Measurement Uncertainty

Associated uncertainties through measurements showed in this report are the maximum allowable uncertainties.

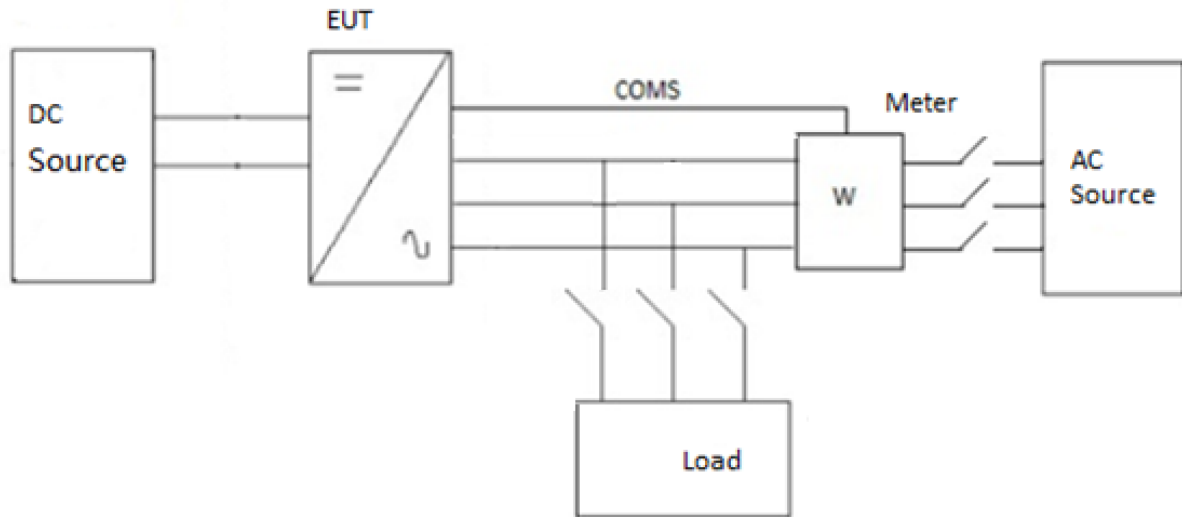
Magnitude	Uncertainty
Voltage measurement	±1.5 %
Current measurement	±2.0 %
Frequency measurement	±0.2 %
Time measurement	±0.2 %
Power measurement	±0.5 %
Phase Angle	±1°
Temperature	±3° C
<p>Note1: Measurements uncertainties showed in this table are maximum allowable uncertainties. The measurement uncertainties associated with other parameters measured during the tests are in the laboratory at disposal of the petitioner.</p> <p>Note2: Where the standard requires lower uncertainties that those in this table. Most restrictive uncertainty has been considered and would be reported in this report.</p>	

The following measurements uncertainties have been verified by the used equipment (Oscilloscopes and/or Power Analysers) as specifically required by the standard for the performance of the testing process:

Magnitude	Measurement uncertainty requirement	Maximum uncertainty Test equipment used
Voltage (Fundamental frequency)	≤ 0.2 % of U_n	± 0.15 %
Current (Fundamental frequency)	≤ 0.2 % of I_n	± 0.11%
Power (Fundamental frequency)	≤ 0.2 % of I_n	± 0.18%

2.7 TEST SETUP

Below is the simplified construction of the test set up.



Deviations from the picture: the element of control is internal to the inverter so it is part of the EUT on the scheme above. The EUT has been tested together with 2 different power analyzers as which characteristics are in page 12.

Different equipment has been used to take measures as it shows in chapter 2.3. Current and voltage clamps have been connected to the inverter input / output for all the tests.

All the tests described in the following pages have used this specified test setup.

The test bench used includes:

EQUIPMENT	MARK / MODEL	RATED CHARACTERISTICS	OWNER / ID.CODE
AC source	Kwell / AFG-S-33800	Voltage: 0-600 V 600Kw	Sofar solar / EP-026
PV source	Kwell / TVS-630Kw	Voltage: 0 – 1000 V 630Kw	Sofar solar / EP-027
RLC load	Qunlin / ACLT3820H	68 kW, 68 kVAr	Sofarsolar / EP-029

2.8 LIST OF INSTALLATION COMPONENTS

CHARACTERISTICS OF THE TESTED SAMPLE (ENERGY METER)

Type of appliance/ Installation:	Three-Phase Smart meter / DIN-Rail
Manufacturer / Distributor / Installer:	Zhejiang CHINT Instrument&Meter Co., Ltd.
Brand:	CHINT
Model/ Type:	DTSU666
Serial number:	200806010055
Nominal characteristics:	230/400Vac, 0.05~1.5(6)A with CT (Ratio 40:1), 50/60Hz, 6400imp/kWh Power accuracy: 1% Software Version: V3.04 Firmware Version: ZTY8.067.2837V2 IP51

CHARACTERISTICS OF THE TESTED SAMPLE (ENERGY METER ALTERNATIVE)

Type of appliance/ Installation:	Three-Phase Smart meter / DIN-Rail
Manufacturer / Distributor / Installer:	Acrel Co.,Ltd.
Brand:	Acrel
Model/ Type:	ACR10R-D24TE4
Serial number:	11908162560005
Nominal characteristics:	230/400Vac, 200A _{max} (Ratio: 200A/66.66mA), 45~65Hz, 8000imp/kWh Power accuracy: 1% Software Version: V1.17 Firmware Version: V05 IP20

3 RESUME OF TEST RESULTS

INTERPRETATION KEYS

- Test object does meet the requirement.....: **P** Pass
- Test object does not meet the requirement.....: **F** Fails
- Test case does not apply to the test object.....: **N/A** Not applicable
- To make a reference to a table or an annex.: See additional sheet
- To indicate that the test has not been realized: **N/R** Not realized

Report	UNE 217001 IN	ITC-BT-40	REQUIREMENTS OF THE STANDARD	Result ^{1, 2}
Section	Section	Section	Title	
4.1	5.1	I.3.1	Tolerance on permanent rule	P
4.2	5.2	I.3.2	Response to load disconnections	P
4.3	5.3	I.3.3	Response to power increases in the primary energy source	P
4.4	5.4	I.3.4	Acting in case of loss of communications	P
4.5	5.5	I.3.5	Determining the maximum number of generators	N/A

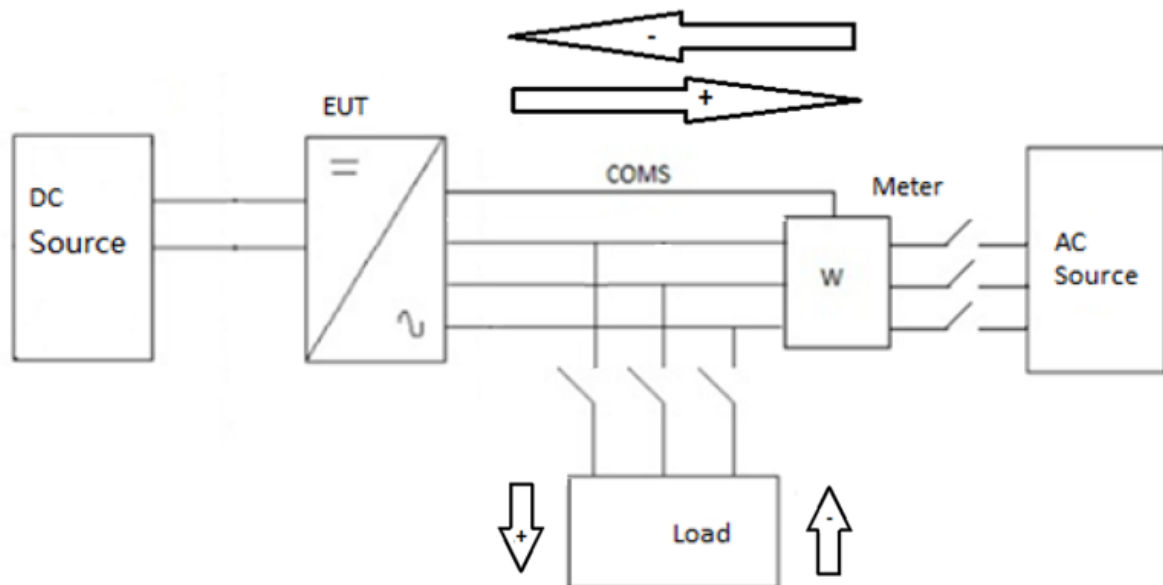
¹ Tests 4.2, 4.3 and 4.4 have been performed only on model HYD 15KTL-3PH while test 4.1 (permanent regime) has been tested and evaluated for all declared models.

² The conformity of the results has been evaluated taking into account IEC Guide 115.

4 TEST RESULT

Maximum power injected during the registration time, in Watts. Negative values indicate that the inverter and load system consume, i.e. there is no power injection into the network, in those cases, the consumption values closest to the power injection have been taken.

Sign Criterion for Data Interpretation:



In the results tables are positive the power injection values from the inverter to loads, and negative the values consumed by the loads. Values from network to loads are also negative, so if injection from the inverter to the net would occur this would look like positive values.

The tests have been carried out to two different configurations, the difference between the two occurs in the inverter control mode, the following two configurations are shown:

Type 1: The tests are performed on the inverter with energy meter **DTSU666**

Type 2: The tests are performed on the inverter with energy meter **ACR10R-D24TE4**

4.1 TOLERANCE ON PERMANENT RULE

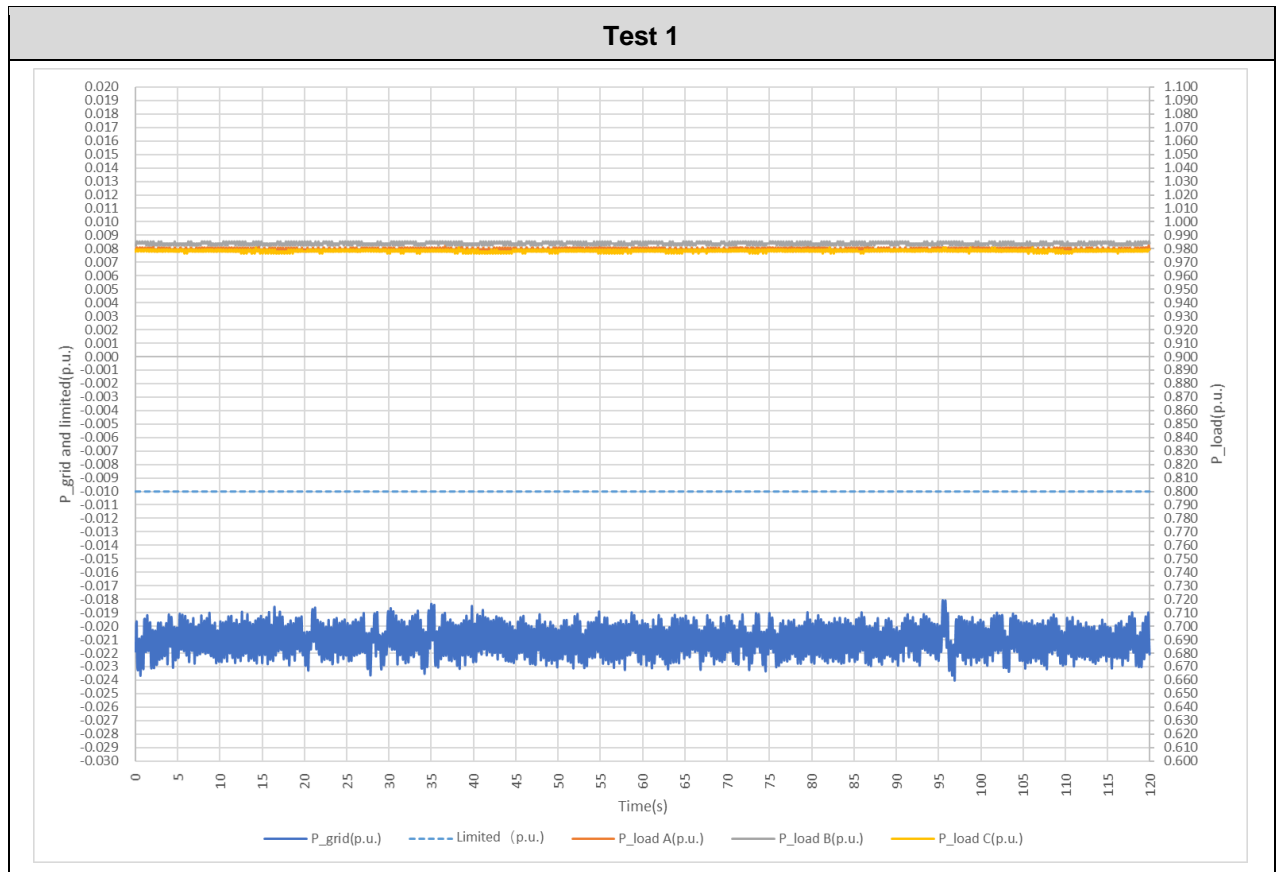
The tests have been carried out in accordance with paragraph 5.1 of UNE 217001:2015 IN (section I.3.1 of ITC-BT-40). The results obtained for the two configurations mentioned above are shown below:

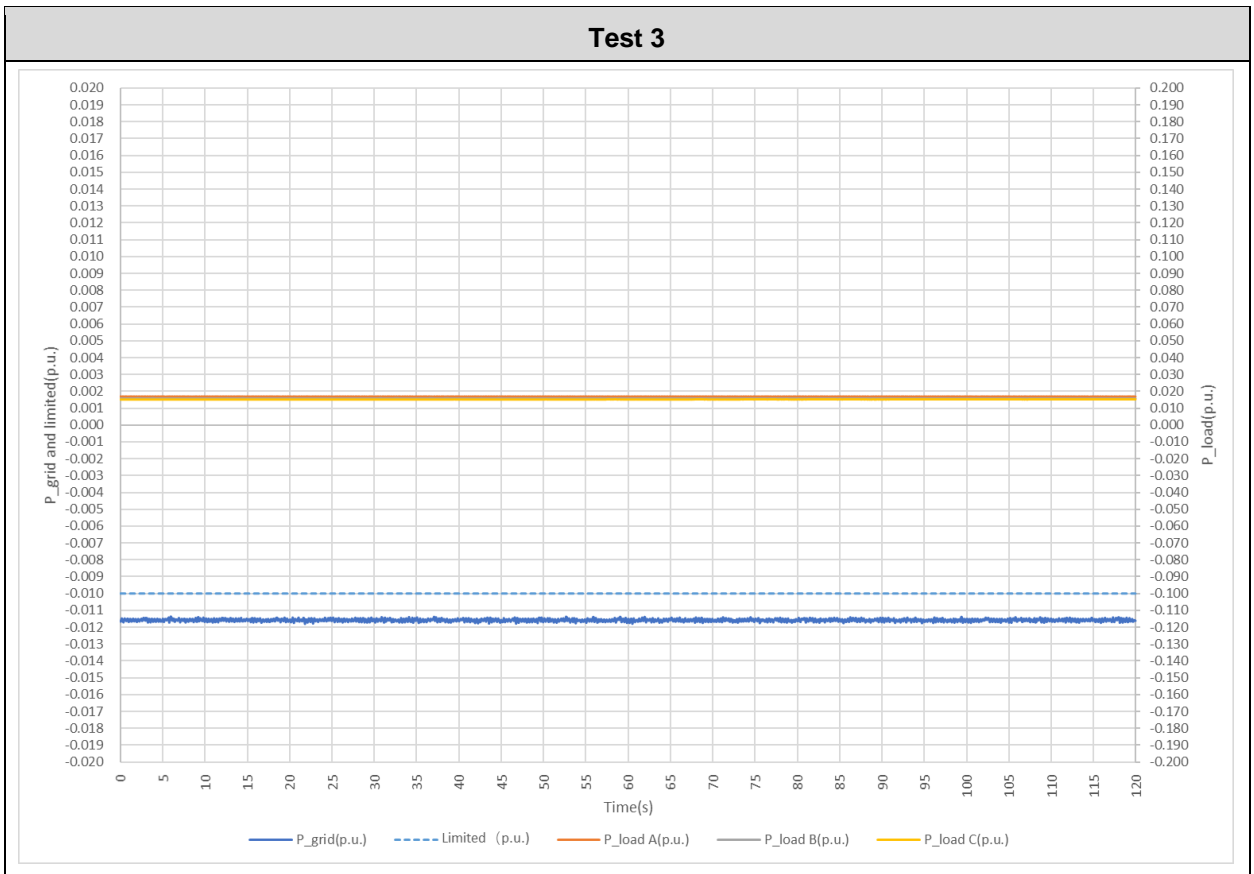
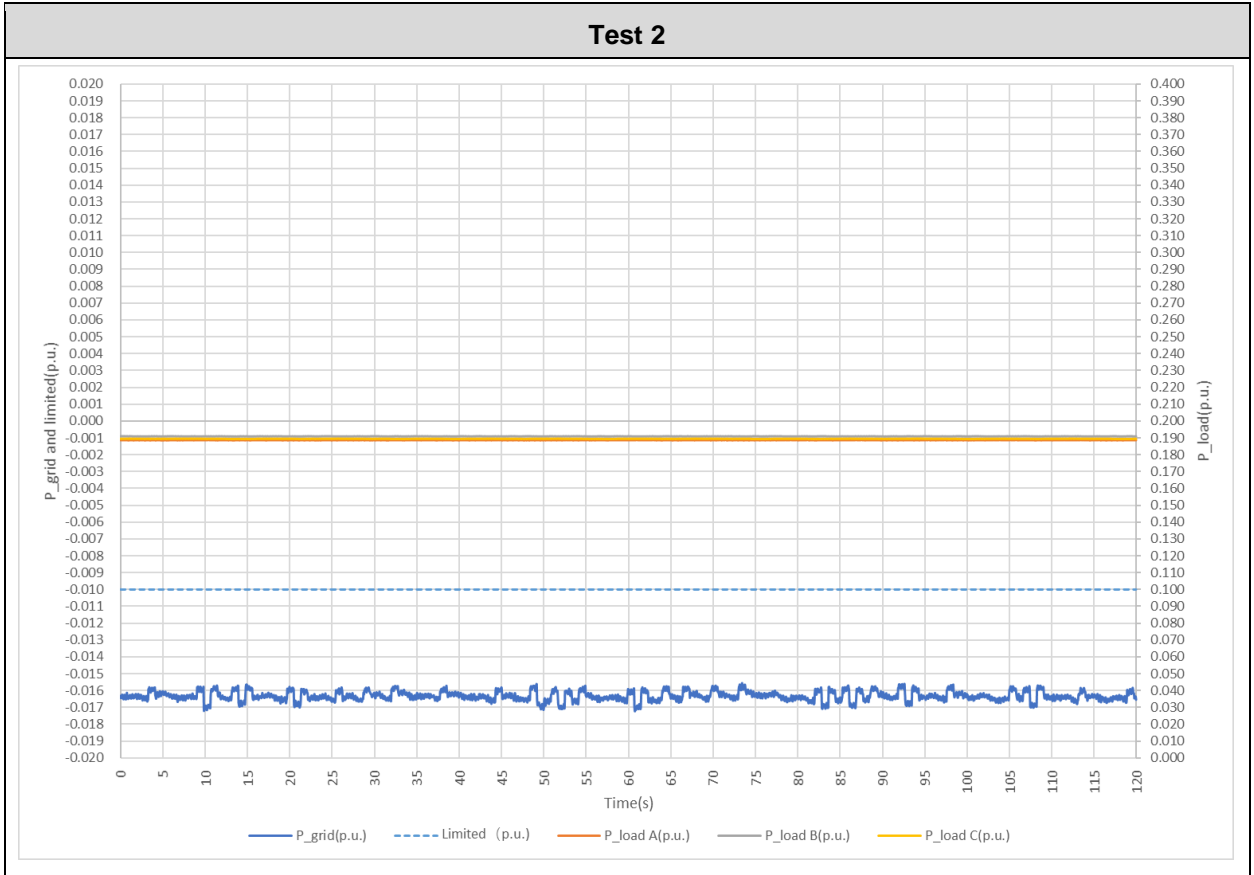
Type 1: With energy meter DTSU666									
Test model: HYD 20KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	98.0	90-100	98.4	90-100	97.8	2	-362	-200
2	10-20	18.9	10-20	19.1	10-20	18.9	2	-311	
3	0	1.7	0	1.6	0	1.5	2	-227	
4	90-100	98.2	60-70	66.8	60-70	66.4	2	-2654	
5	60-70	66.6	60-70	66.8	60-70	66.4	2	-537	
6	30-40	38.3	60-70	66.6	60-70	66.3	2	-4177	
7	0	1.6	60-70	66.4	60-70	66.1	2	-8853	

Additional information:

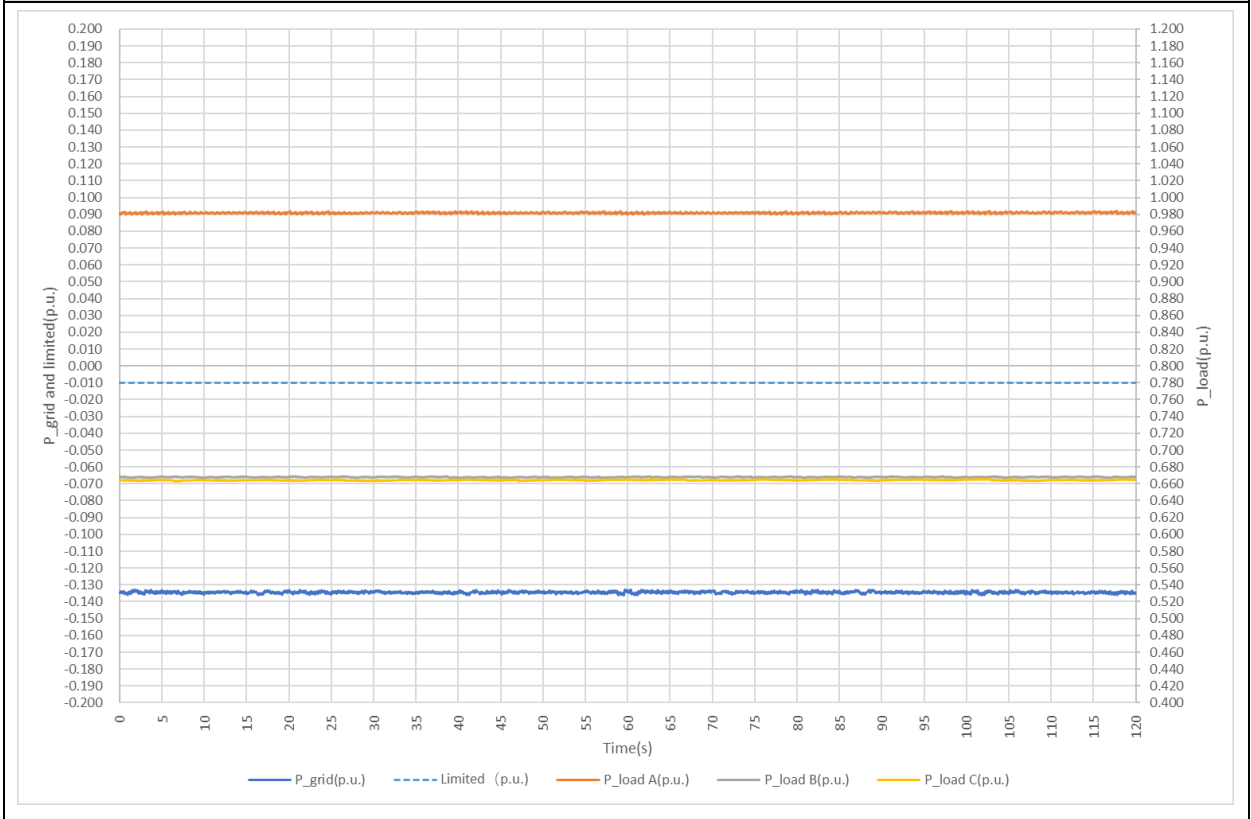
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.

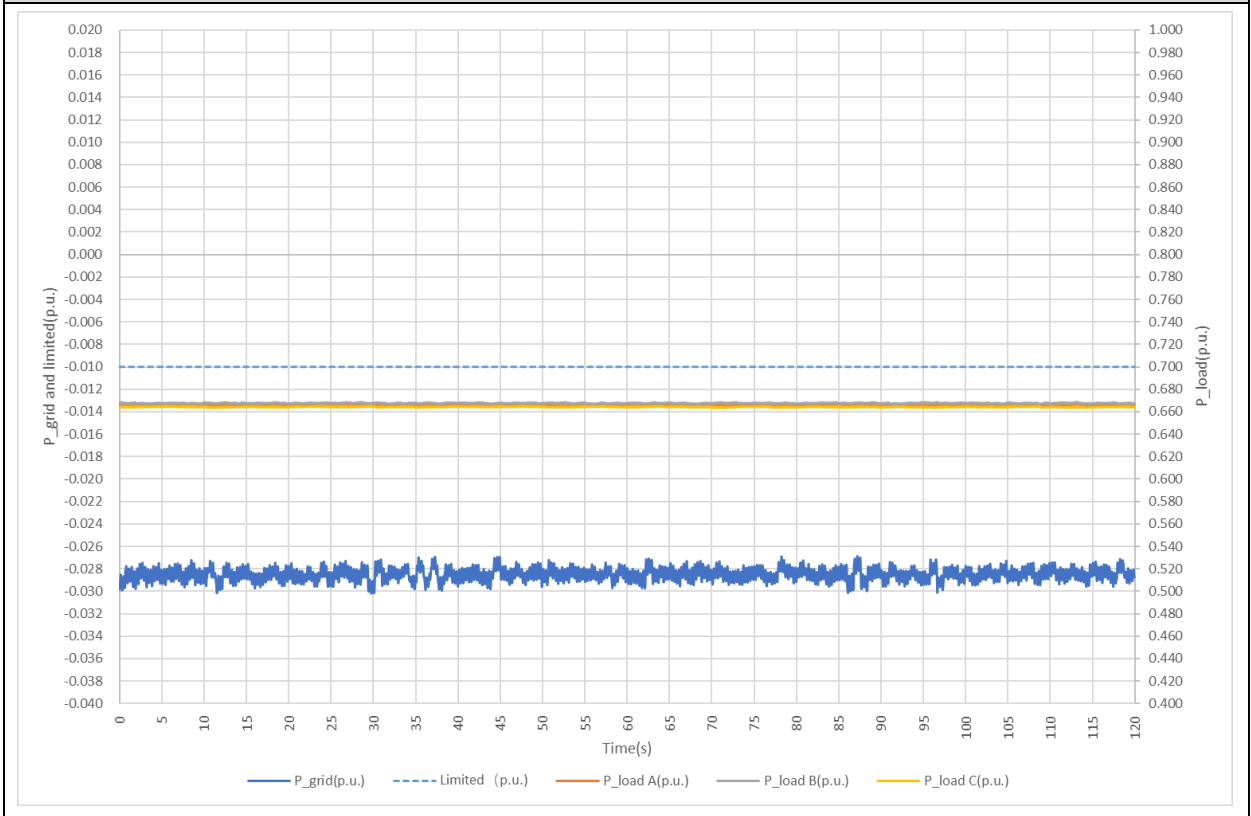


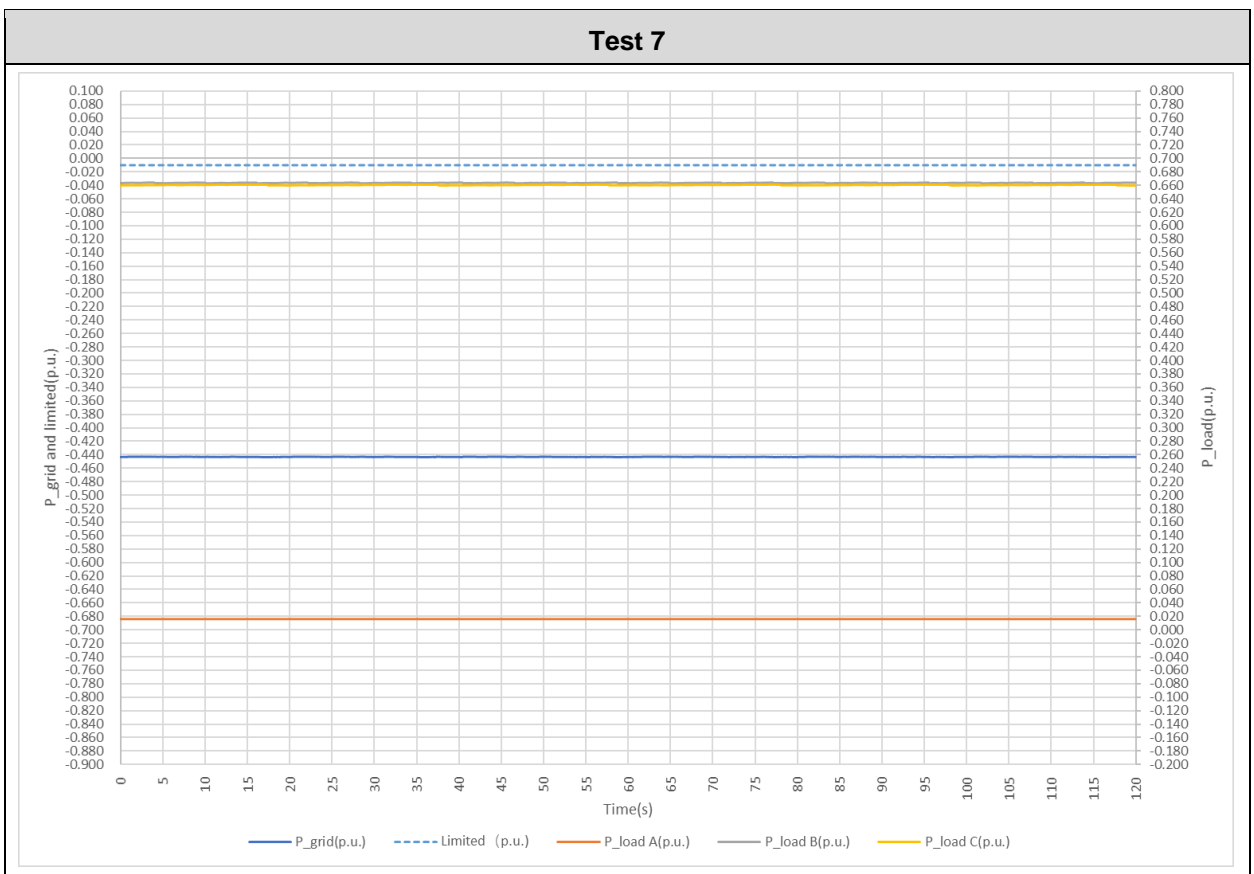
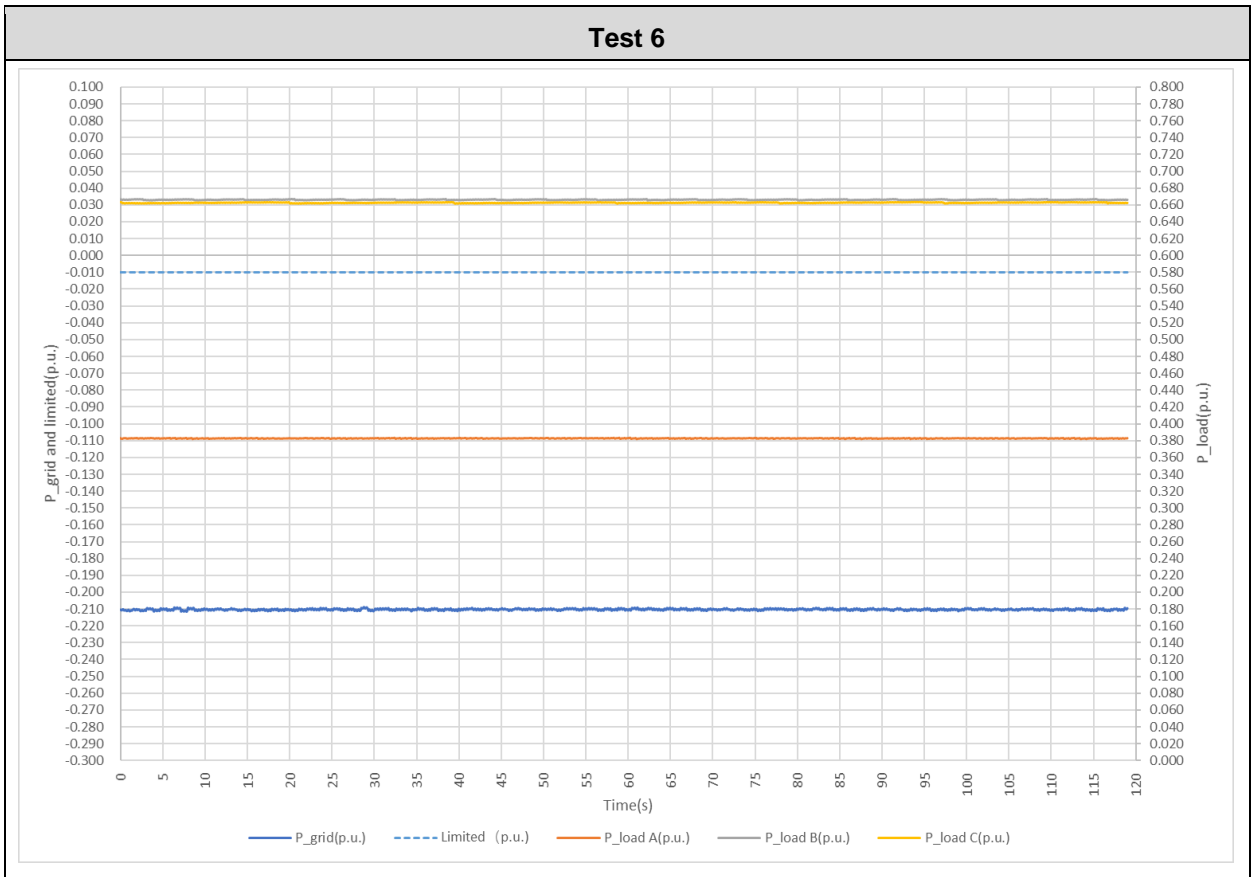


Test 4



Test 5



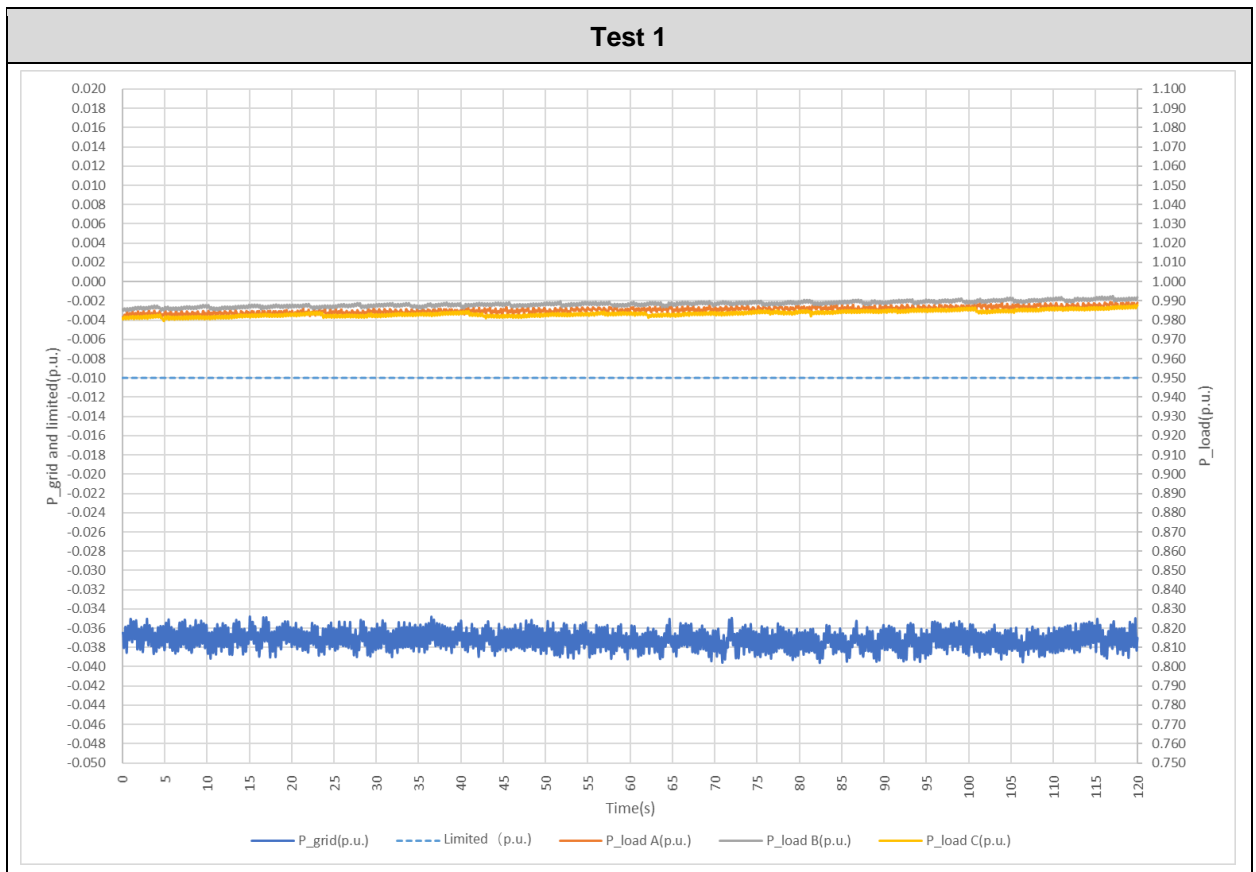


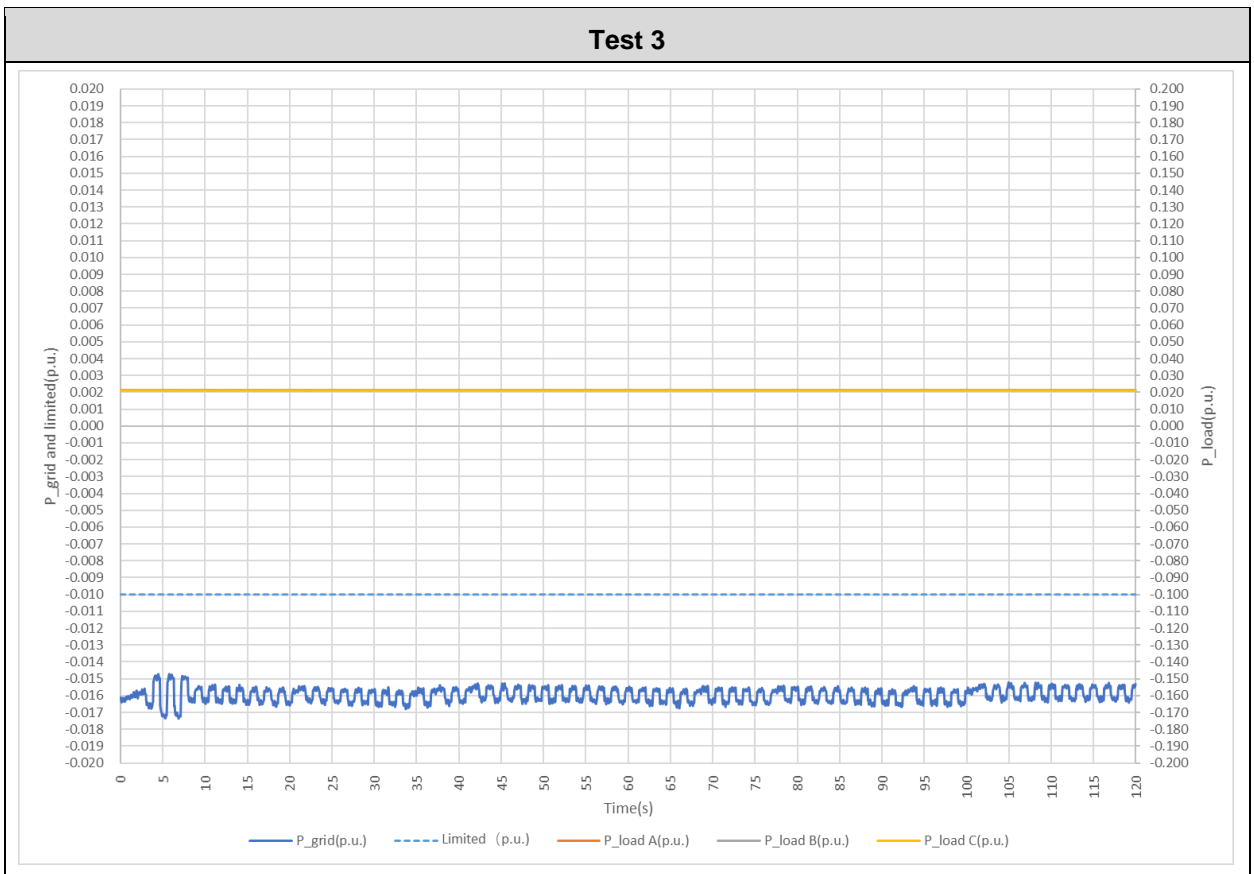
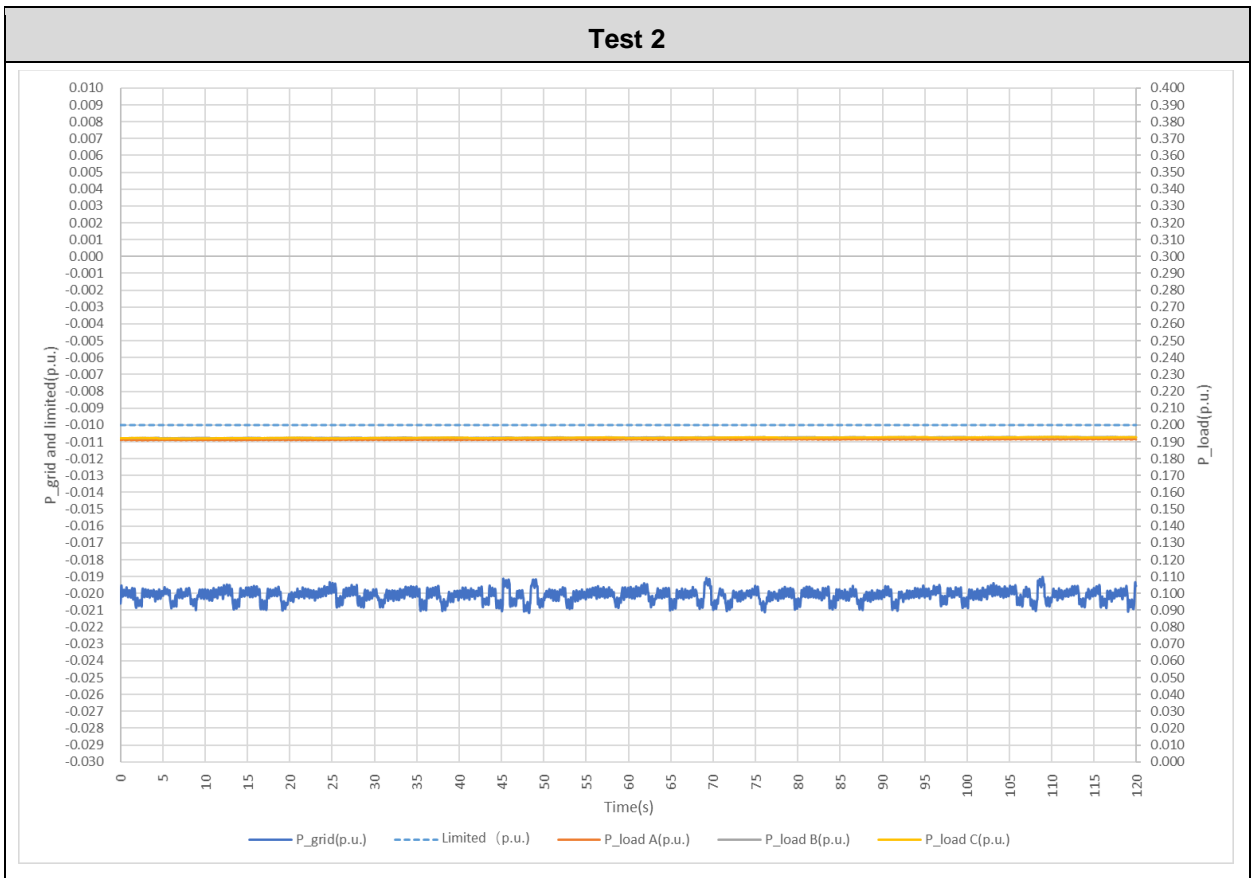
Type 1: With energy meter DTSU666									
Test model: HYD 15KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	98.5	90-100	98.8	90-100	98.4	2	-522	-150
2	10-20	19.1	10-20	19.3	10-20	19.2	2	-285	
3	0	2.1	0	2.1	0	2.1	2	-221	
4	90-100	98.6	60-70	68.5	60-70	68.3	2	-1895	
5	60-70	68.1	60-70	68.6	60-70	68.5	2	-378	
6	30-40	38.4	60-70	67.4	60-70	66.8	2	-1909	
7	0	1.4	60-70	68.1	60-70	68.0	2	-5955	

Additional information:

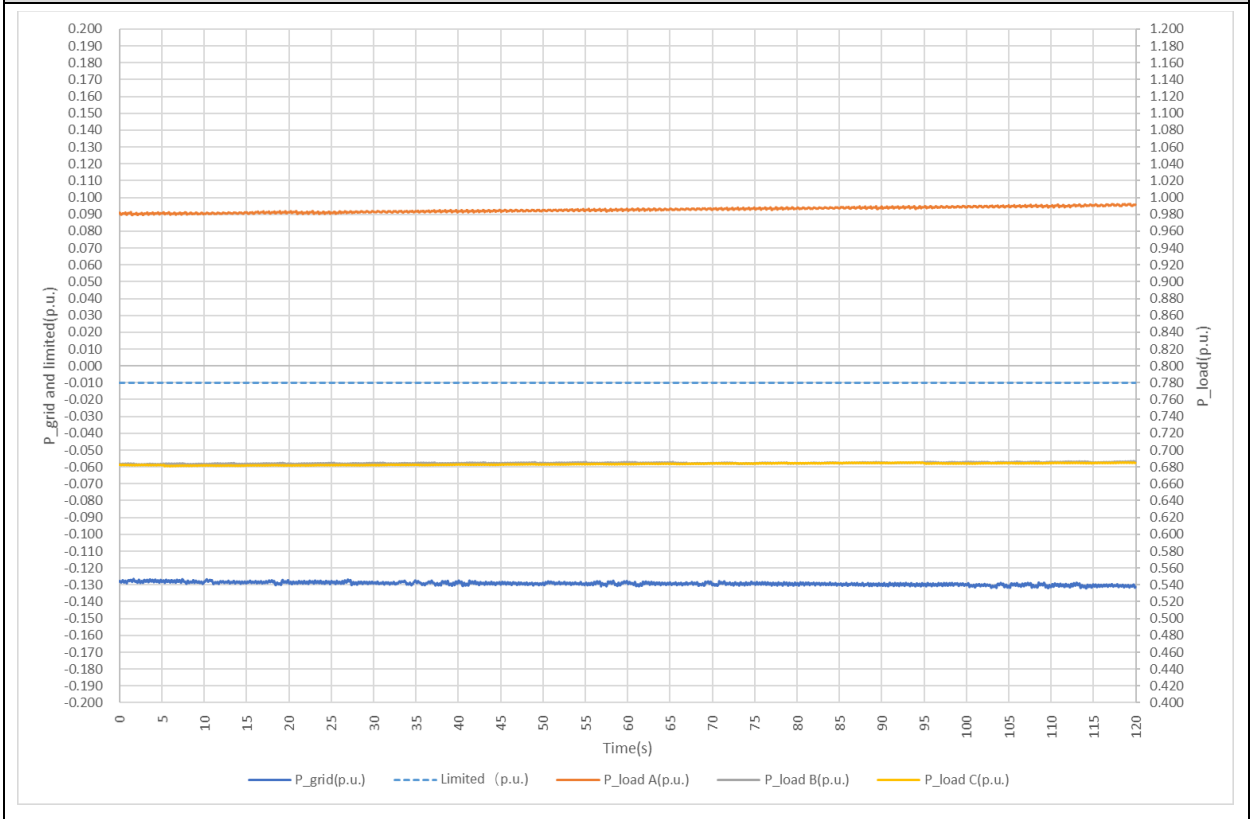
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.

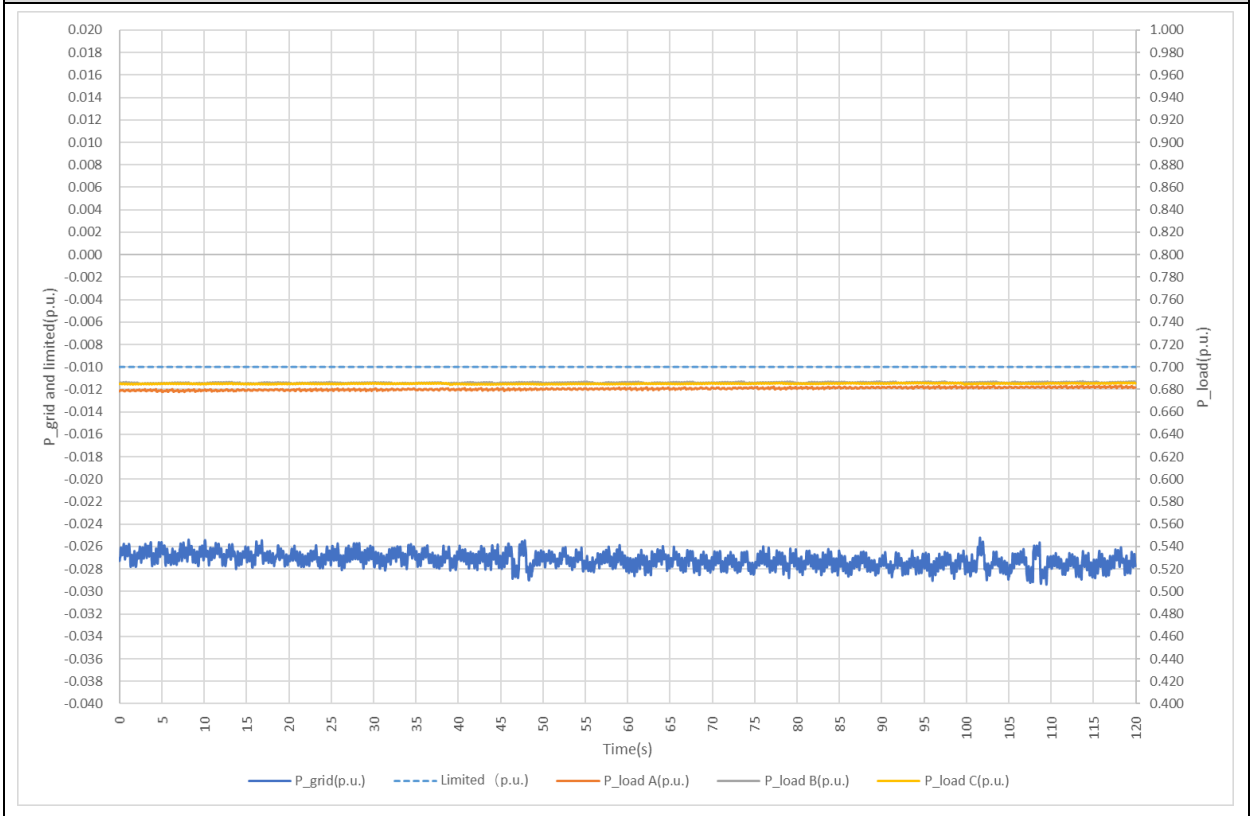


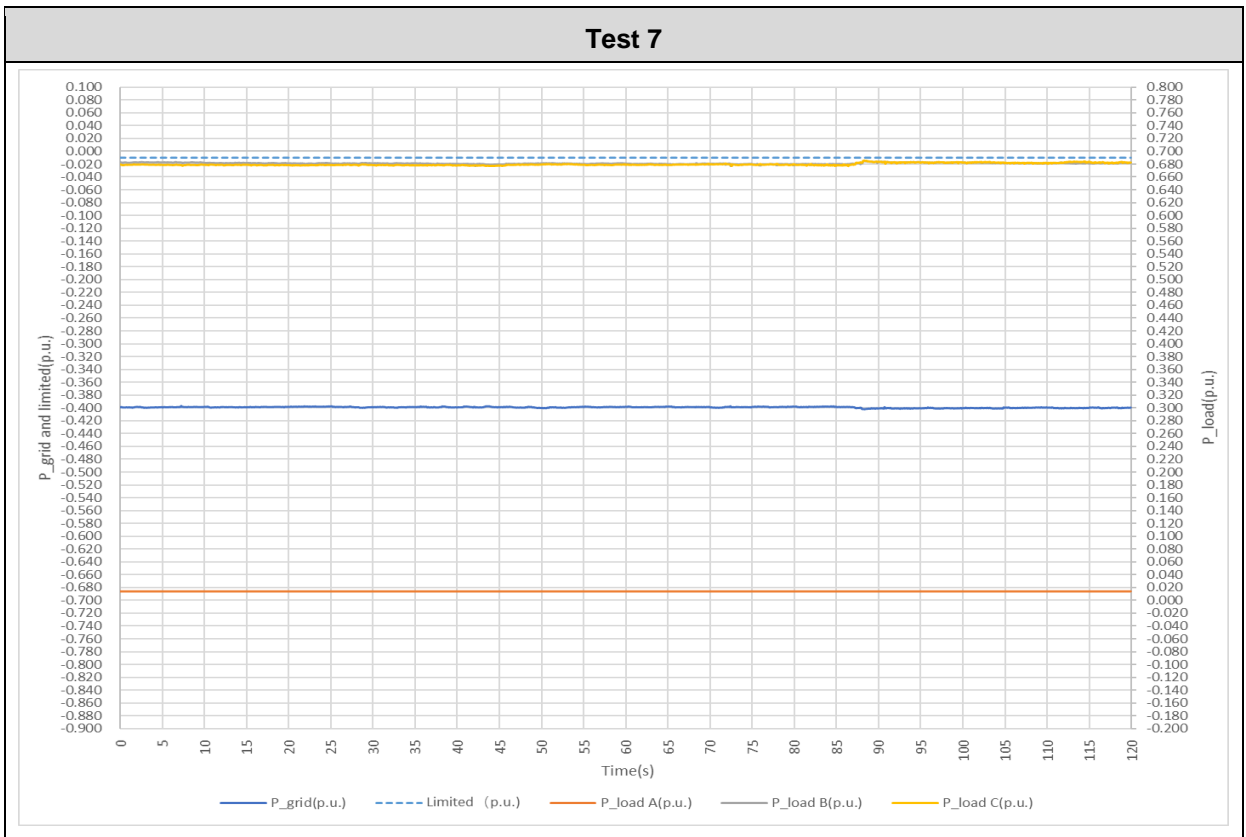
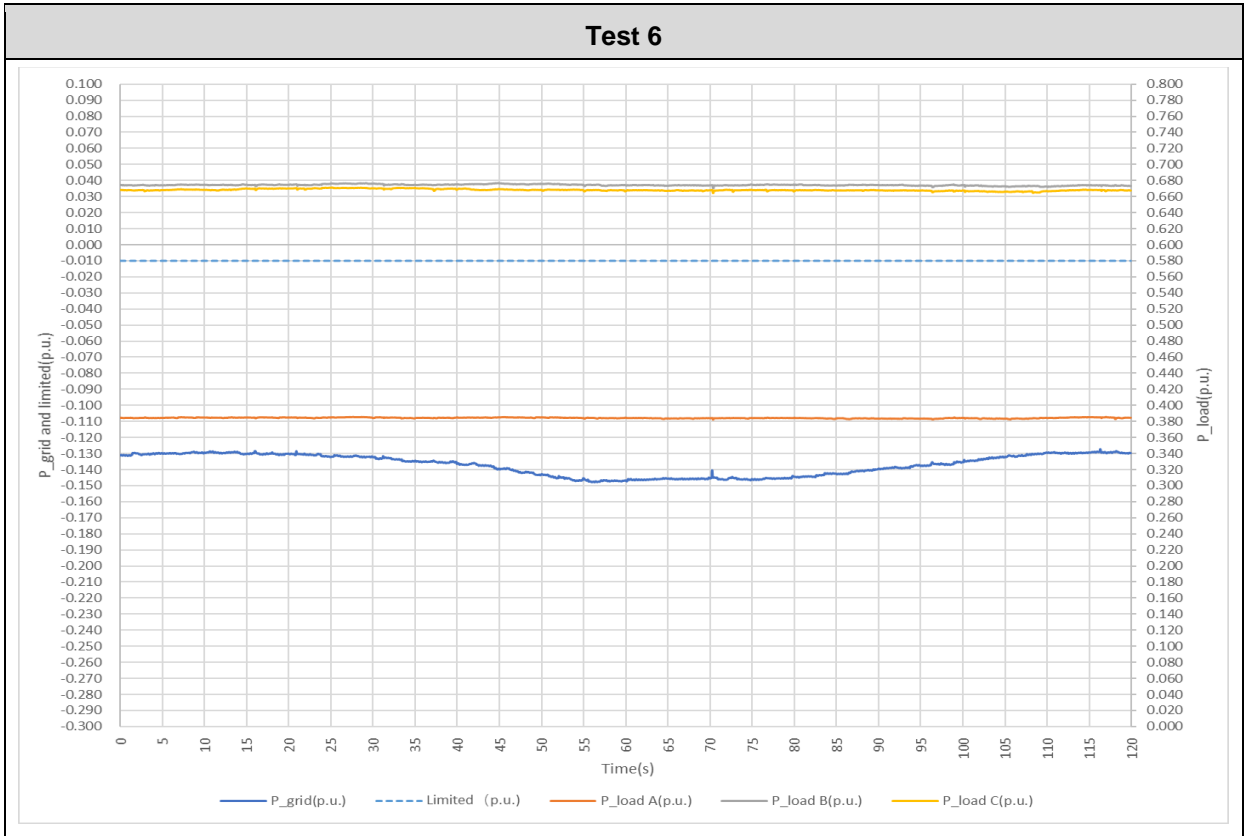


Test 4



Test 5



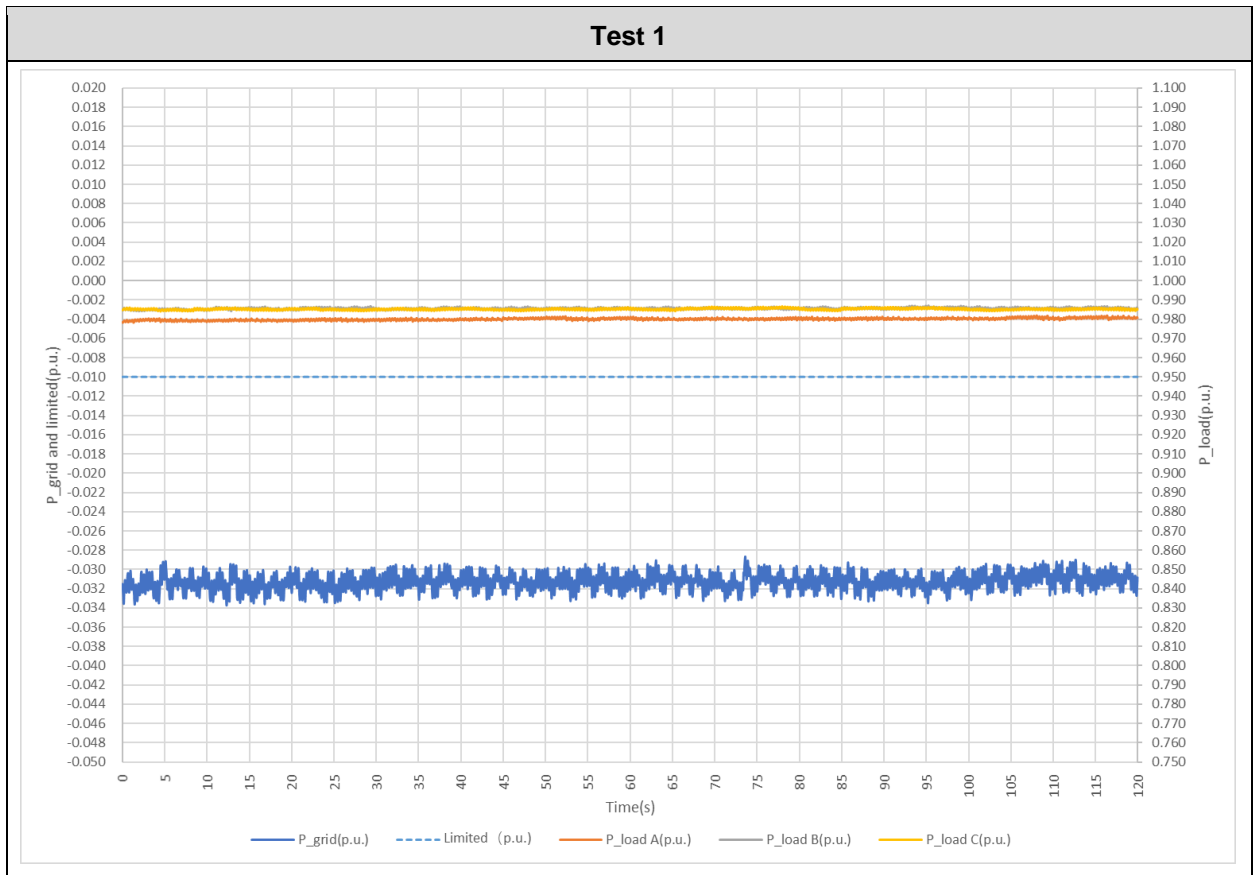


Type 1: With energy meter DTSU666									
Test model: HYD 10KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	98.0	90-100	98.6	90-100	98.5	2	-287	-100
2	10-20	19.0	10-20	19.1	10-20	19.0	2	-227	
3	0	3.2	0	3.2	0	3.2	2	-238	
4	90-100	97.9	60-70	68.5	60-70	68.3	2	-1284	
5	60-70	68.1	60-70	68.4	60-70	68.3	2	-289	
6	30-40	37.8	60-70	68.3	60-70	68.2	2	-2212	
7	0	3.2	60-70	68.2	60-70	68.1	2	-4454	

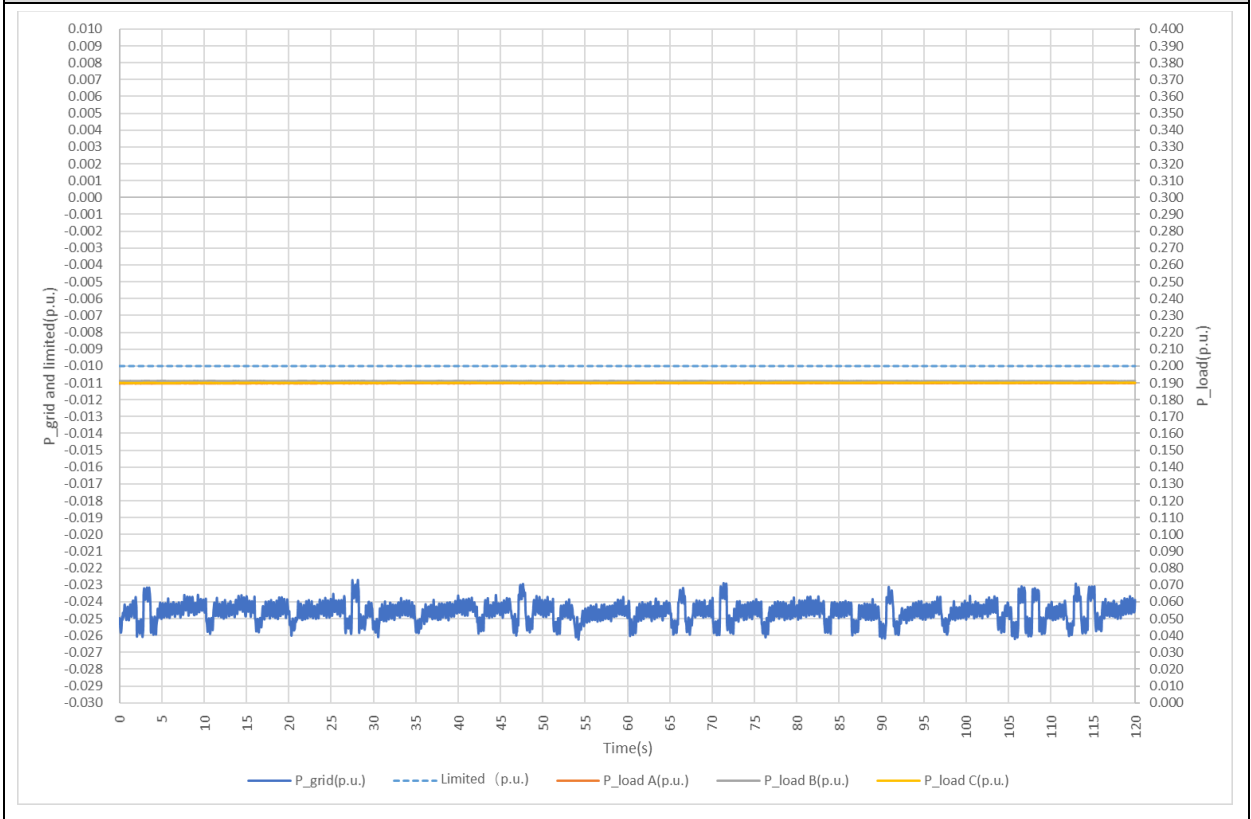
Additional information:

(*) Maximum power injected during the test time.

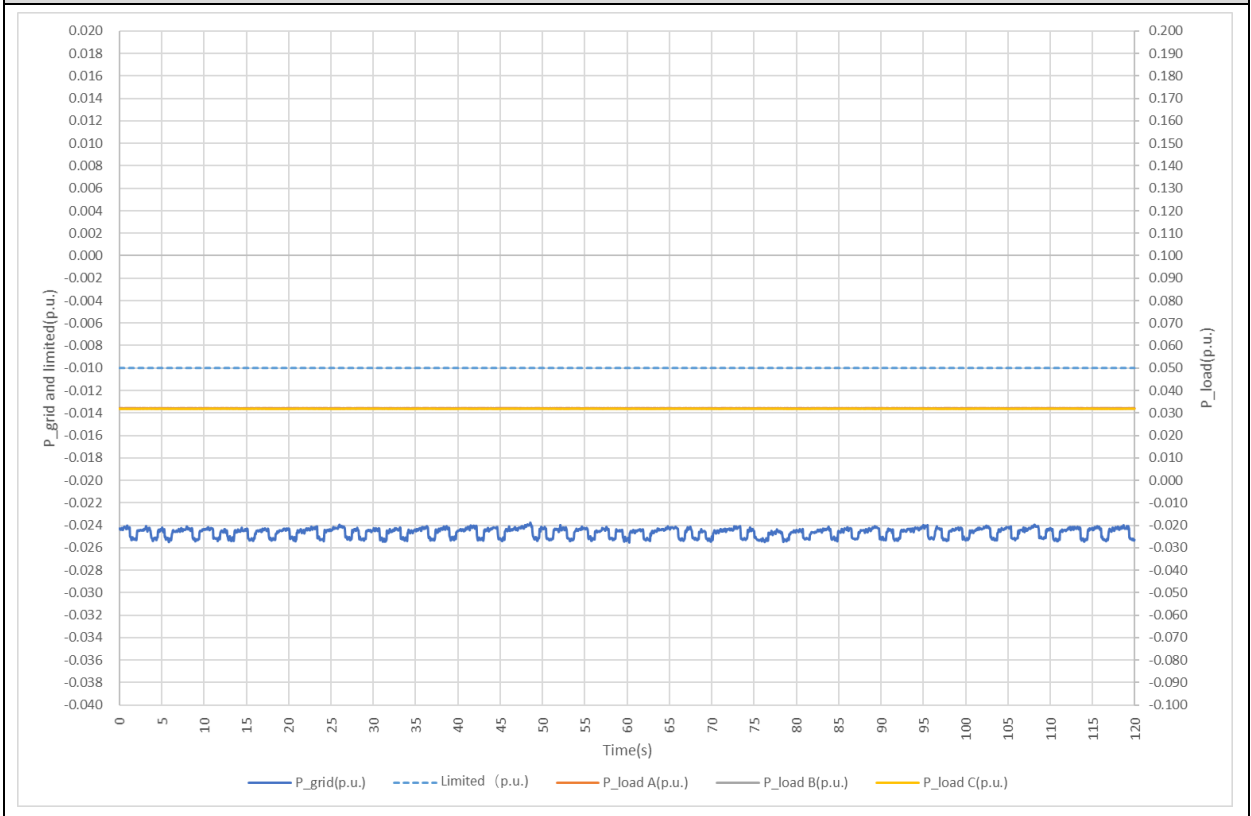
(**) This is the power limit injected is -1%Pn.



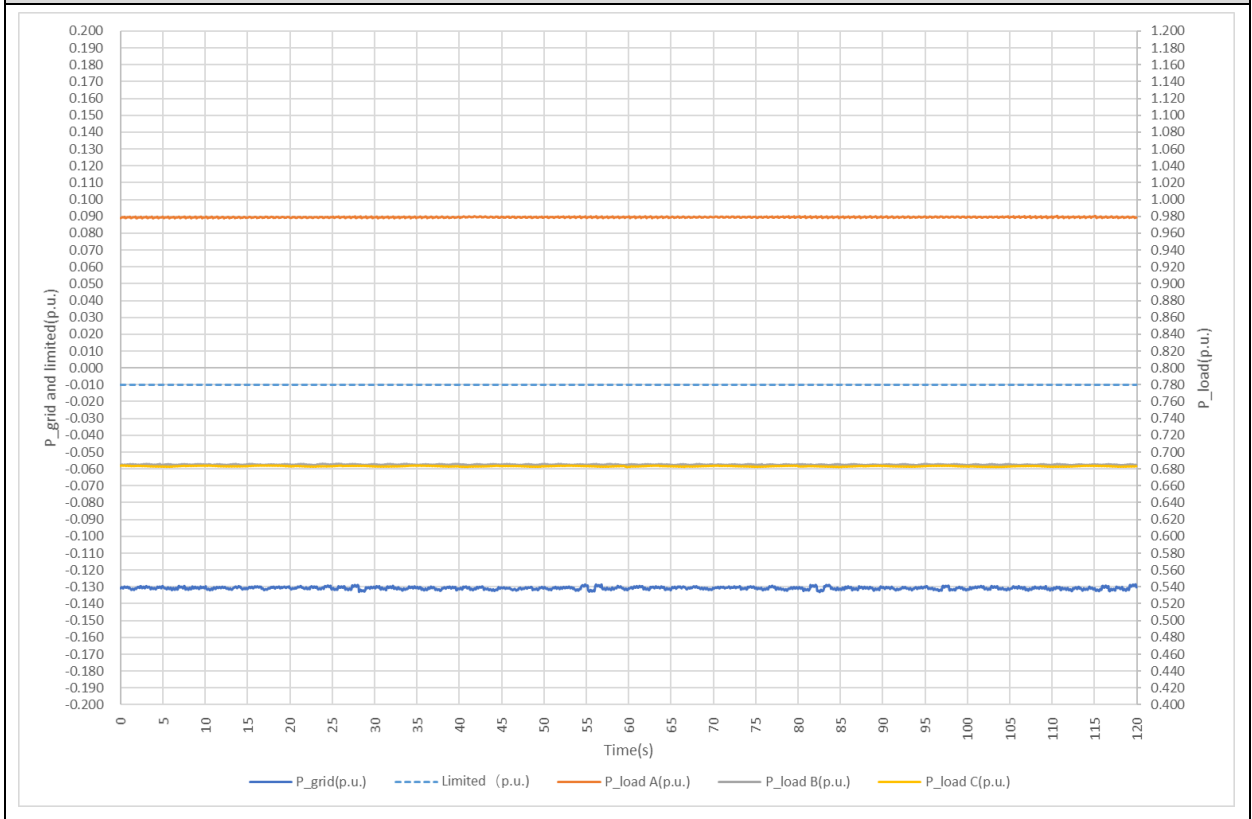
Test 2



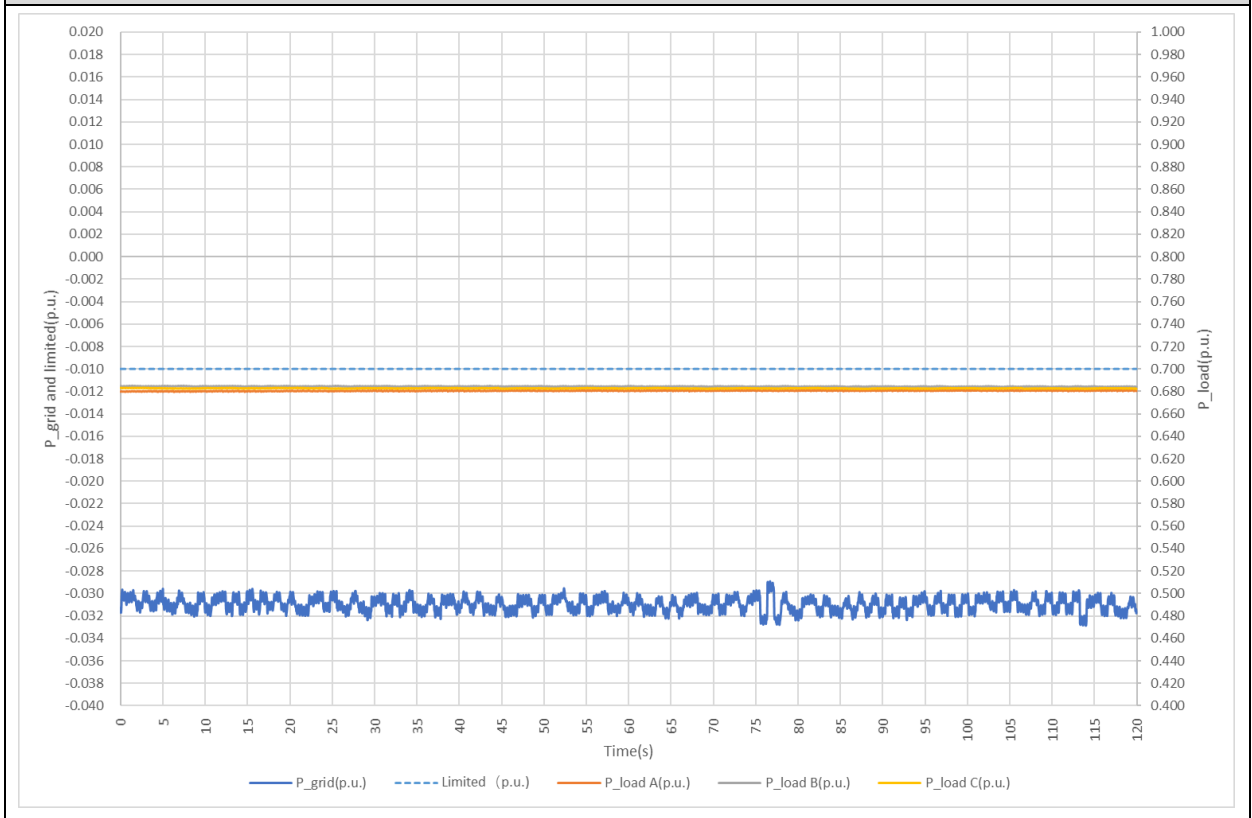
Test 3

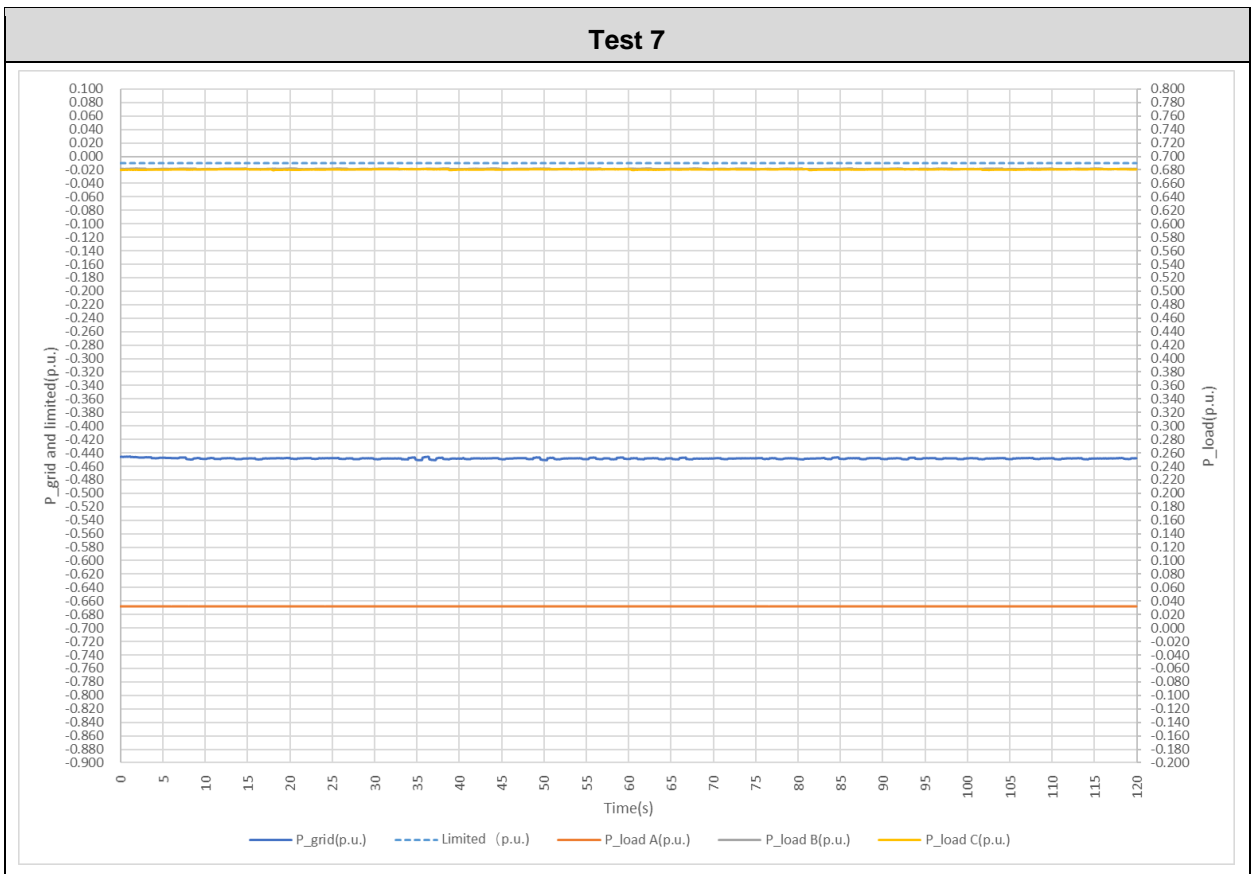
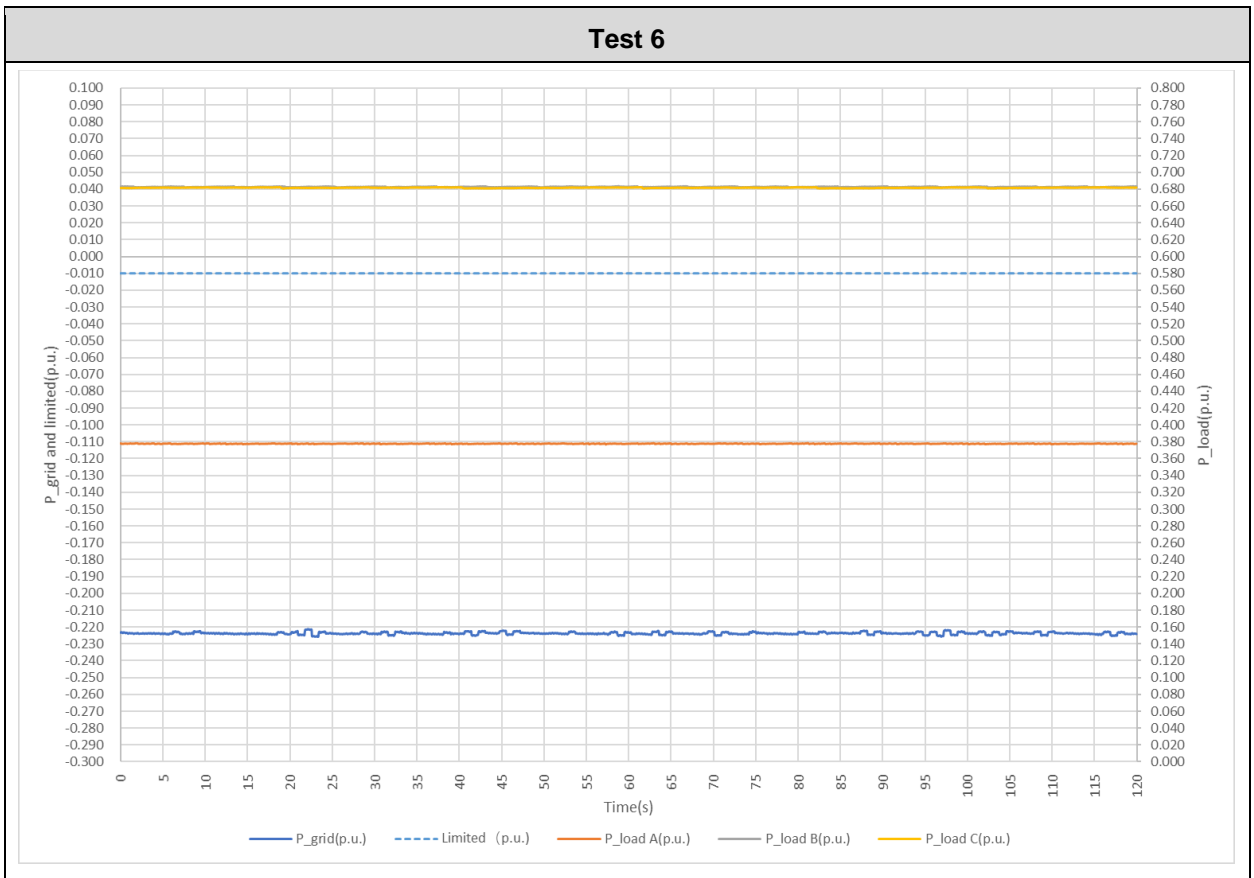


Test 4



Test 5



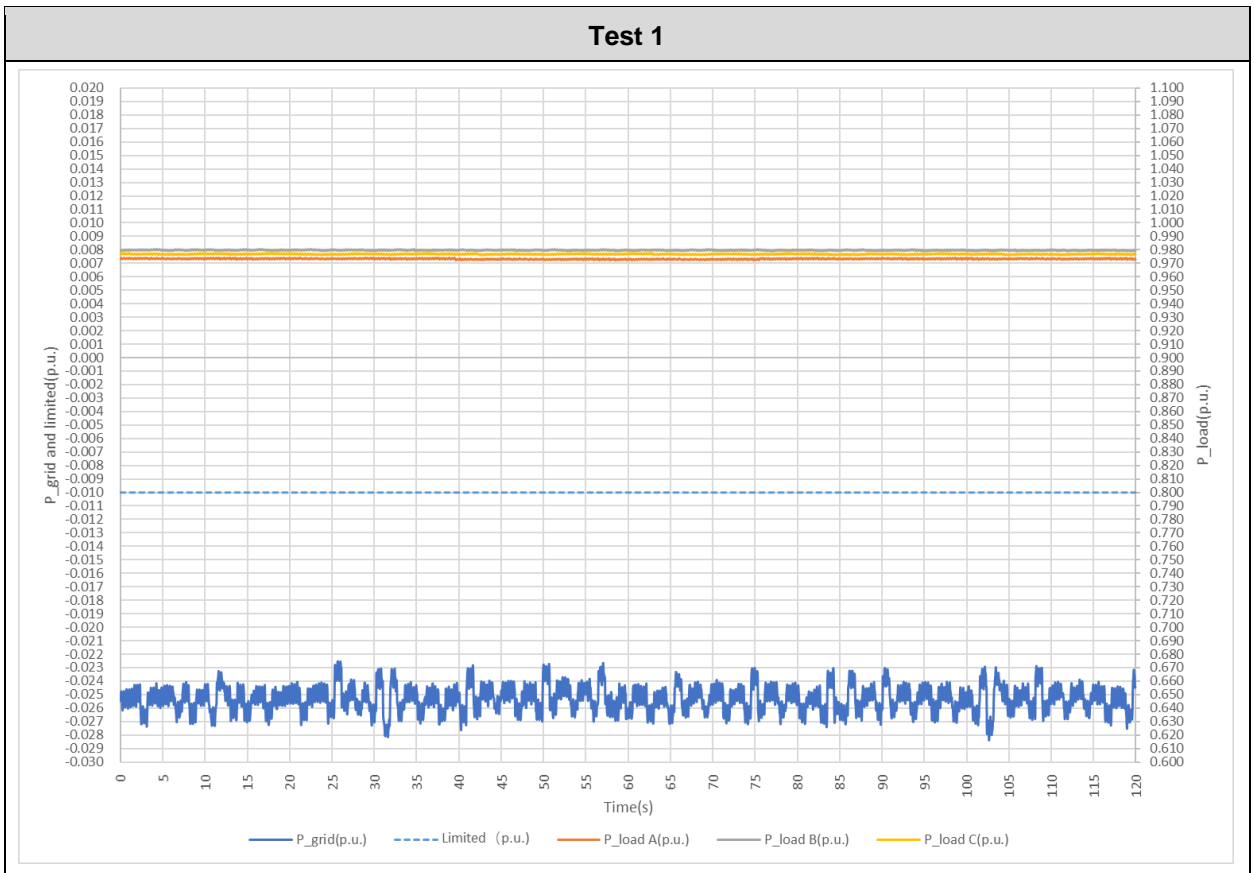


Type 1: With energy meter DTSU666									
Test model: HYD 8KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	97.3	90-100	98.0	90-100	97.7	2	-180	-80
2	10-20	18.0	10-20	18.1	10-20	18.1	2	-149	
3	0	4.0	0	4.0	0	4.0	2	-111	
4	90-100	97.2	60-70	68.8	60-70	68.7	2	-952	
5	60-70	68.5	60-70	68.7	60-70	68.7	2	-181	
6	30-40	37.6	60-70	68.6	60-70	68.5	2	-1769	
7	0	4.0	60-70	68.5	60-70	68.5	2	-3482	

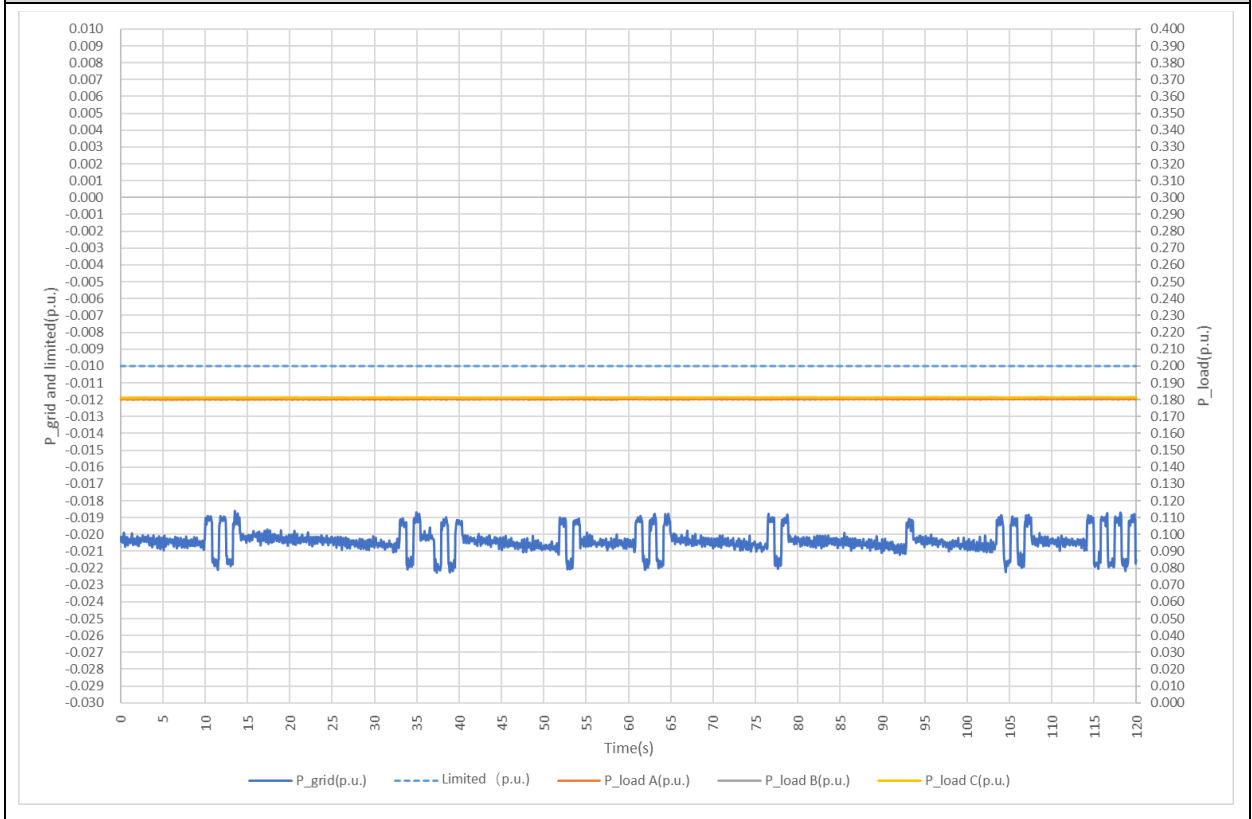
Additional information:

(*) Maximum power injected during the test time.

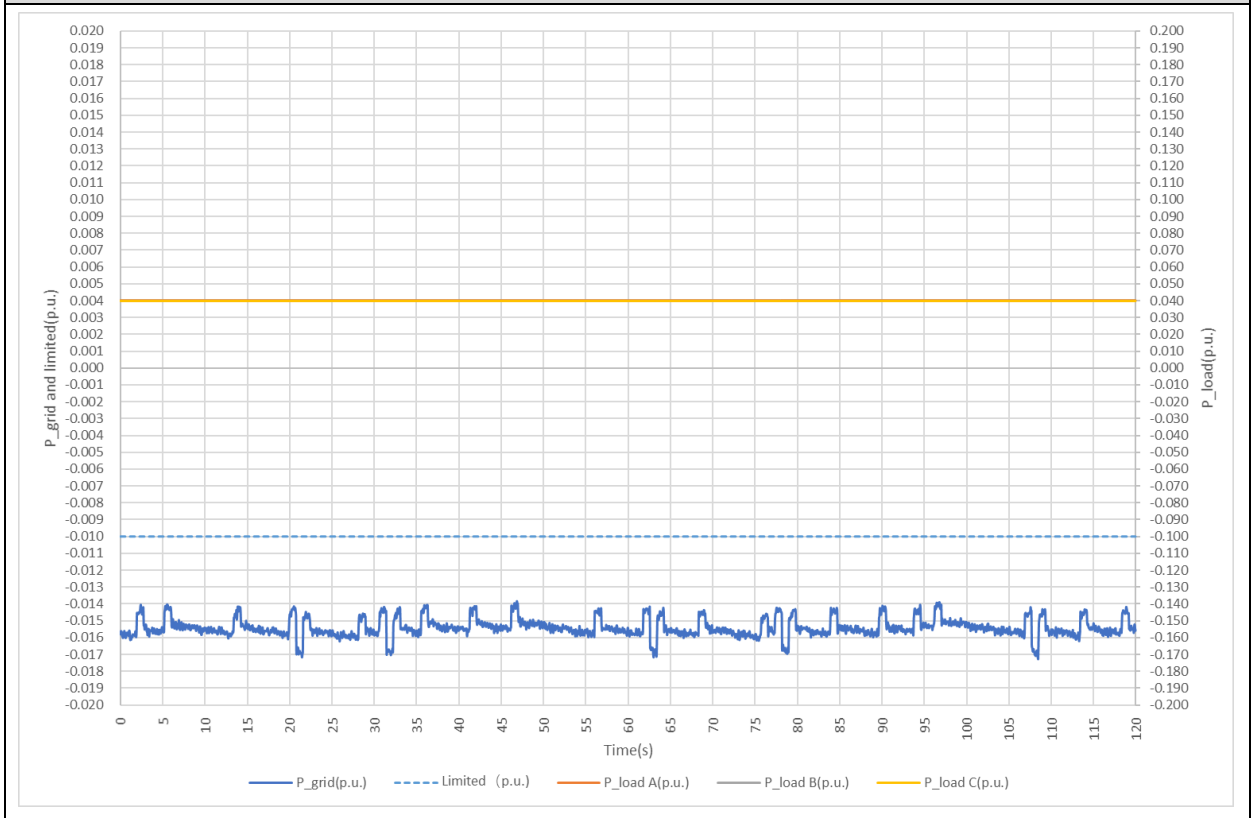
(**) This is the power limit injected is -1%Pn.



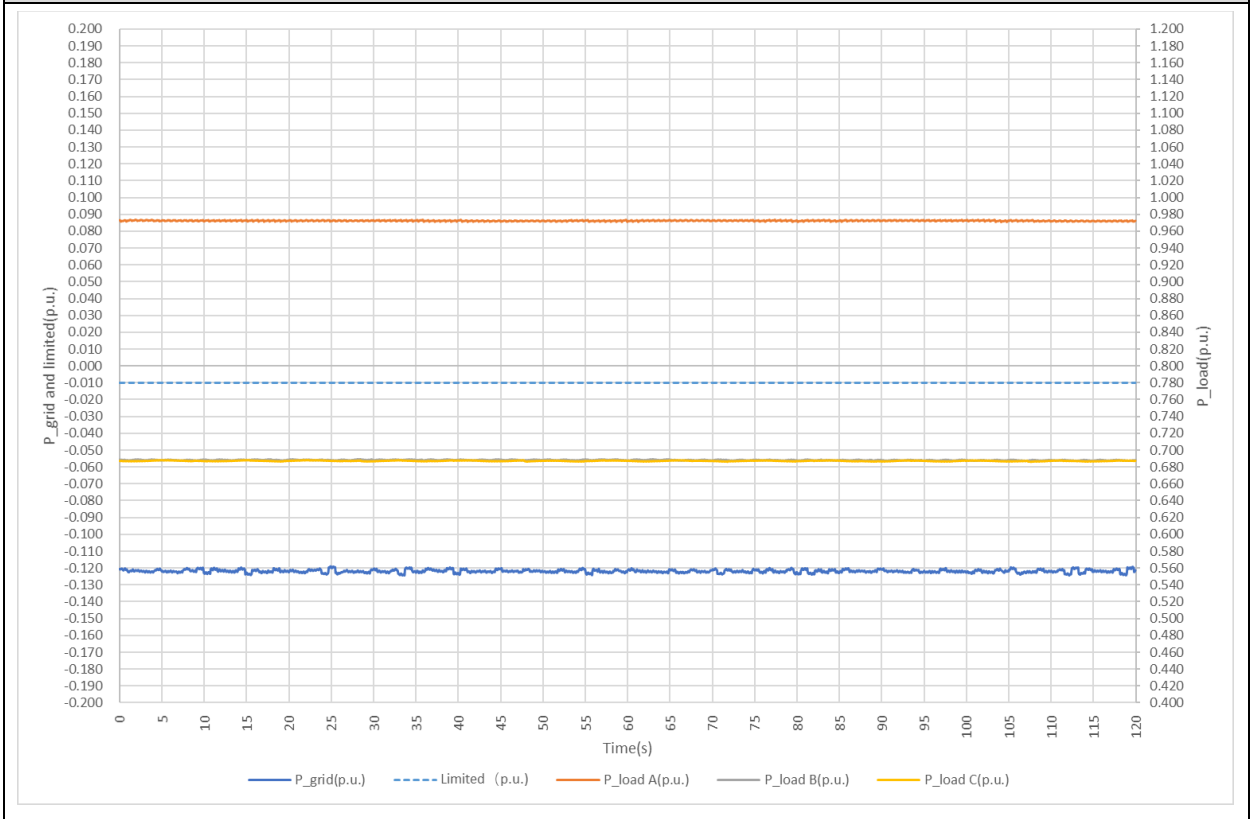
Test 2



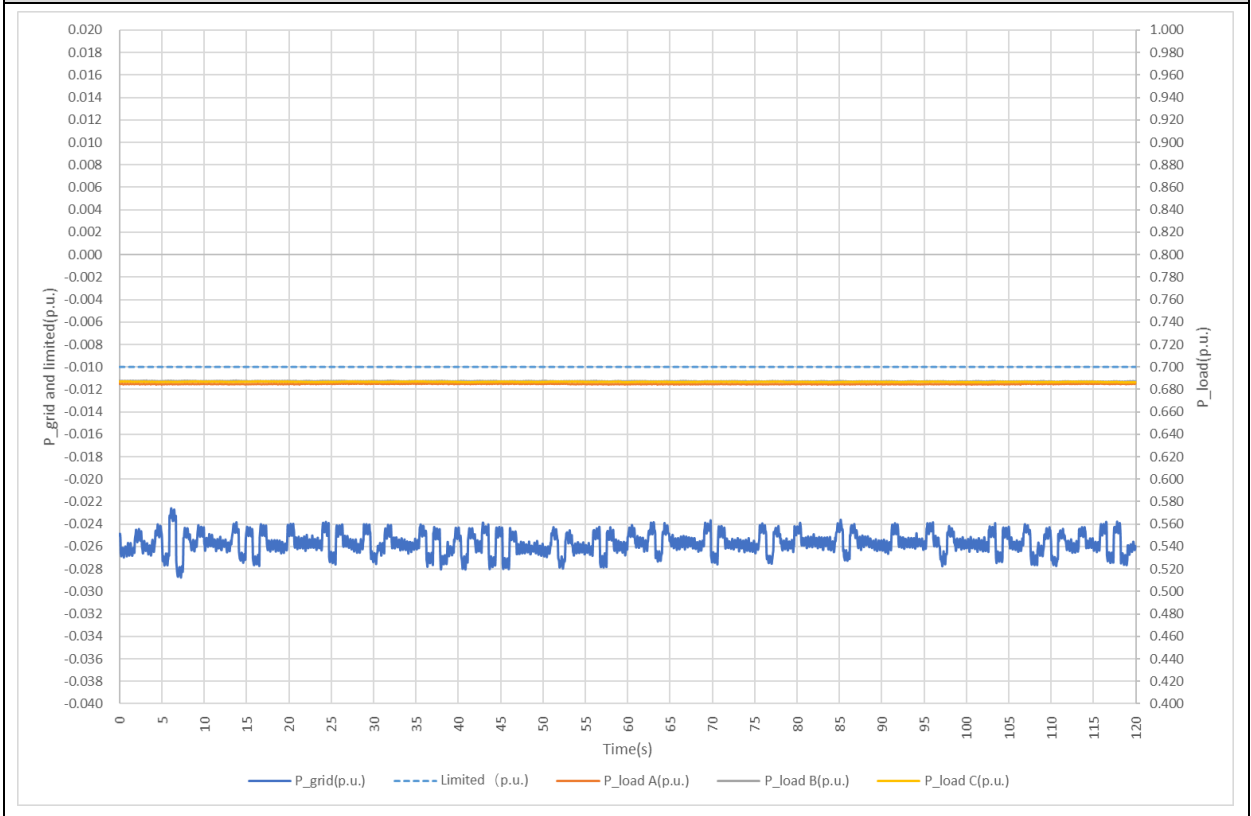
Test 3

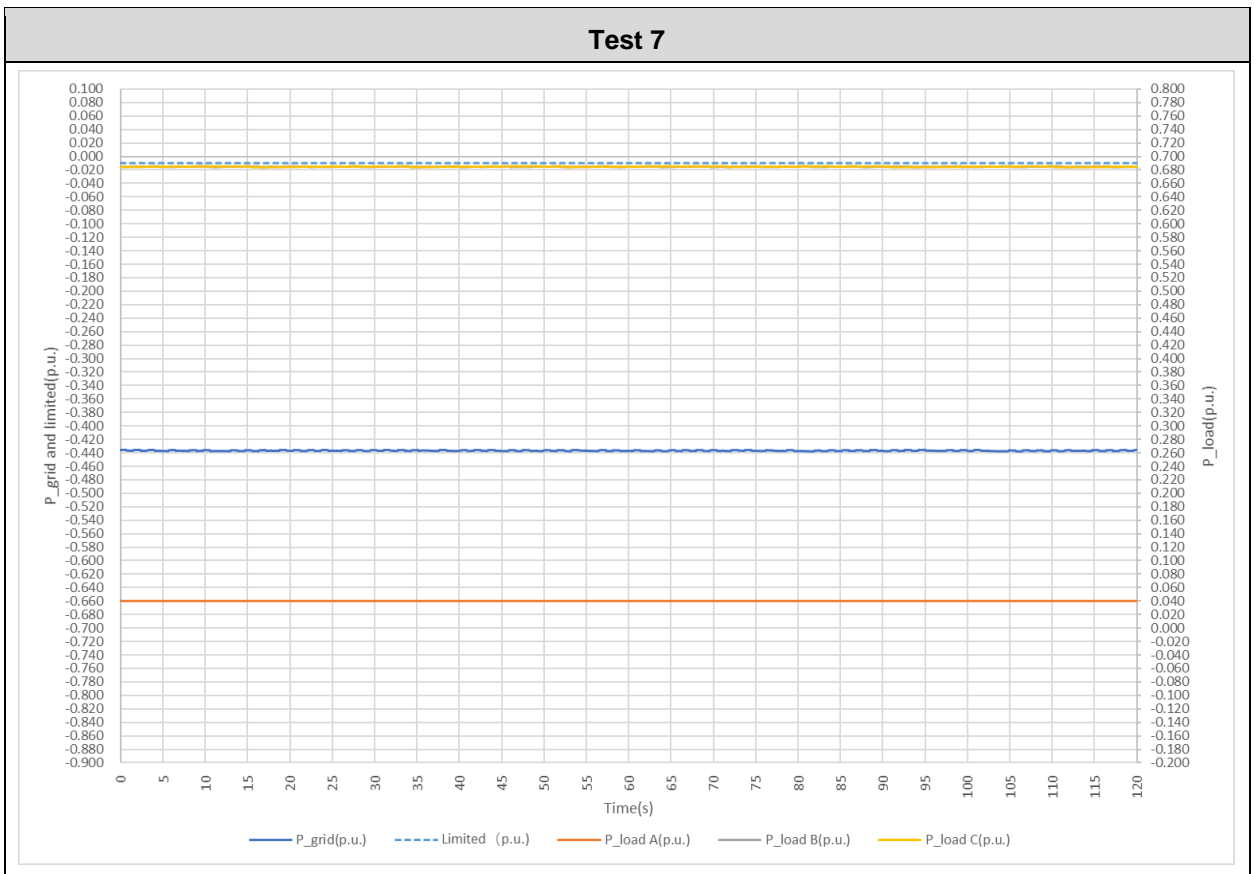
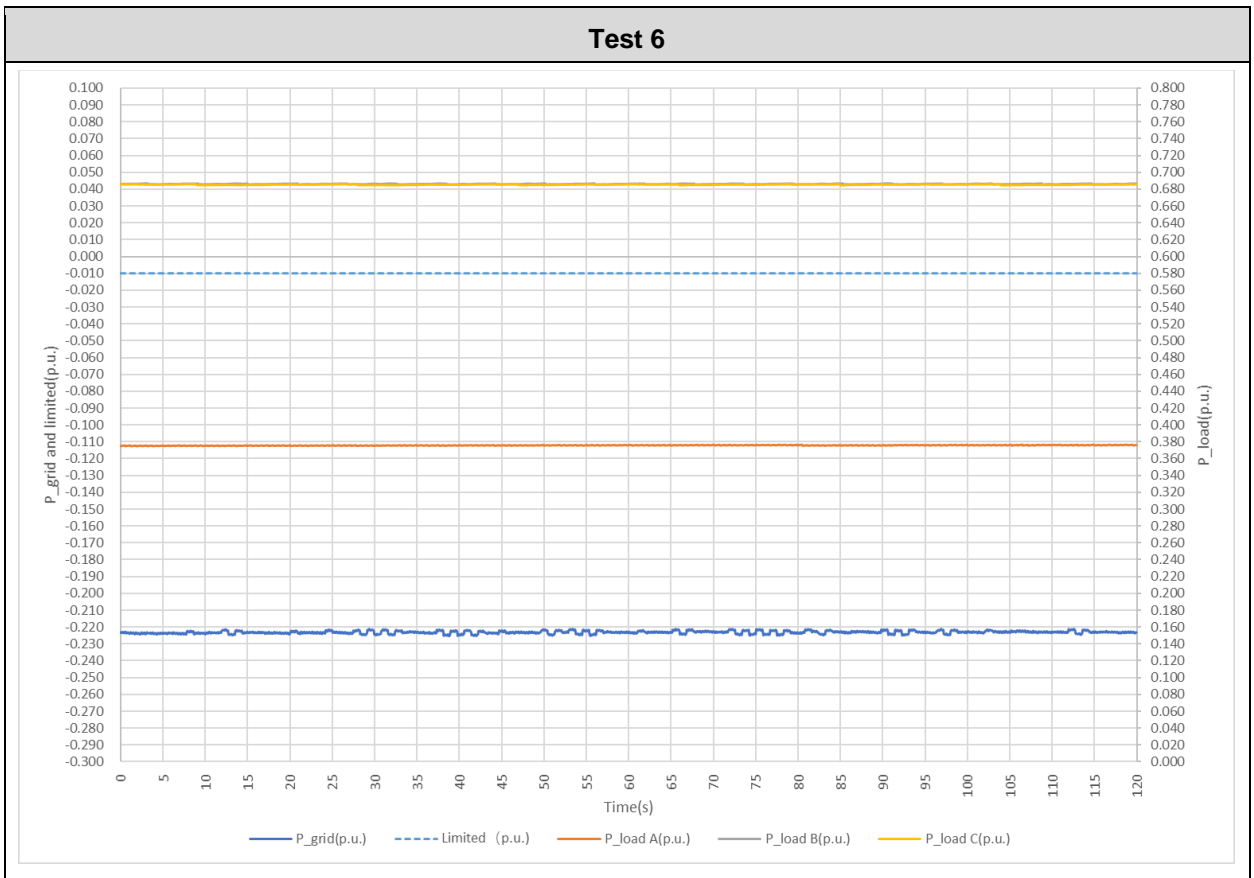


Test 4



Test 5



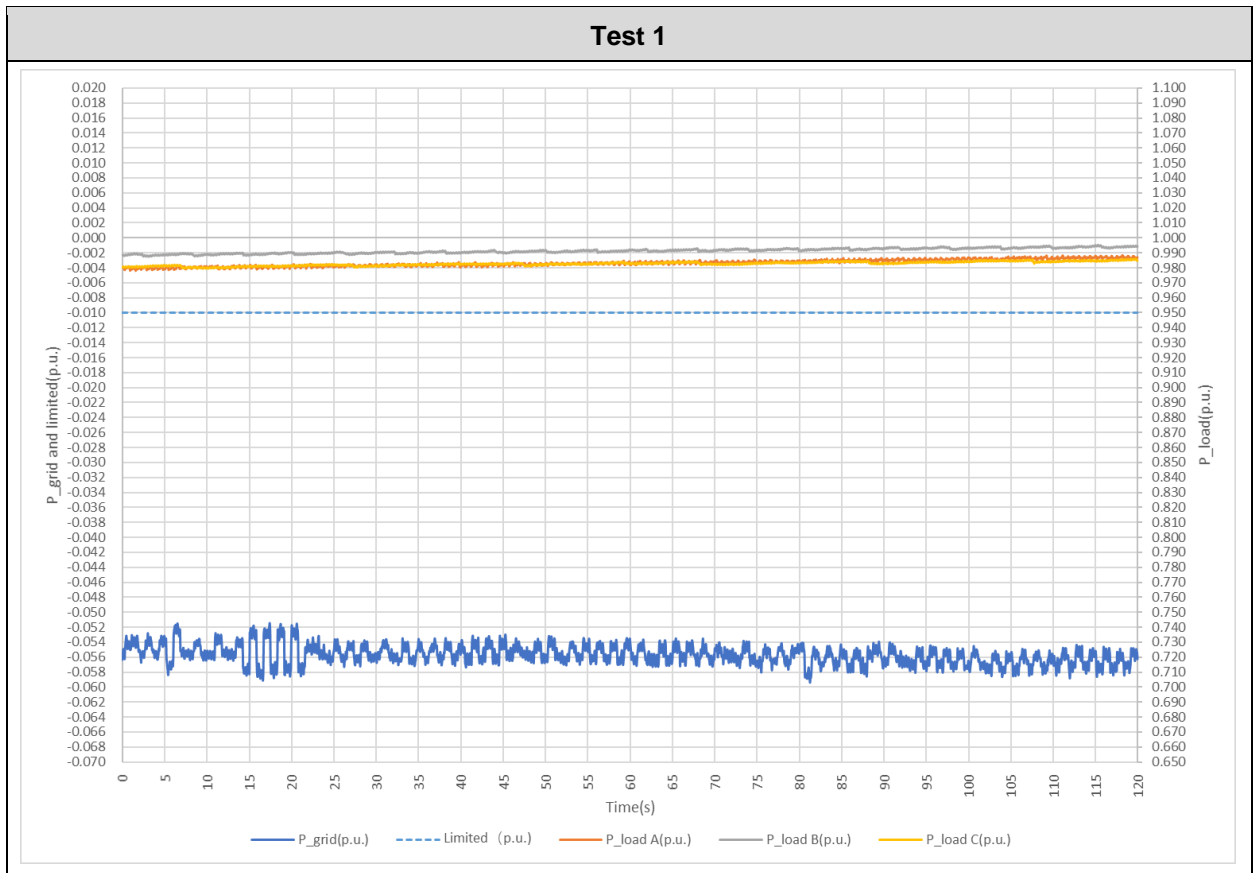


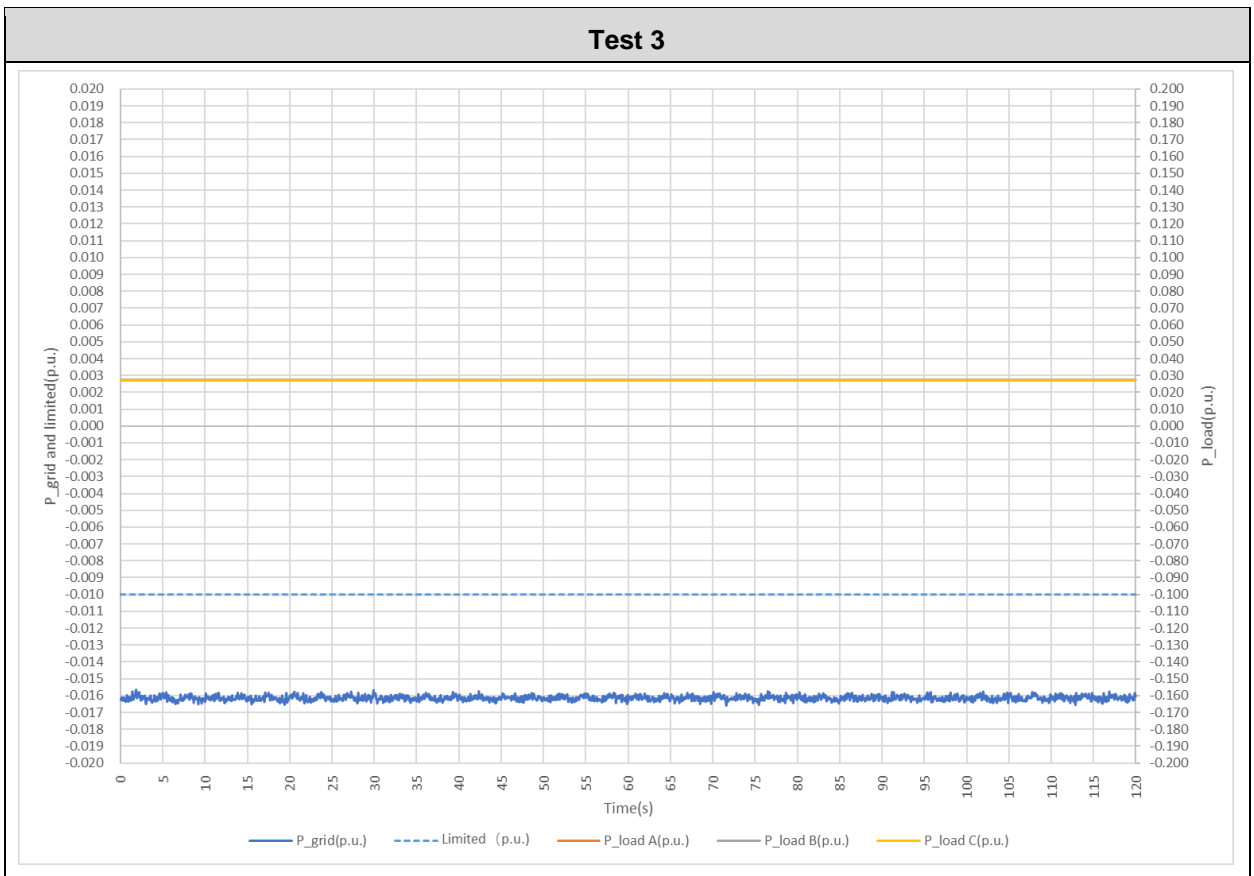
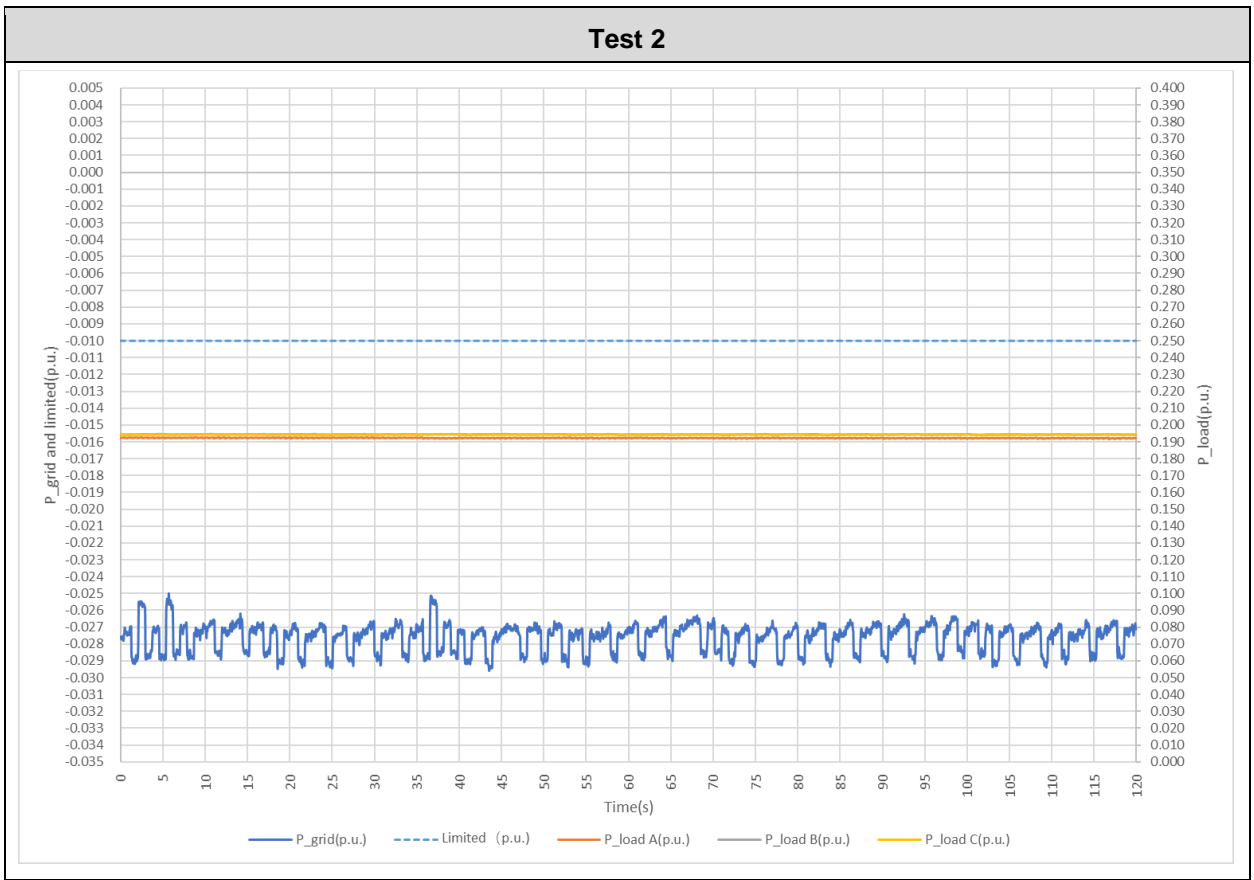
Type 1: With energy meter DTSU666									
Test model: HYD 6KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	98.3	90-100	99.1	90-100	98.3	2	-309	-60
2	10-20	19.2	10-20	19.4	10-20	19.4	2	-150	
3	0	2.7	0	2.7	0	2.7	2	-94	
4	90-100	99.3	60-70	68.8	60-70	68.2	2	-845	
5	60-70	67.9	60-70	68.7	60-70	68.2	2	-204	
6	30-40	37.3	60-70	68.7	60-70	68.2	2	-1268	
7	0	2.7	60-70	68.6	60-70	68.1	2	-2678	

Additional information:

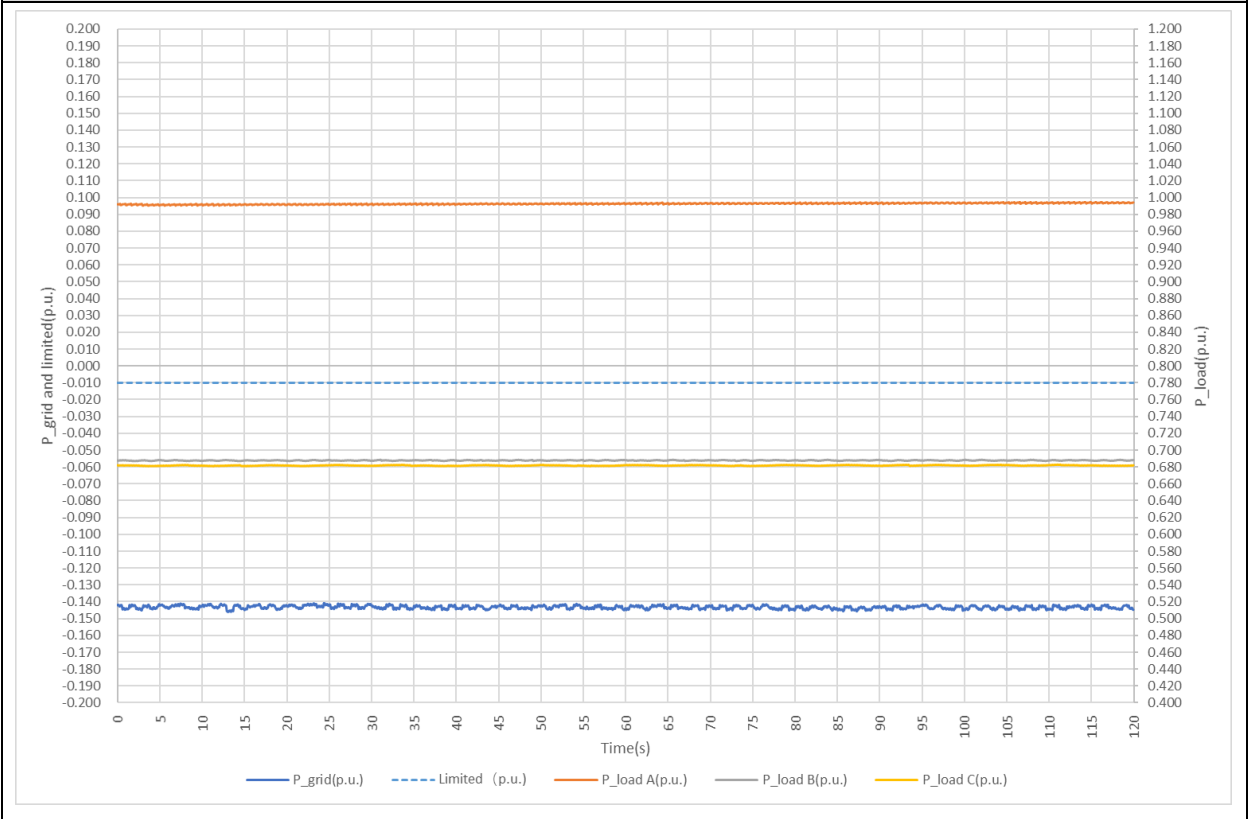
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.

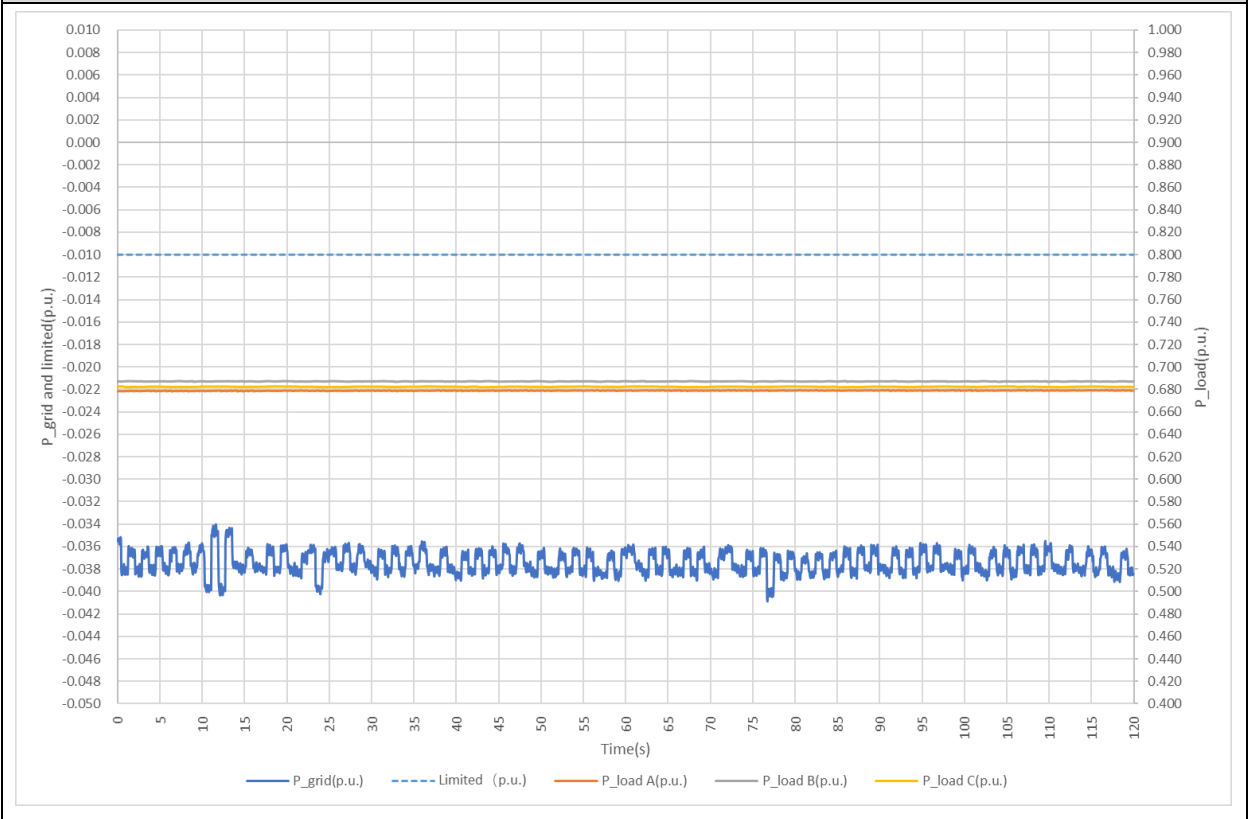


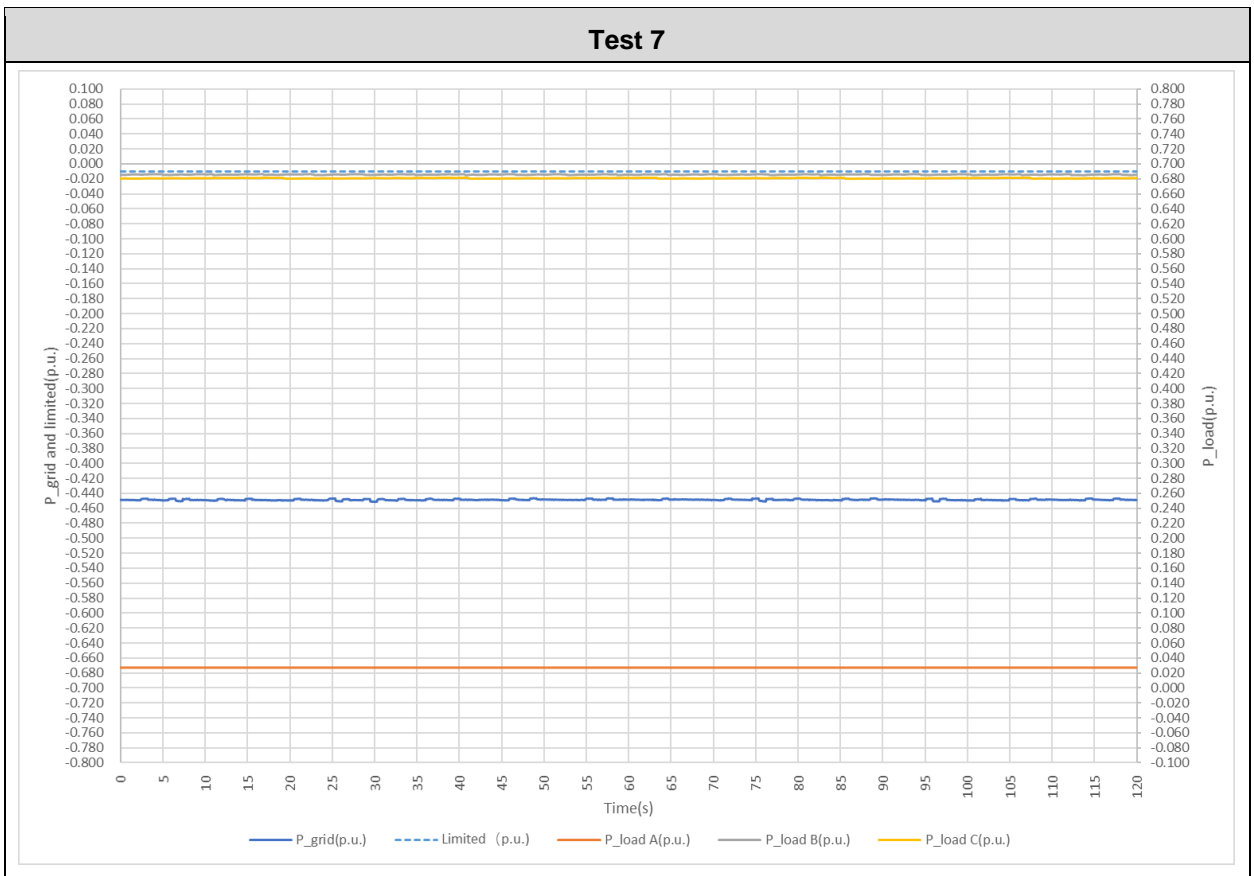
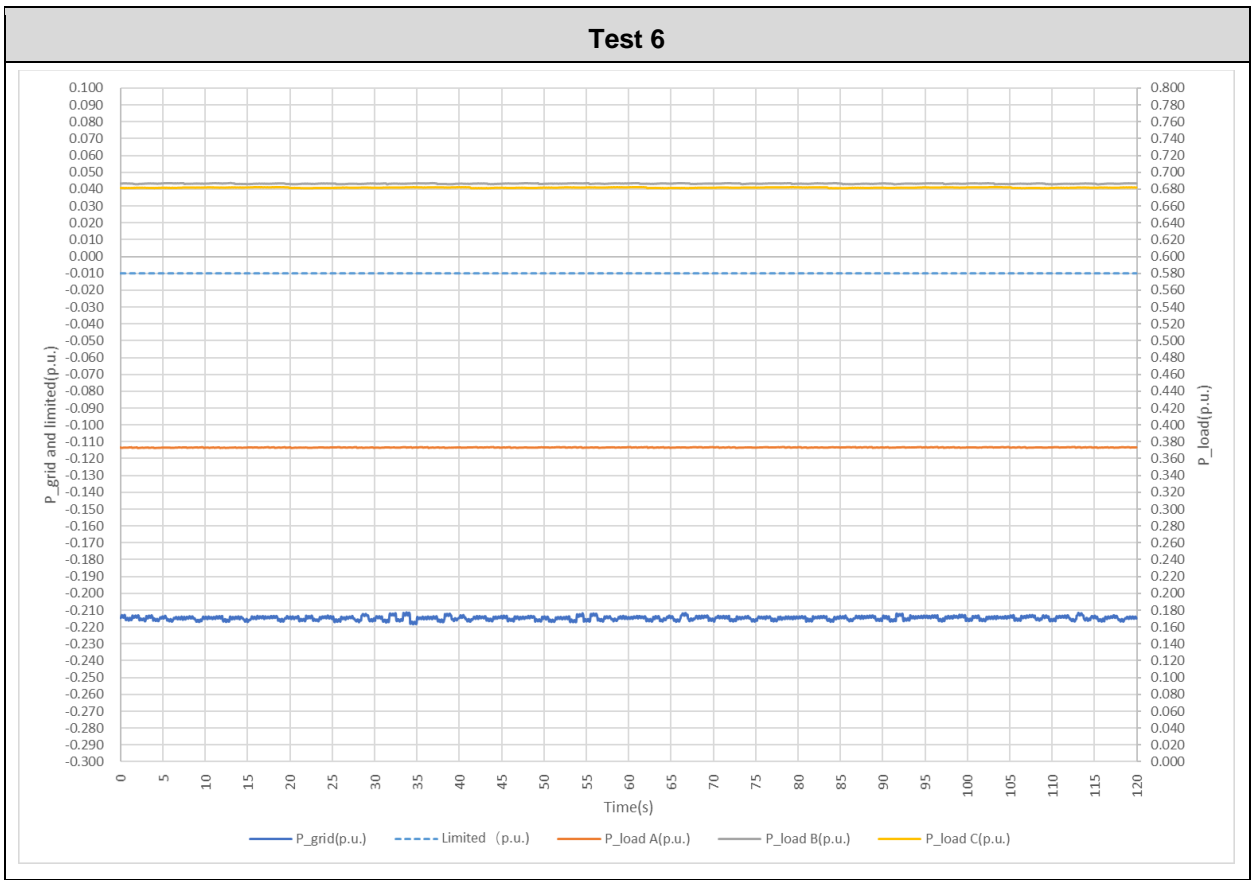


Test 4



Test 5



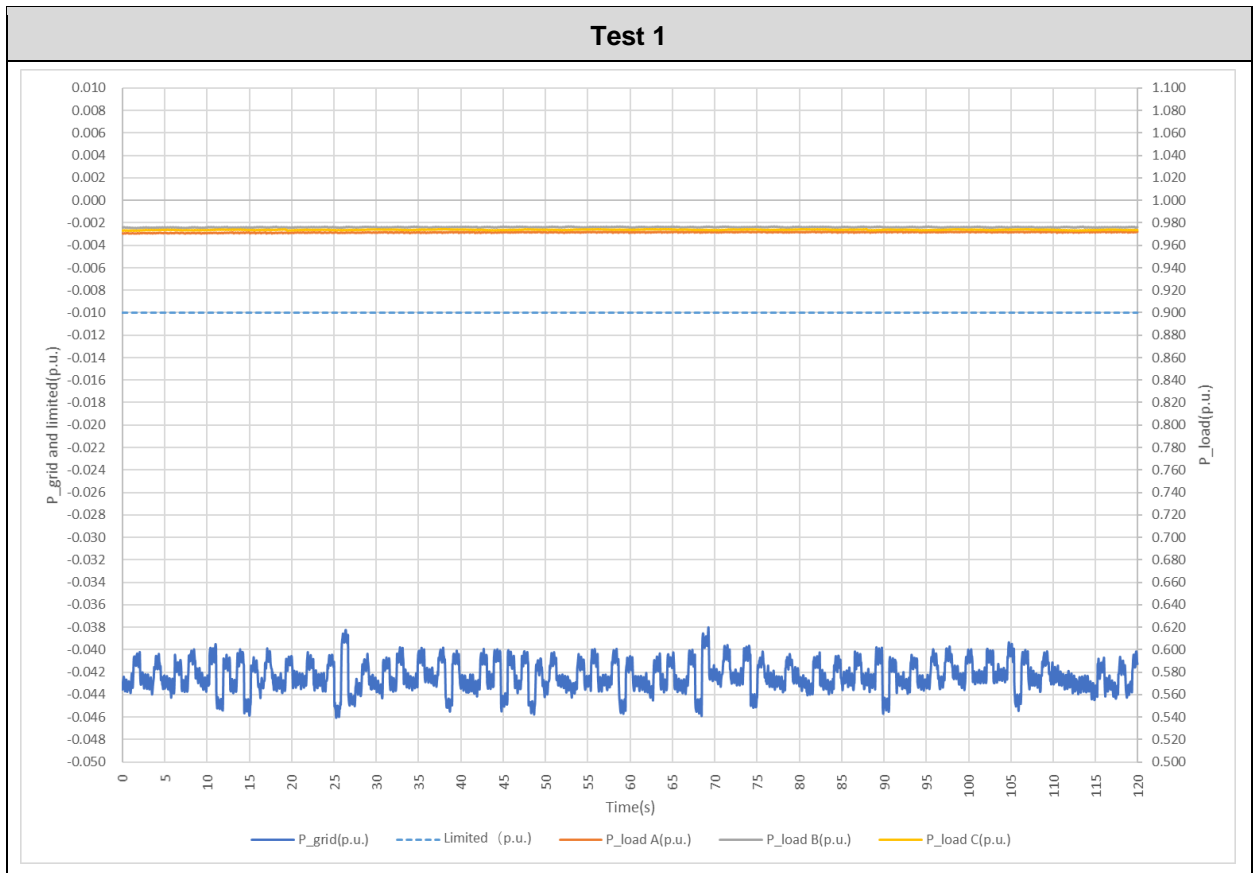


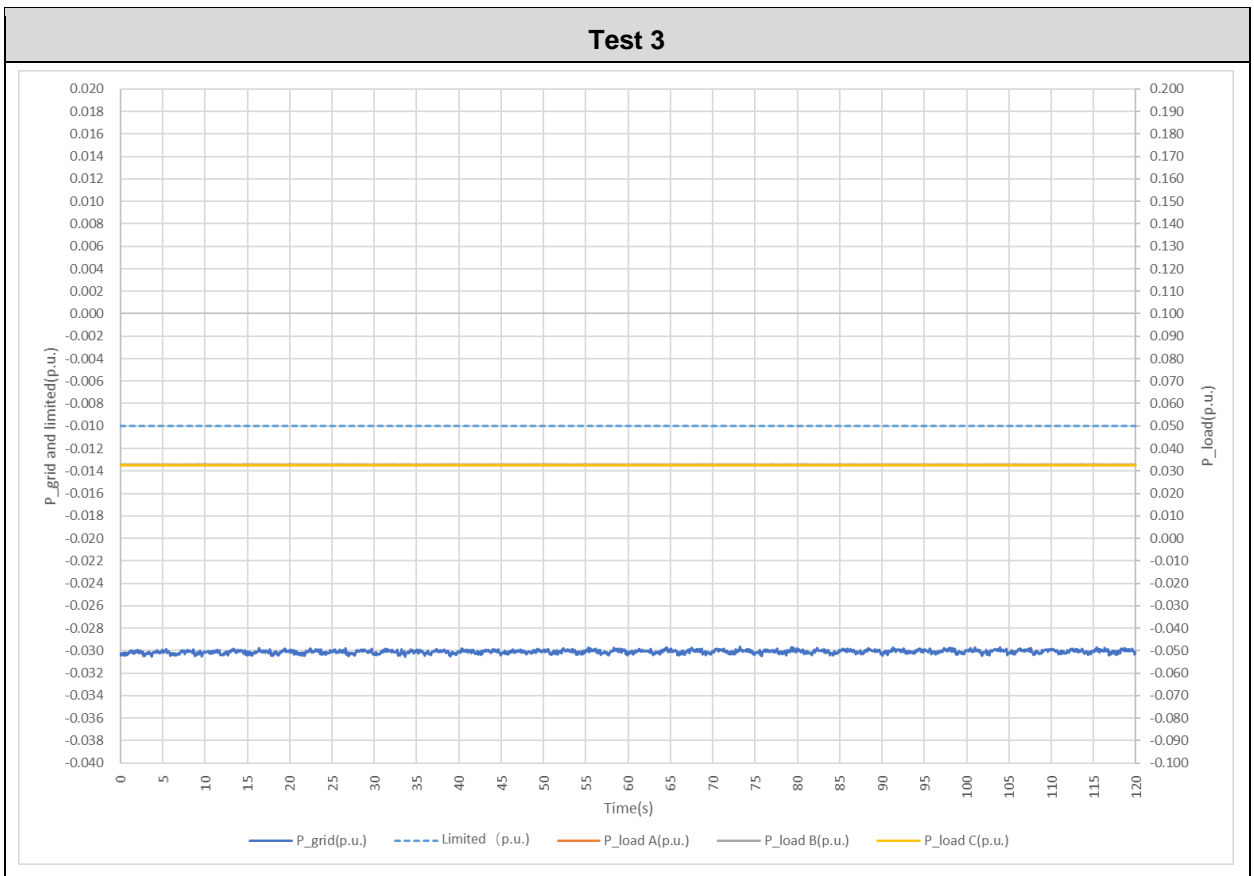
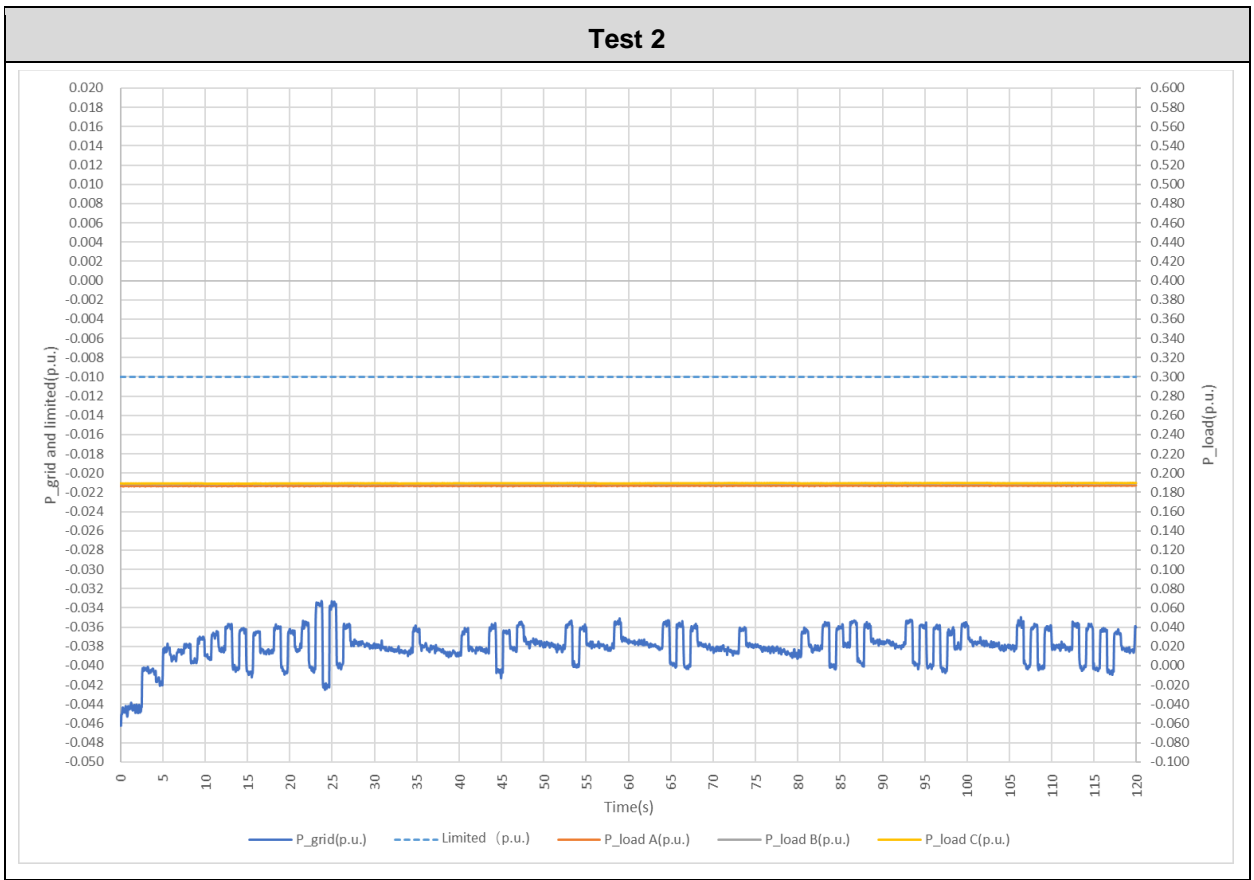
Type 1: With energy meter DTSU666									
Test model: HYD 5KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	97.2	90-100	97.6	90-100	97.4	2	-190	-50
2	10-20	18.7	10-20	18.9	10-20	19.0	2	-166	
3	0	3.3	0	3.3	0	3.3	2	-148	
4	90-100	97.1	60-70	66.6	60-70	66.0	2	-835	
5	60-70	65.7	60-70	66.5	60-70	66.0	2	-206	
6	30-40	38.0	60-70	66.5	60-70	65.9	2	-948	
7	0	3.3	60-70	66.4	60-70	65.9	2	-2088	

Additional information:

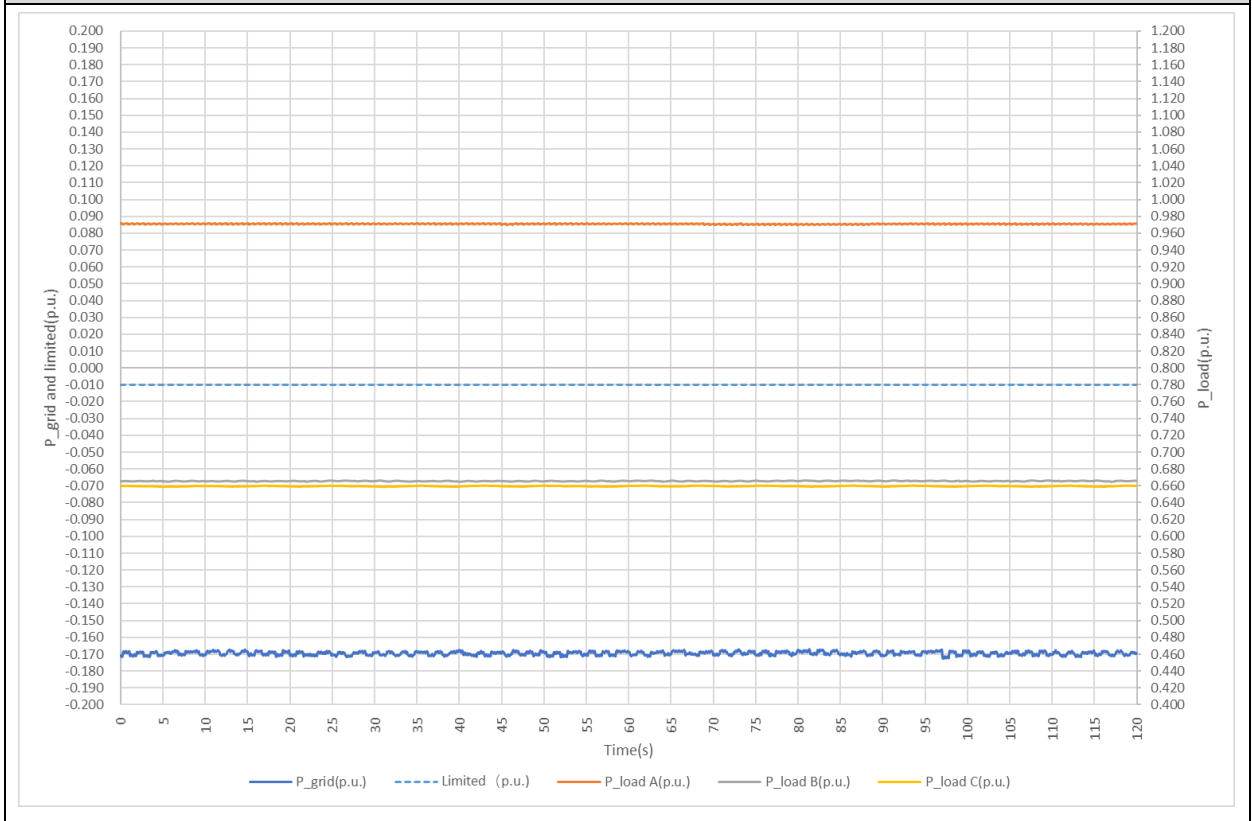
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.

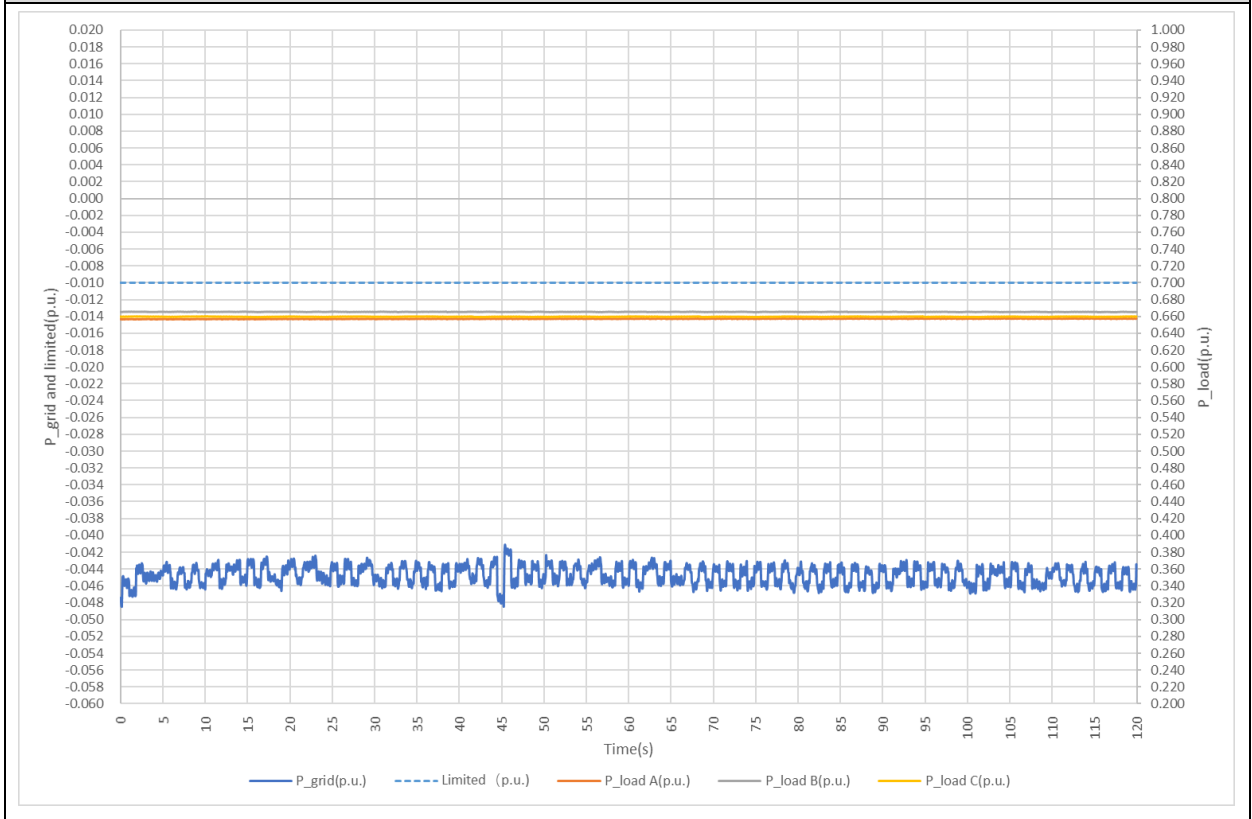


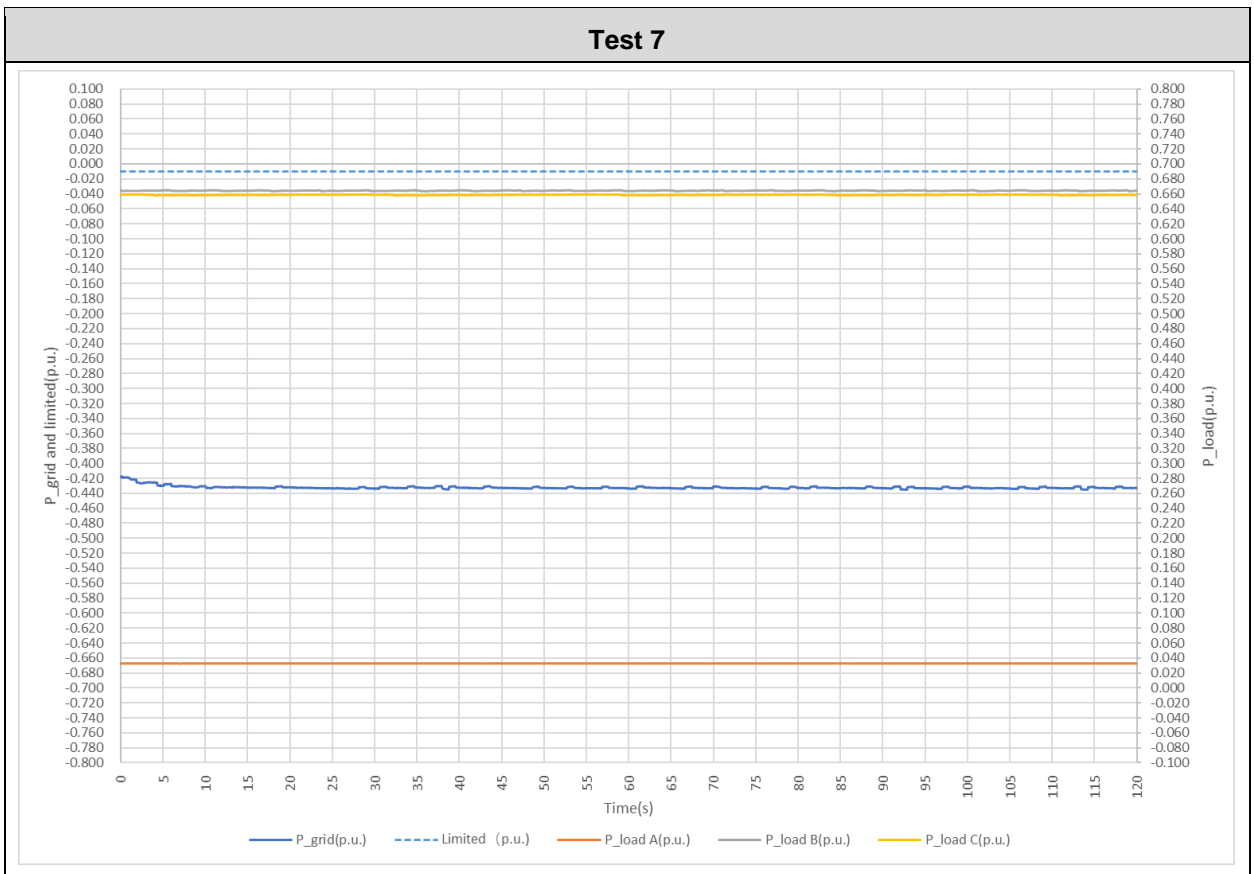
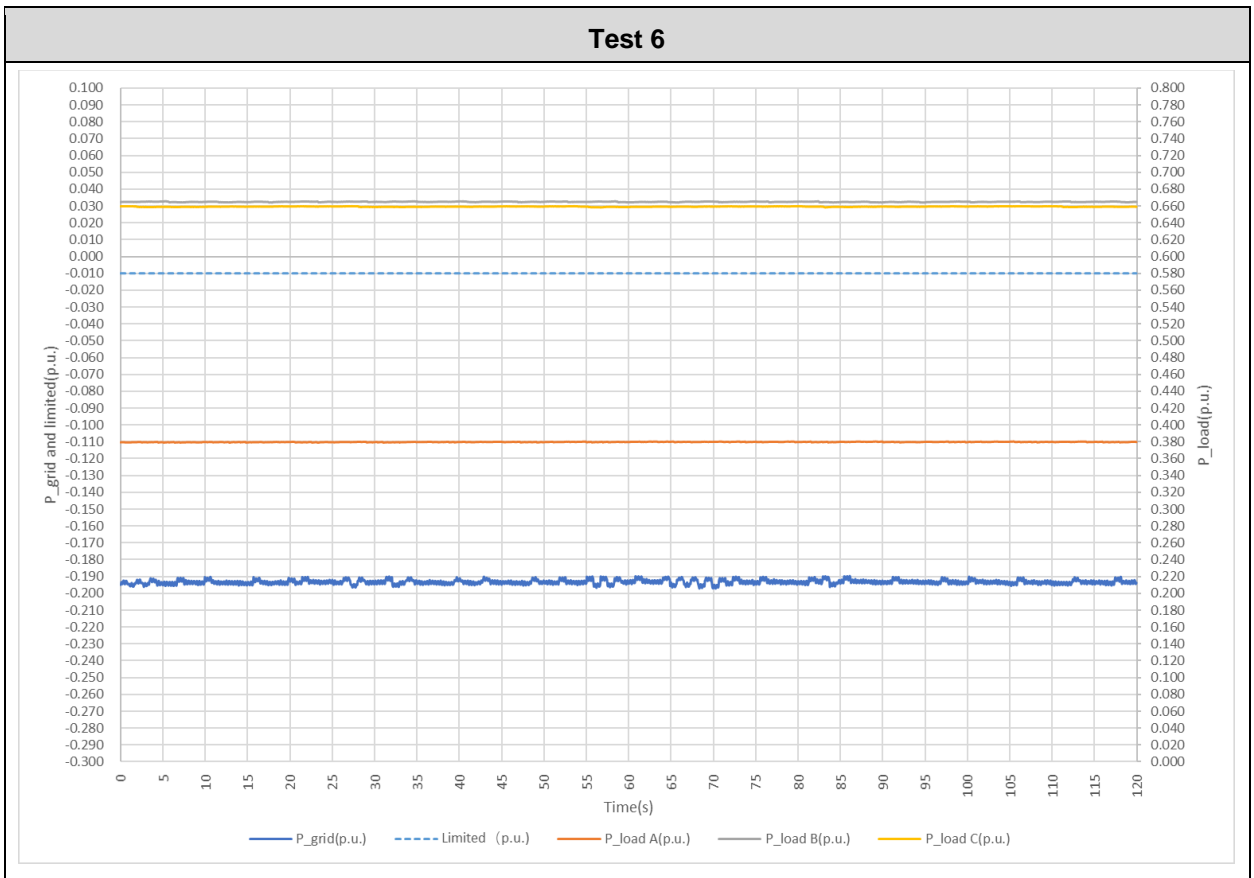


Test 4



Test 5



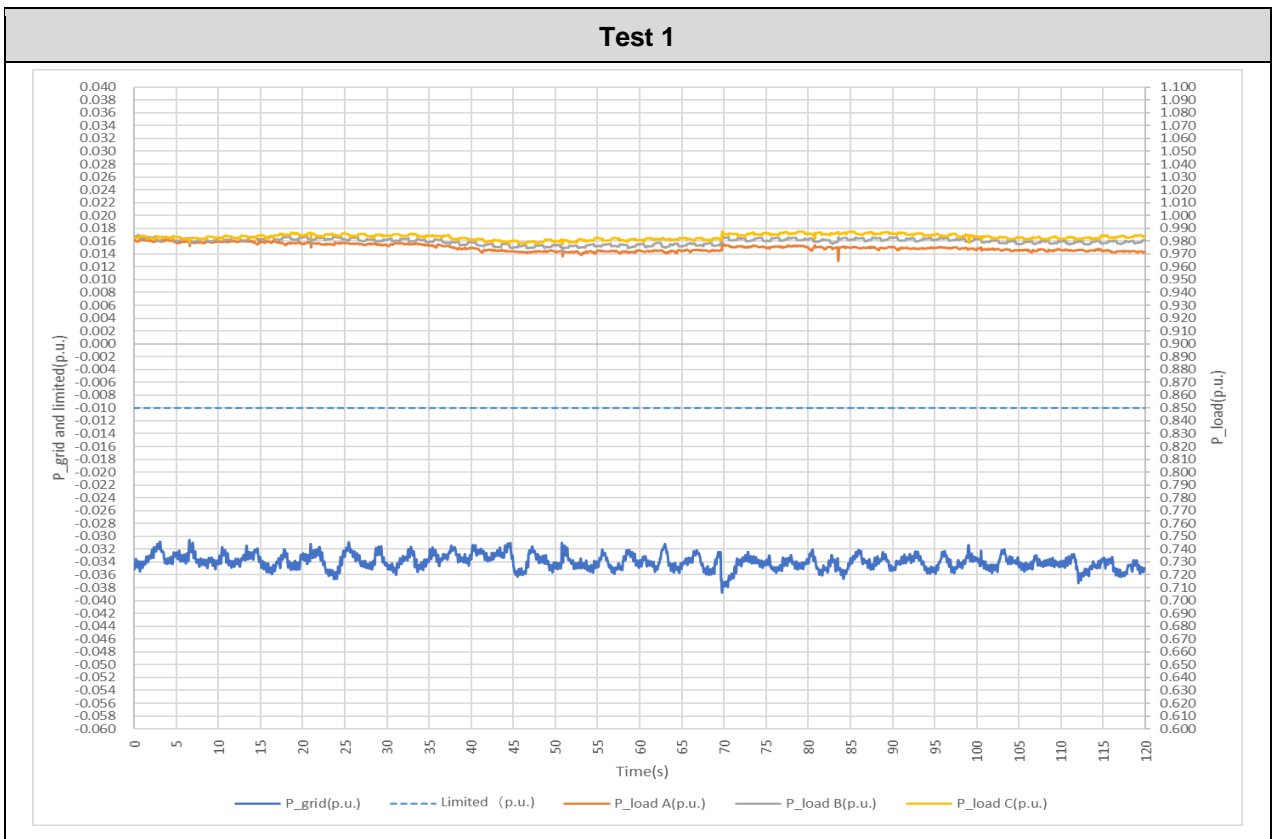


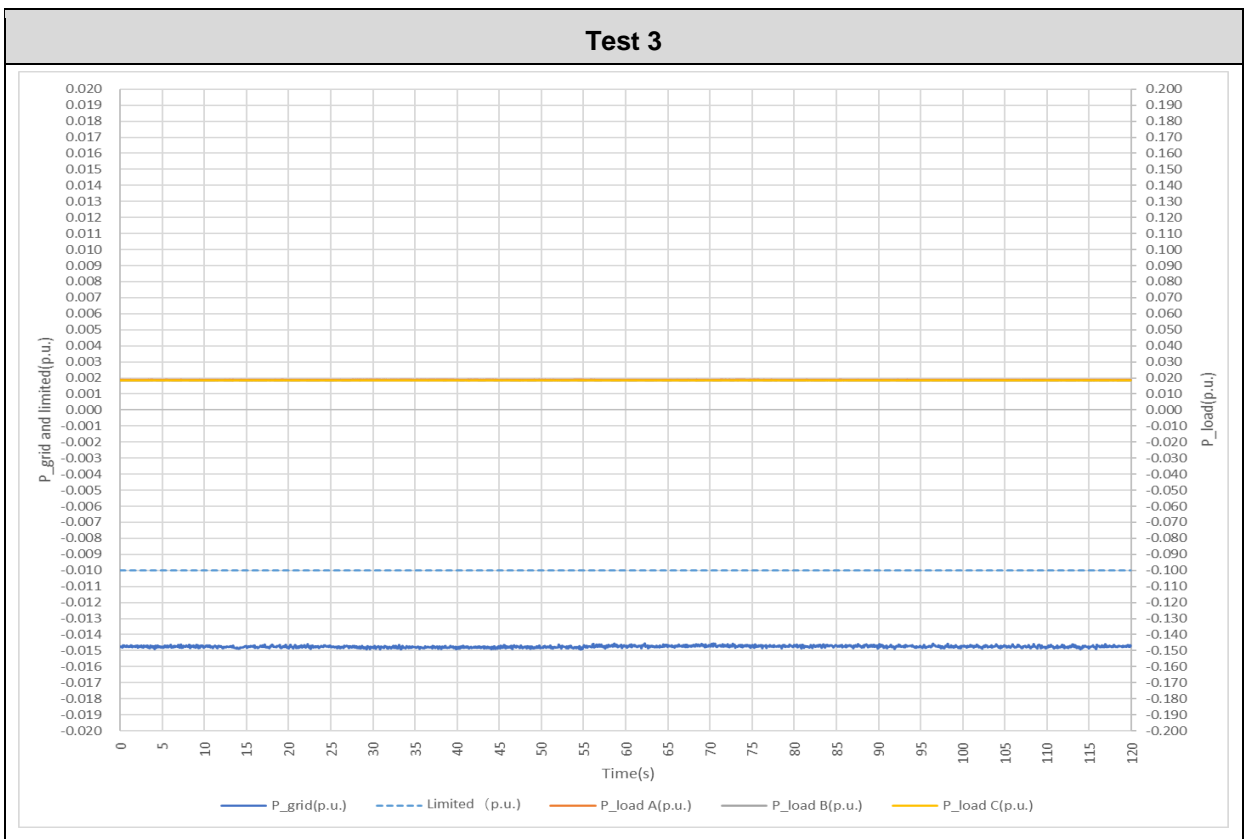
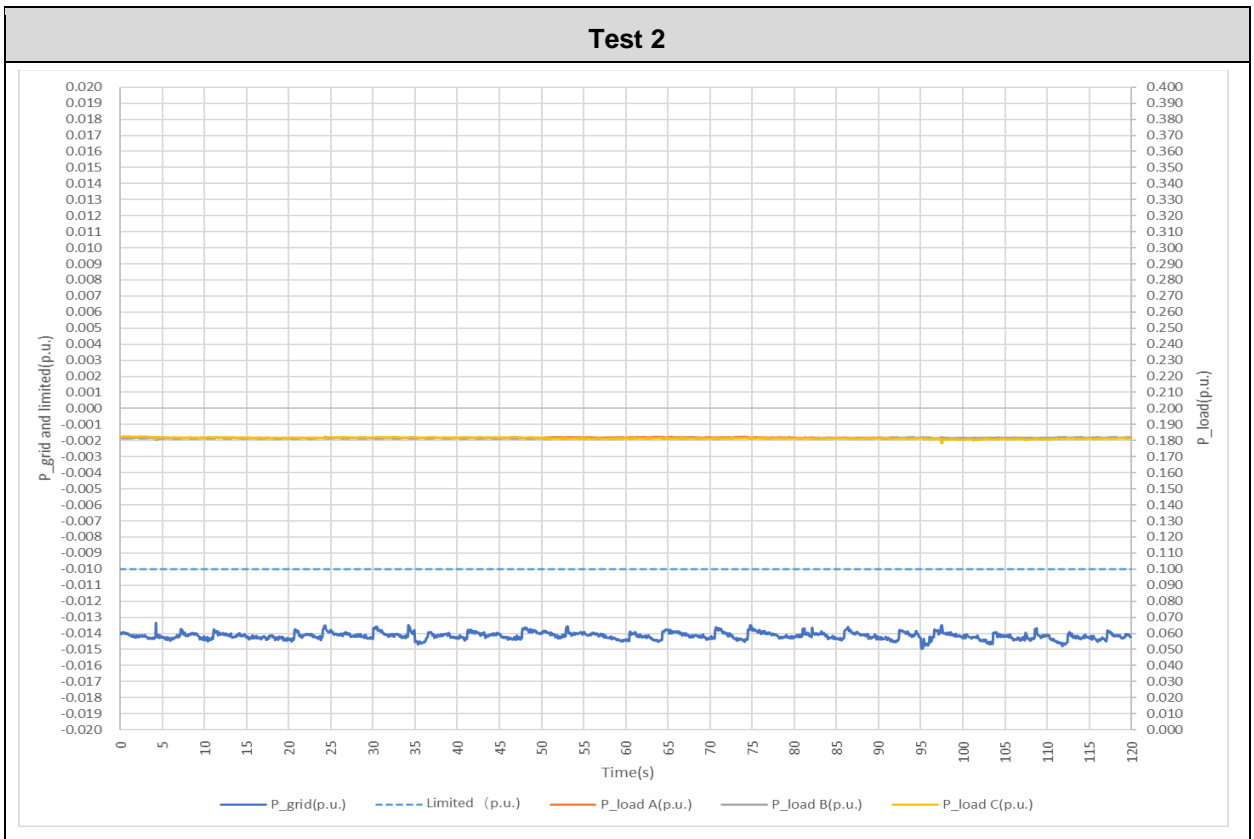
Type 2: With energy meter ACR10R-D24TE4									
Test model: HYD 20KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	97.5	90-100	98.0	90-100	98.3	2	-611	-200
2	10-20	18.2	10-20	18.2	10-20	18.2	2	-267	
3	0	1.9	0	1.8	0	1.9	2	-291	
4	90-100	97.7	60-70	67.6	60-70	68.1	2	-2081	
5	60-70	68.3	60-70	68.0	60-70	67.8	2	-646	
6	30-40	37.8	60-70	67.8	60-70	67.9	2	-3650	
7	0	0.0	60-70	67.5	60-70	68.0	2	-8574	

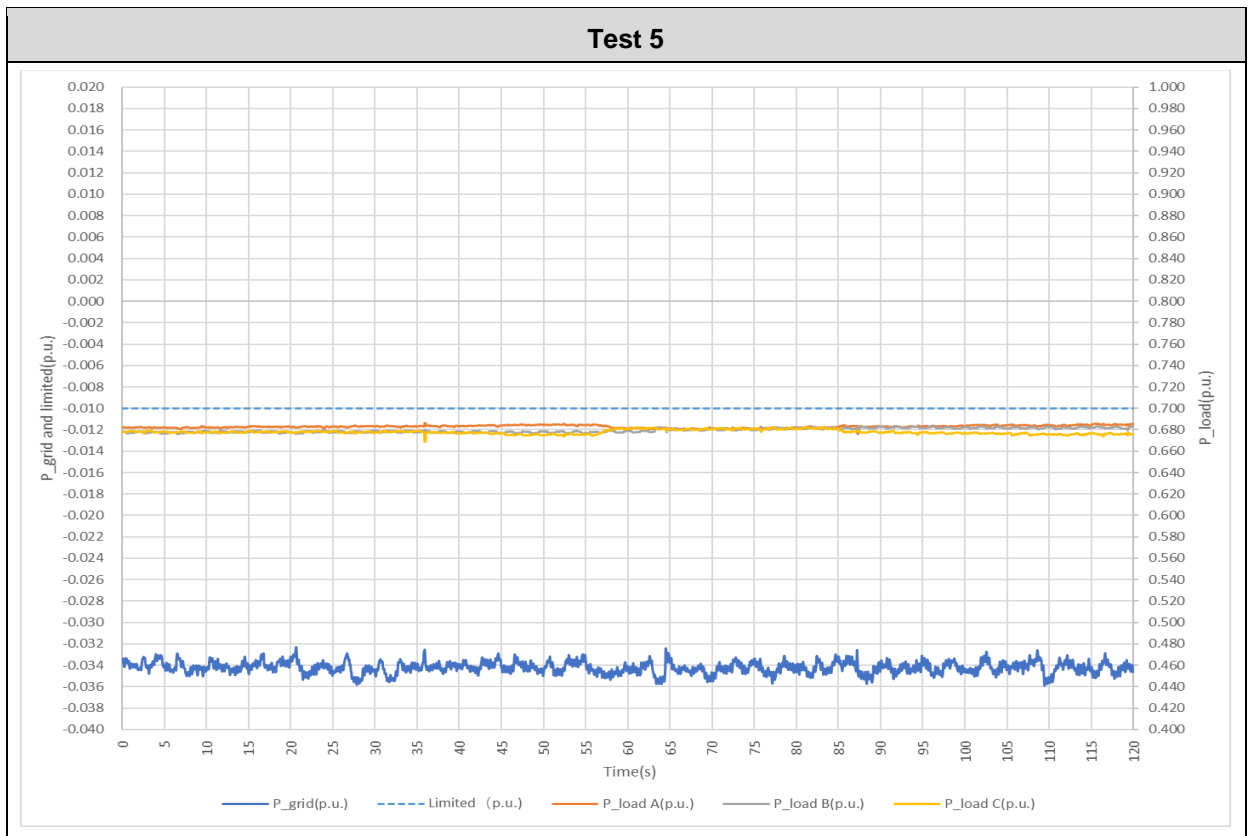
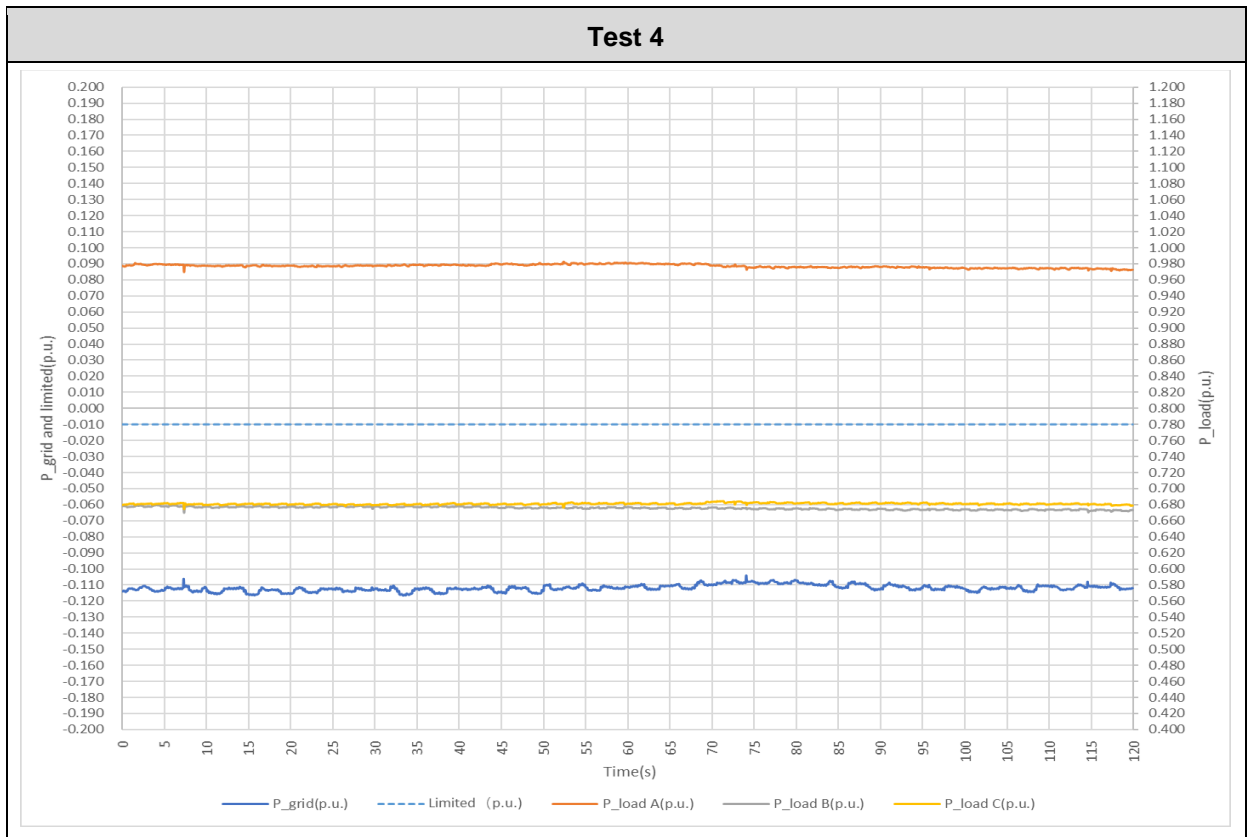
Additional information:

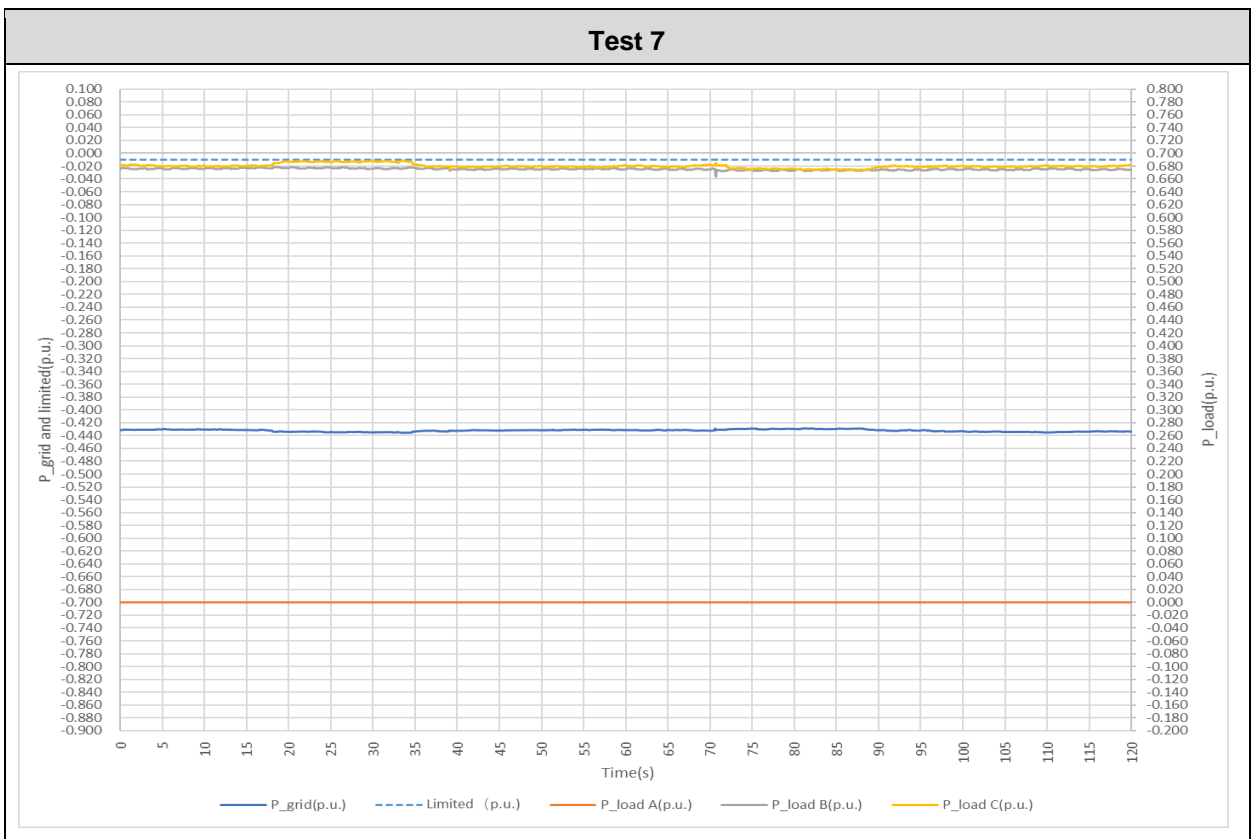
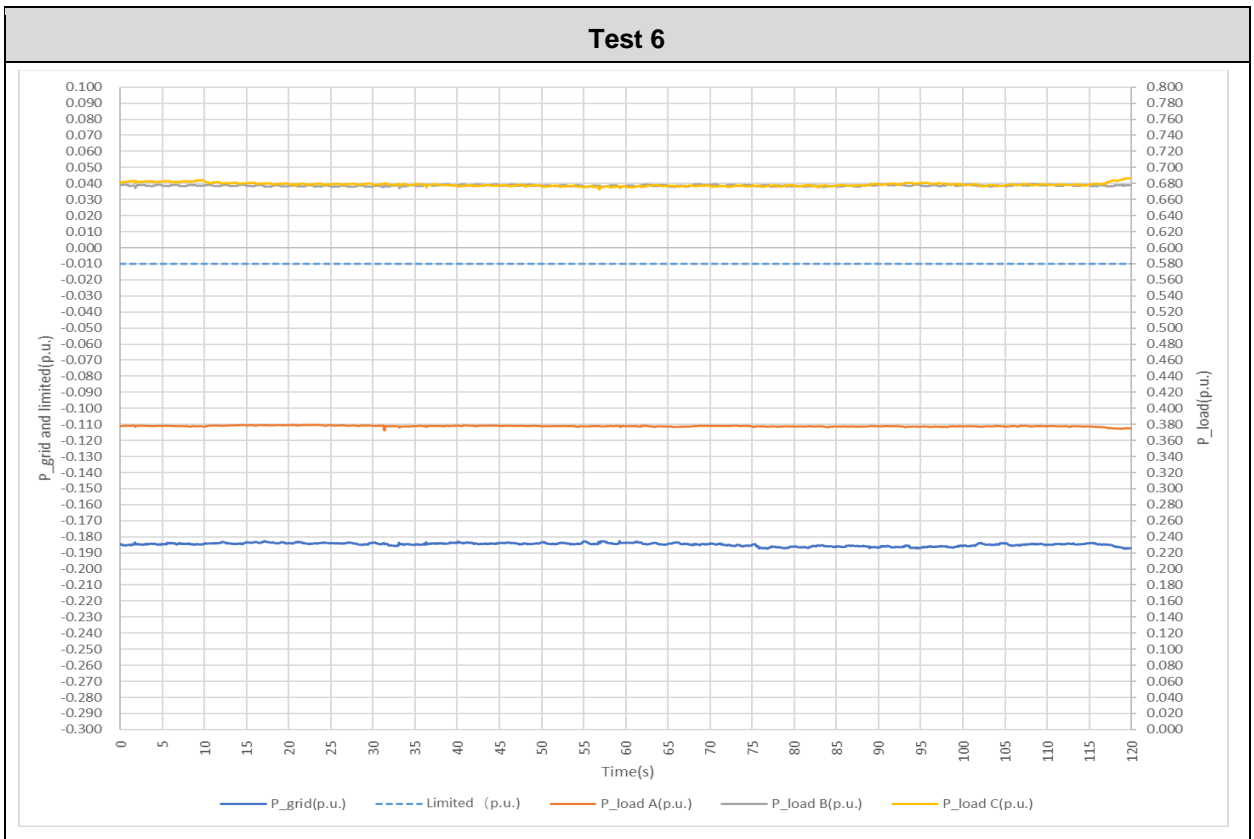
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.







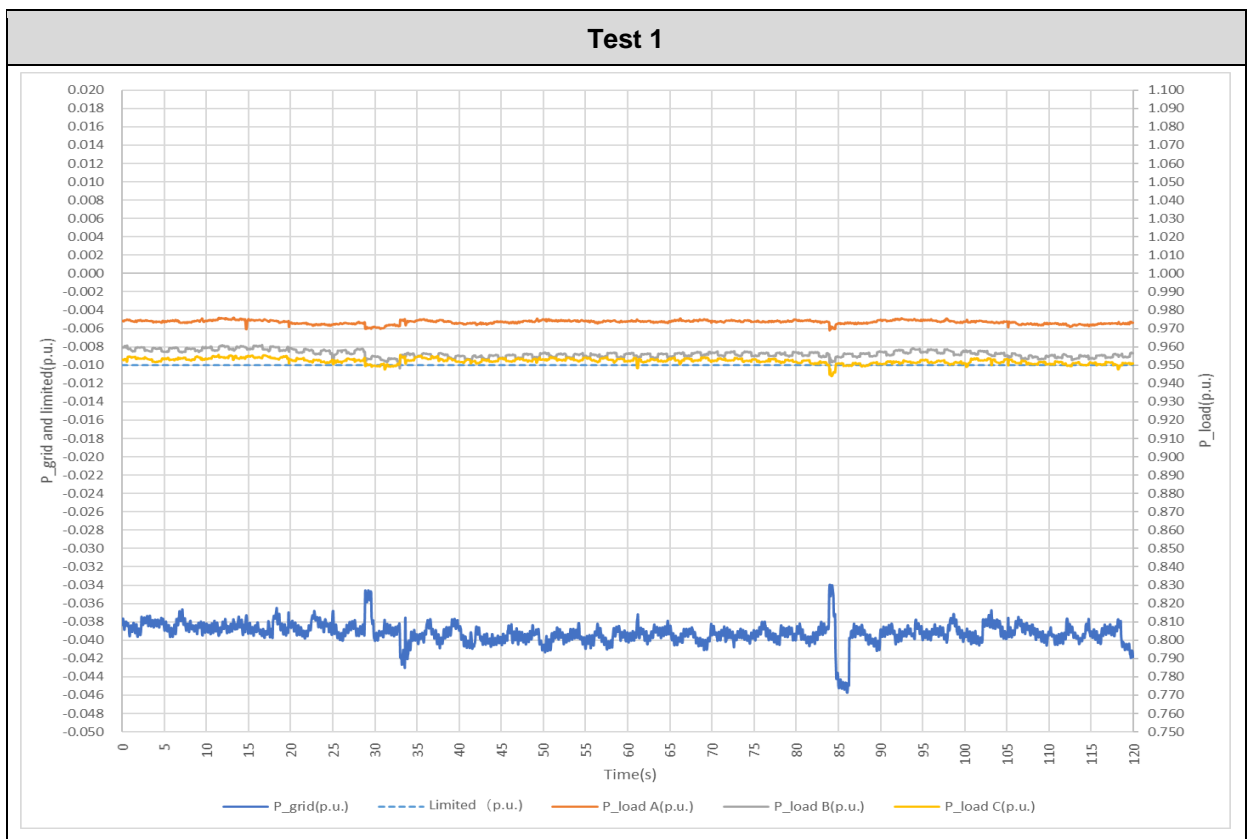


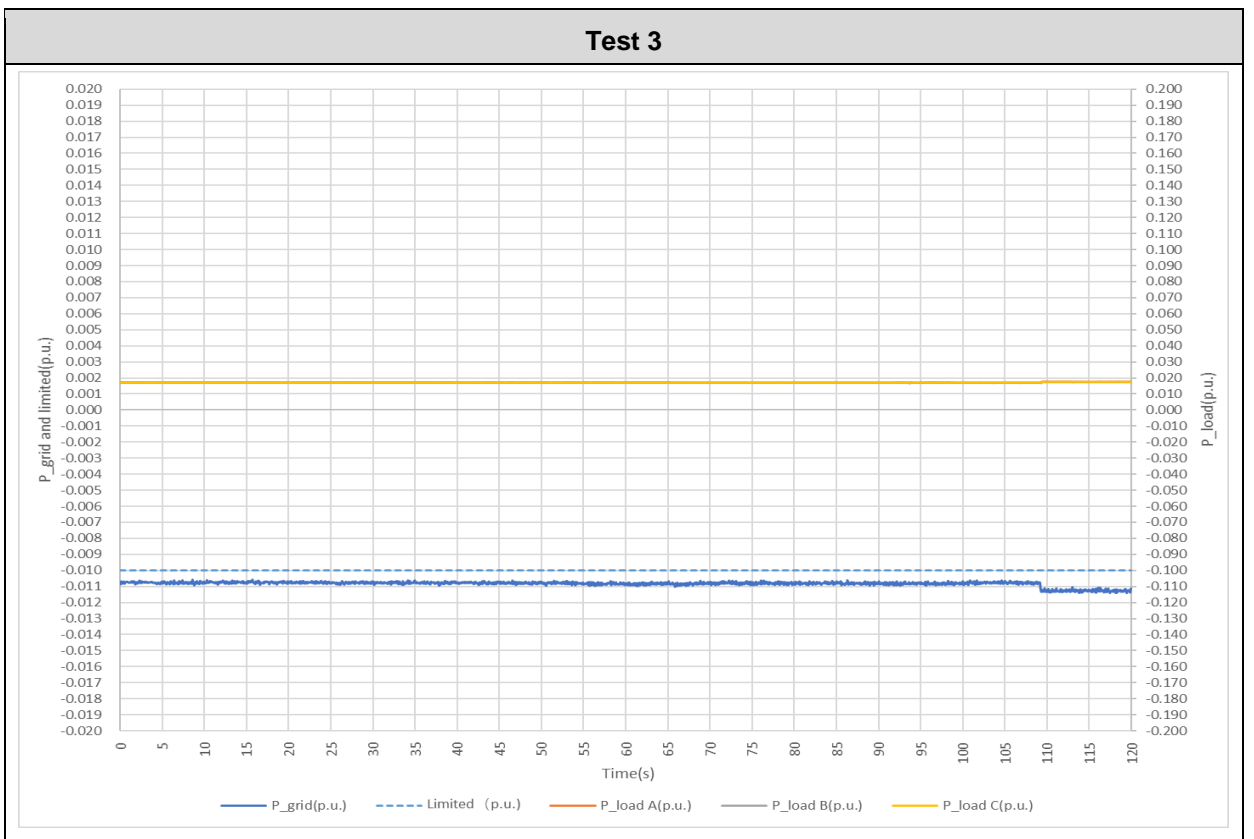
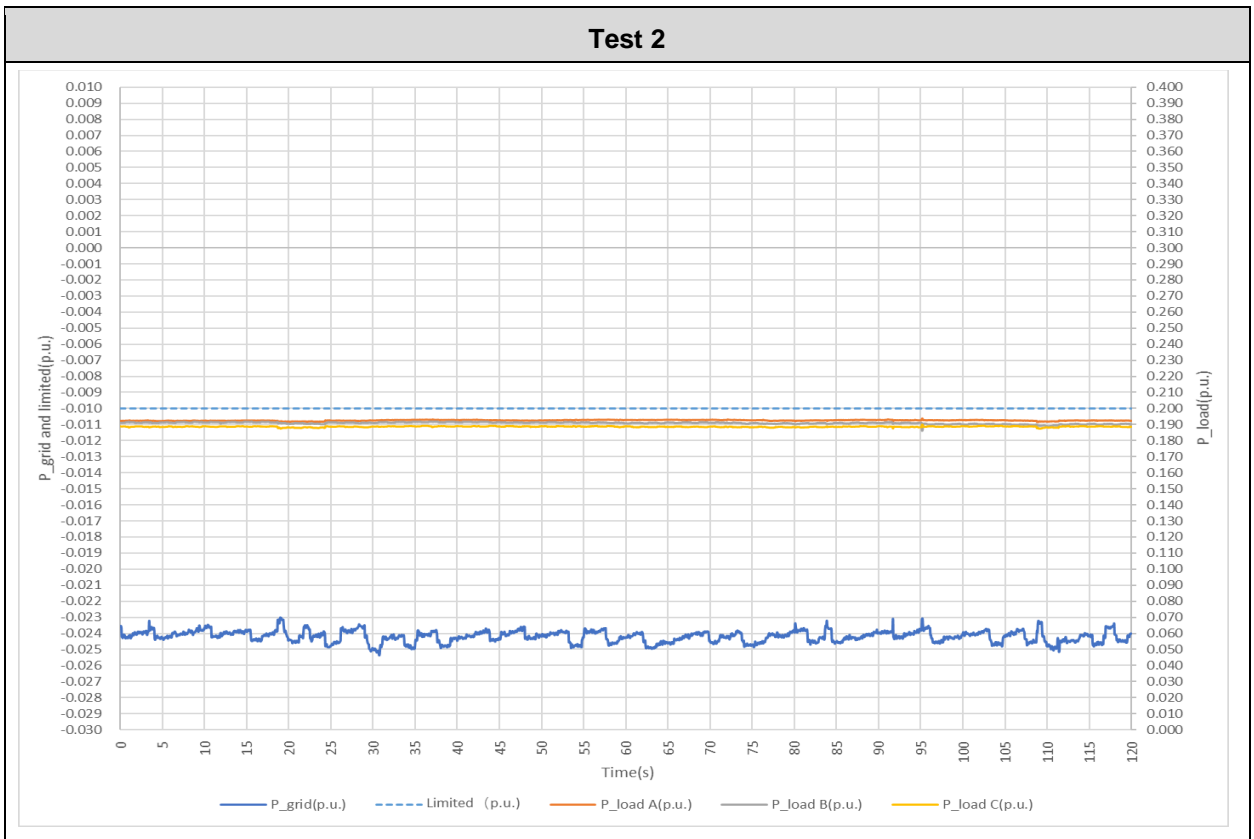
Type 2: With energy meter ACR10R-D24TE4									
Test model: HYD 15KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	97.4	90-100	95.6	90-100	95.2	2	-509	-150
2	10-20	19.3	10-20	19.1	10-20	18.9	2	-345	
3	0	1.8	0	1.7	0	1.7	2	-159	
4	90-100	98.0	60-70	68.8	60-70	68.6	2	-1272	
5	60-70	68.0	60-70	67.8	60-70	68.1	2	-397	
6	30-40	38.3	60-70	66.9	60-70	67.3	2	-1959	
7	0	1.4	60-70	68.1	60-70	67.6	2	-5922	

Additional information:

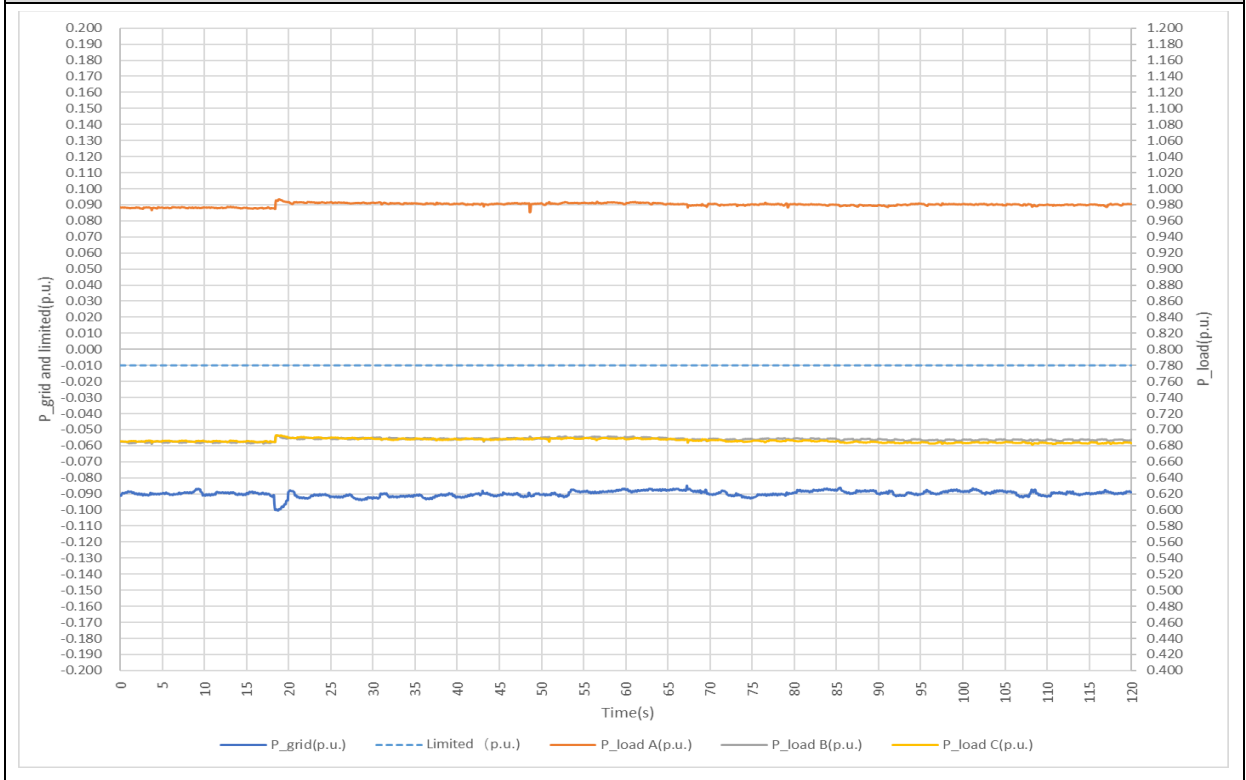
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.

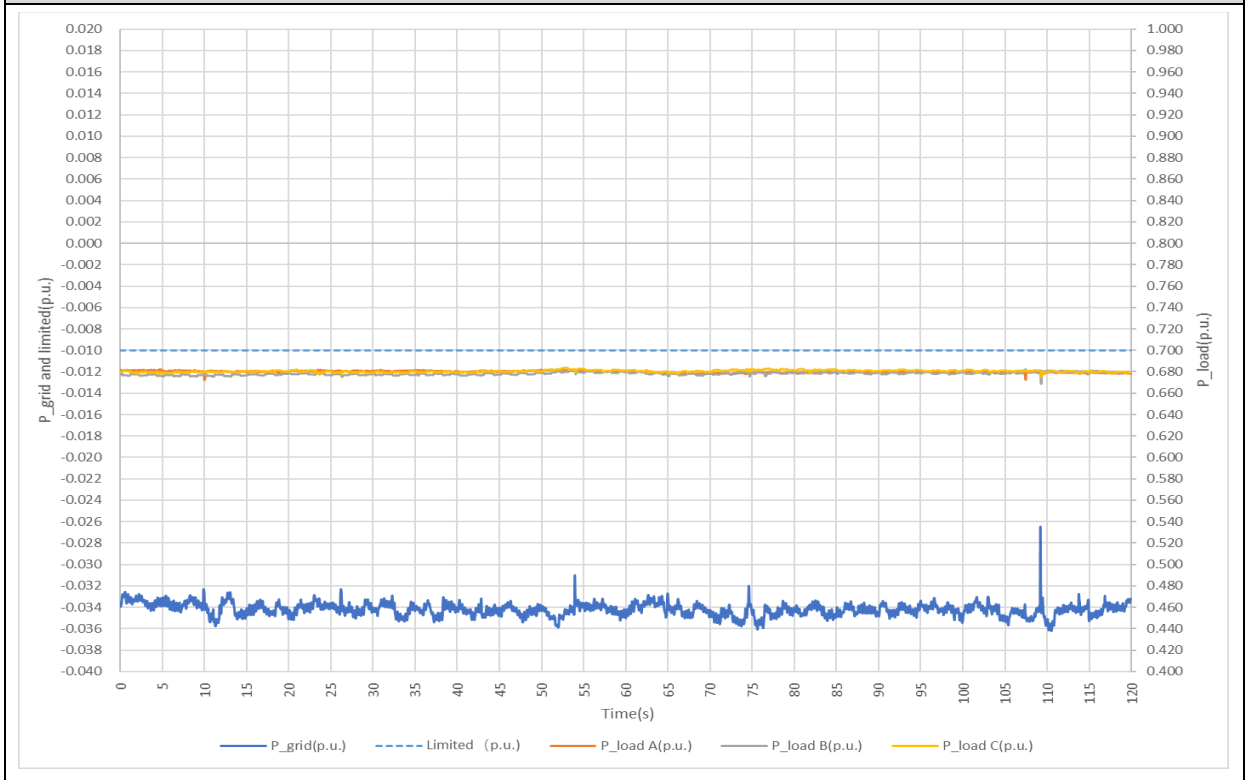


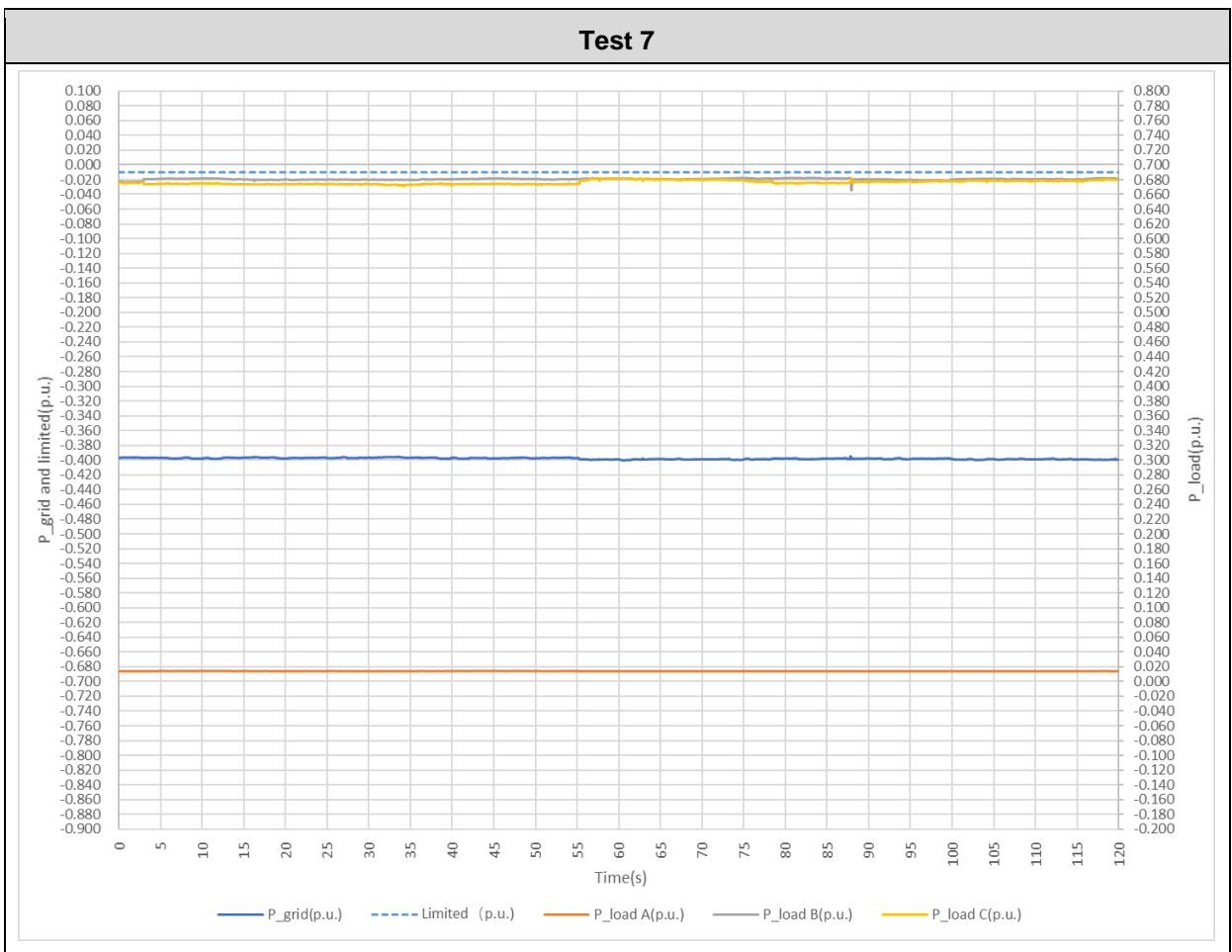
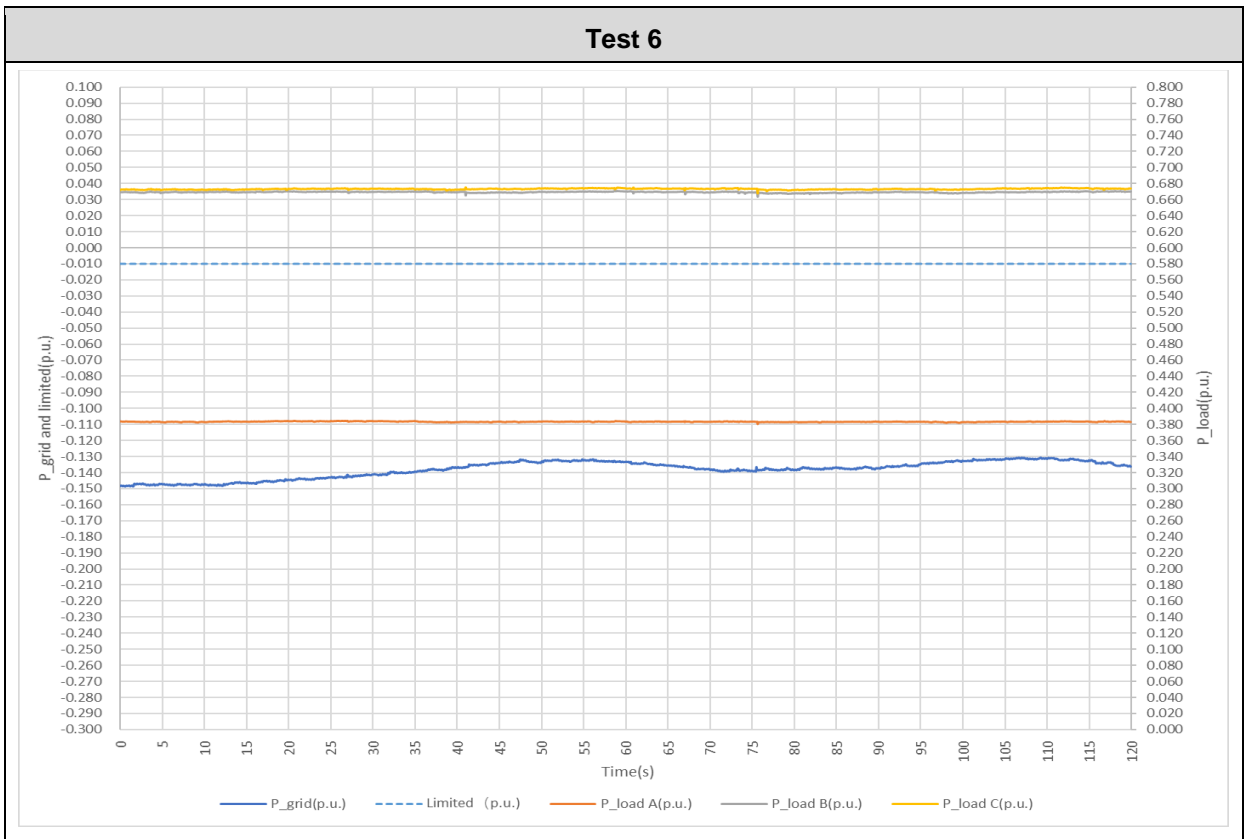


Test 4



Test 5



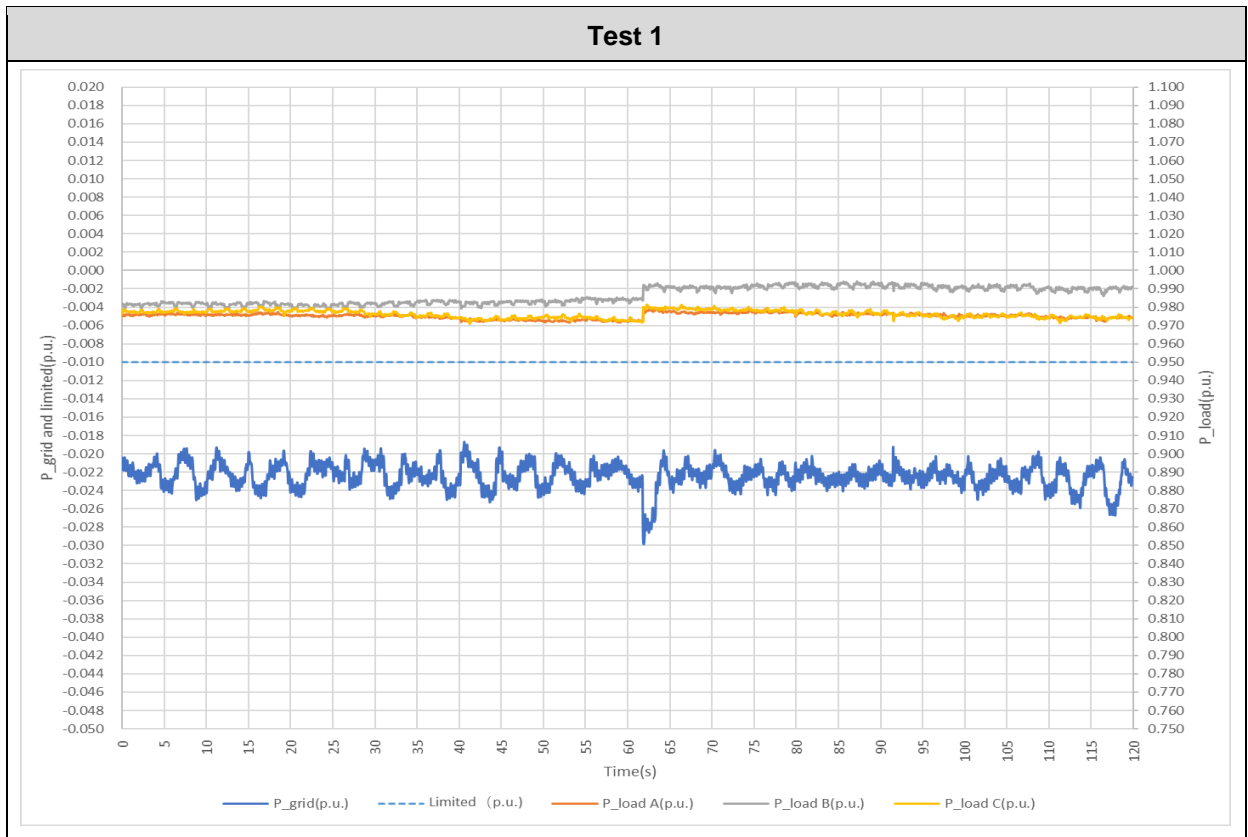


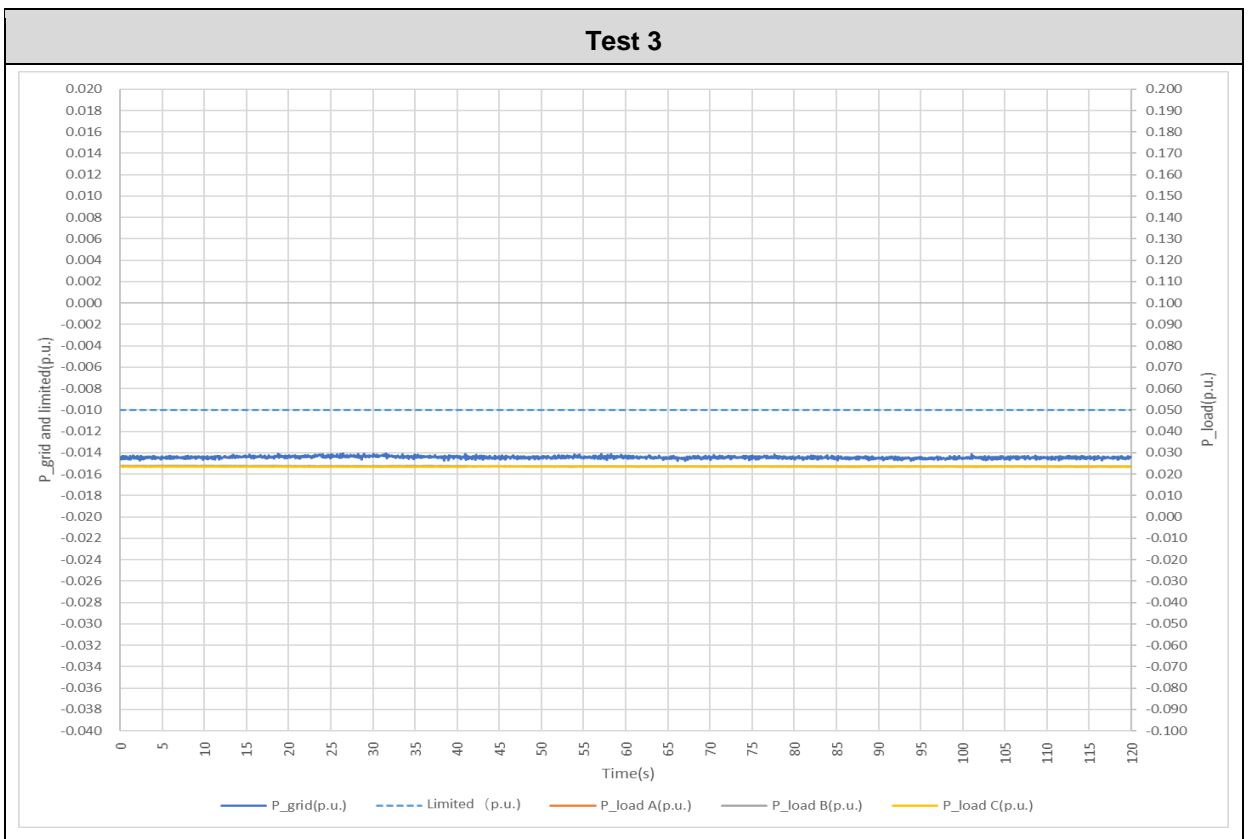
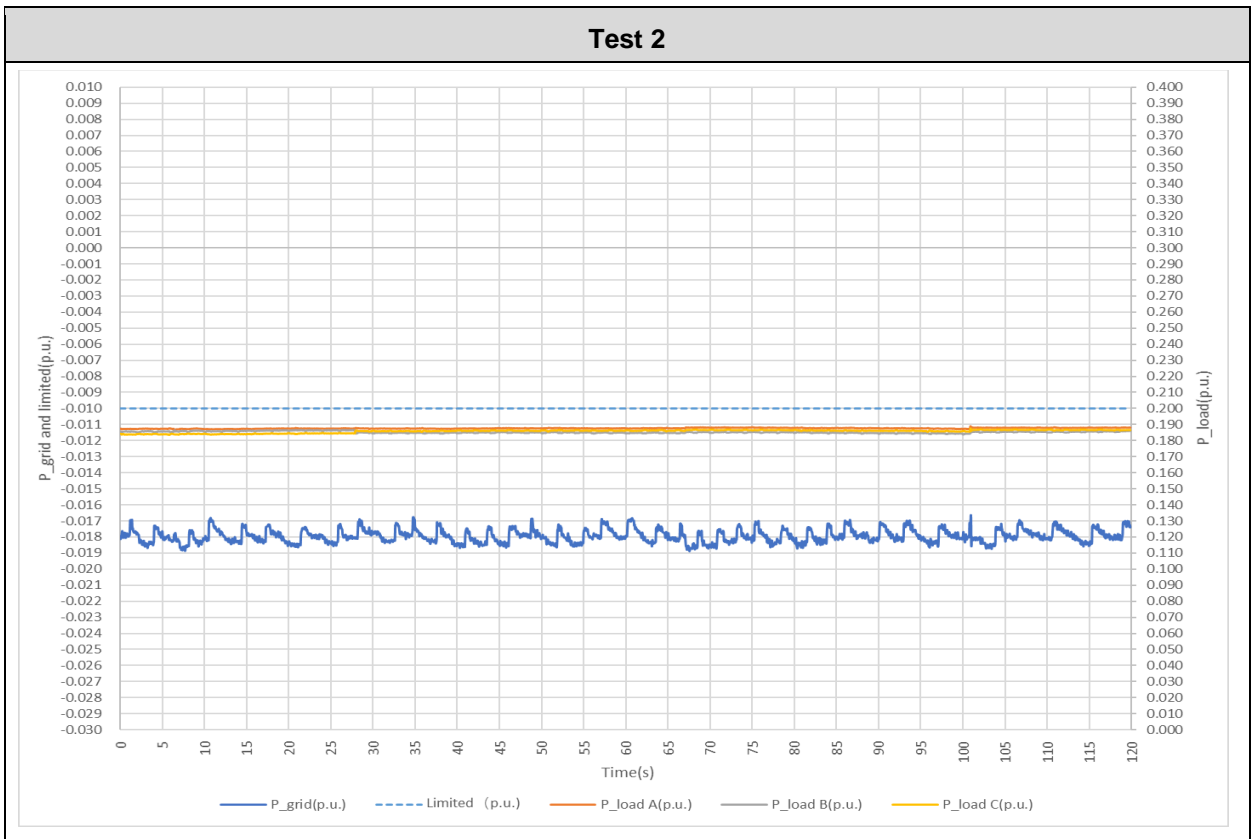
Type 2: With energy meter ACR10R-D24TE4									
Test model: HYD 10KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	97.5	90-100	98.6	90-100	97.6	2	-187	-100
2	10-20	18.8	10-20	18.5	10-20	18.6	2	-166	
3	0	2.4	0	2.4	0	2.4	2	-141	
4	90-100	96.4	60-70	66.0	60-70	65.9	2	-900	
5	60-70	67.6	60-70	65.1	60-70	66.1	2	-125	
6	30-40	38.2	60-70	66.1	60-70	65.7	2	-1174	
7	0	0.0	60-70	65.9	60-70	65.9	2	-3312	

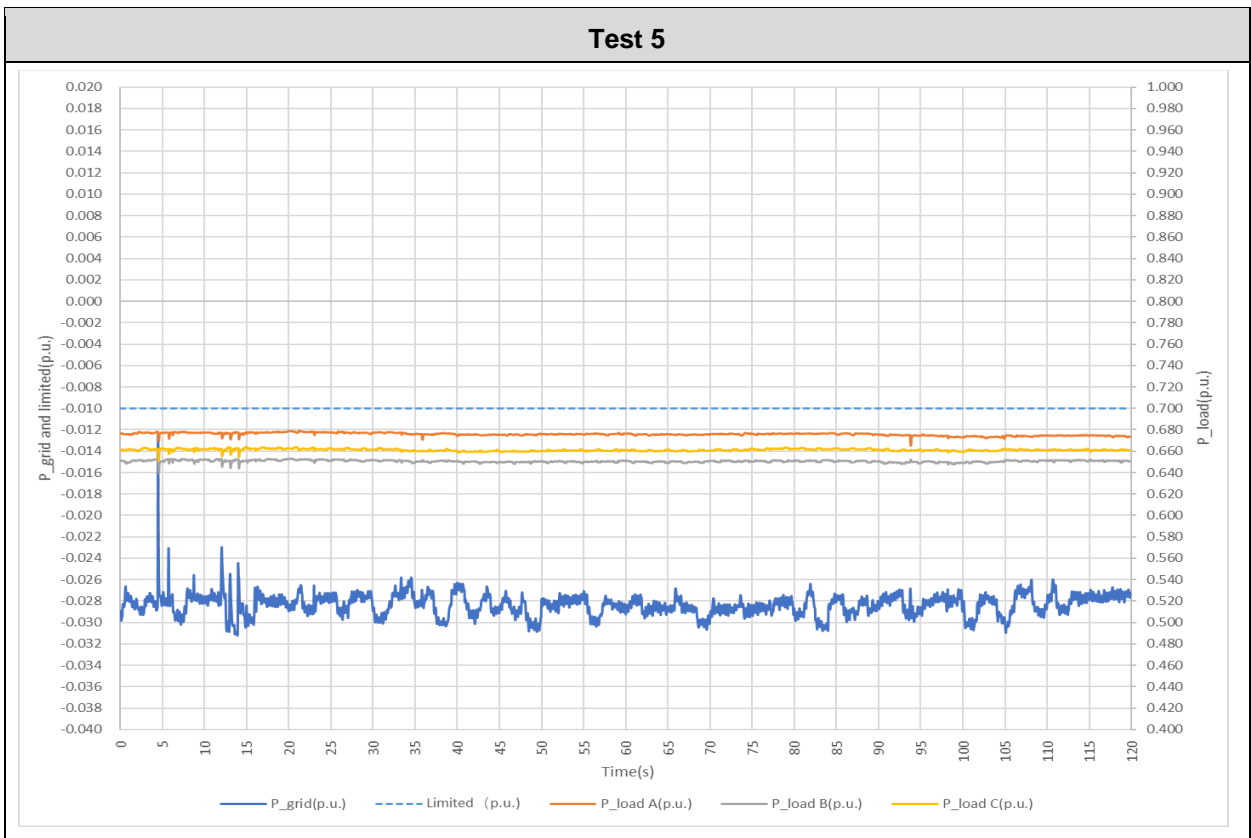
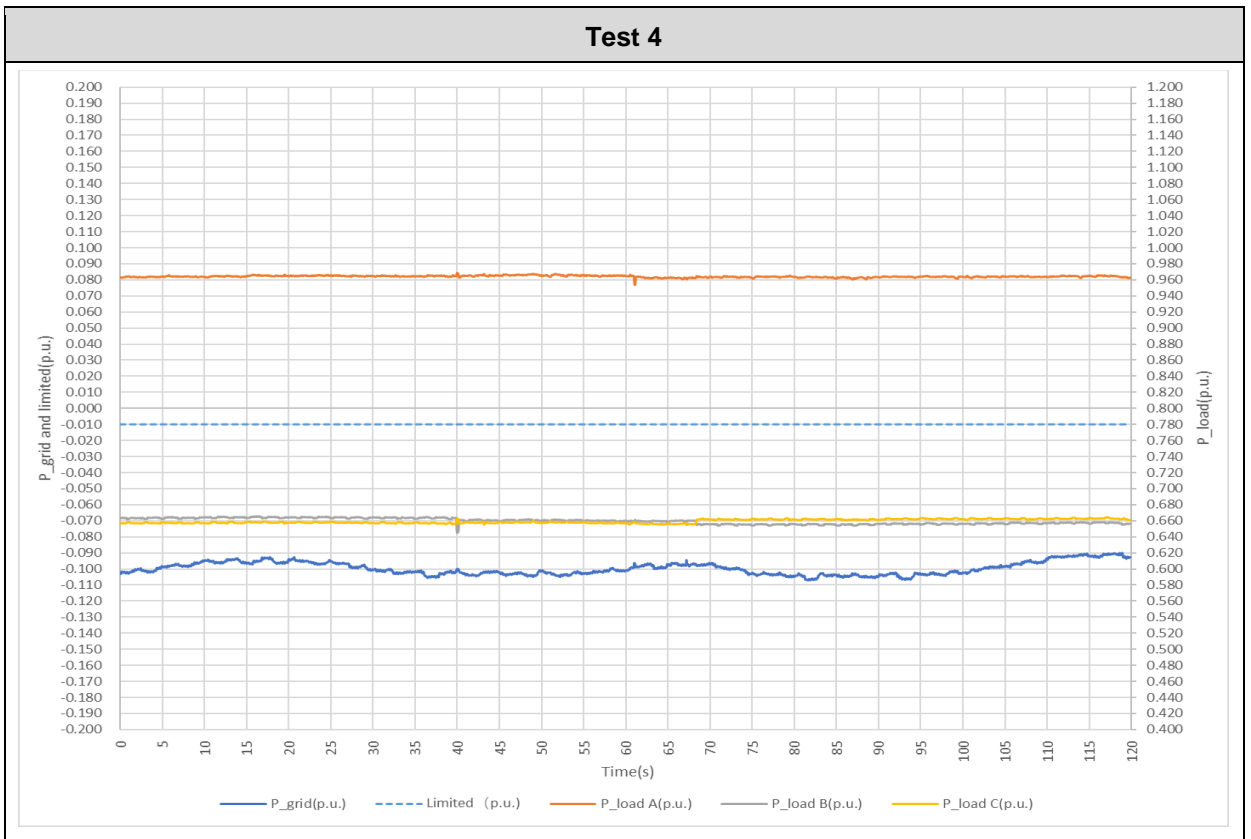
Additional information:

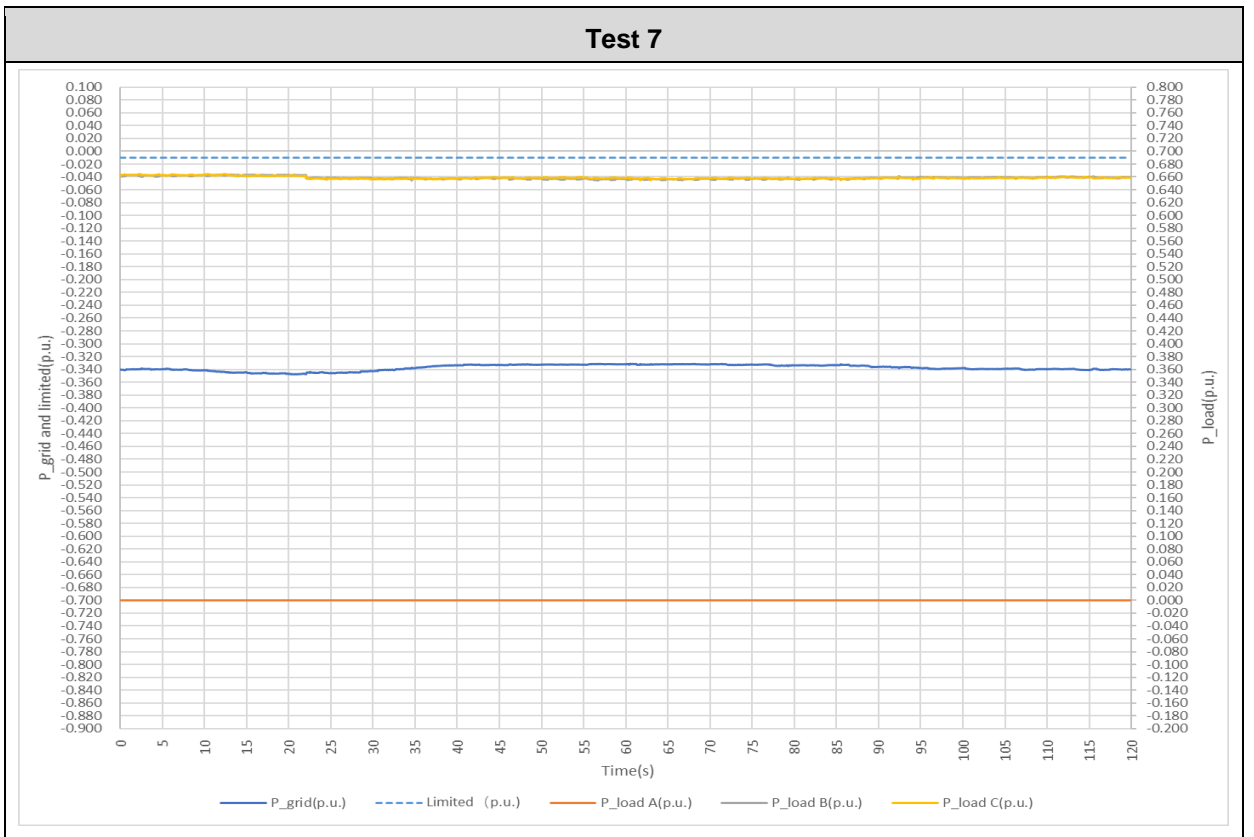
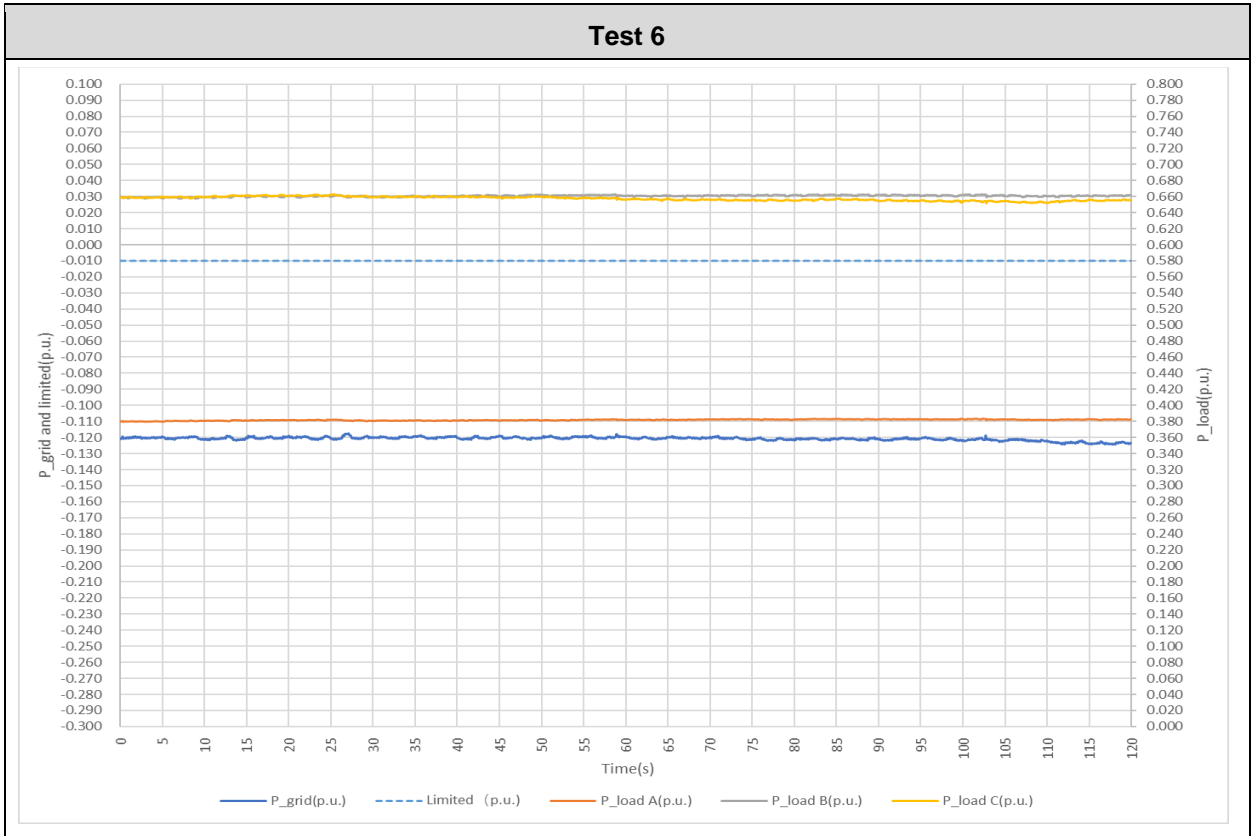
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.







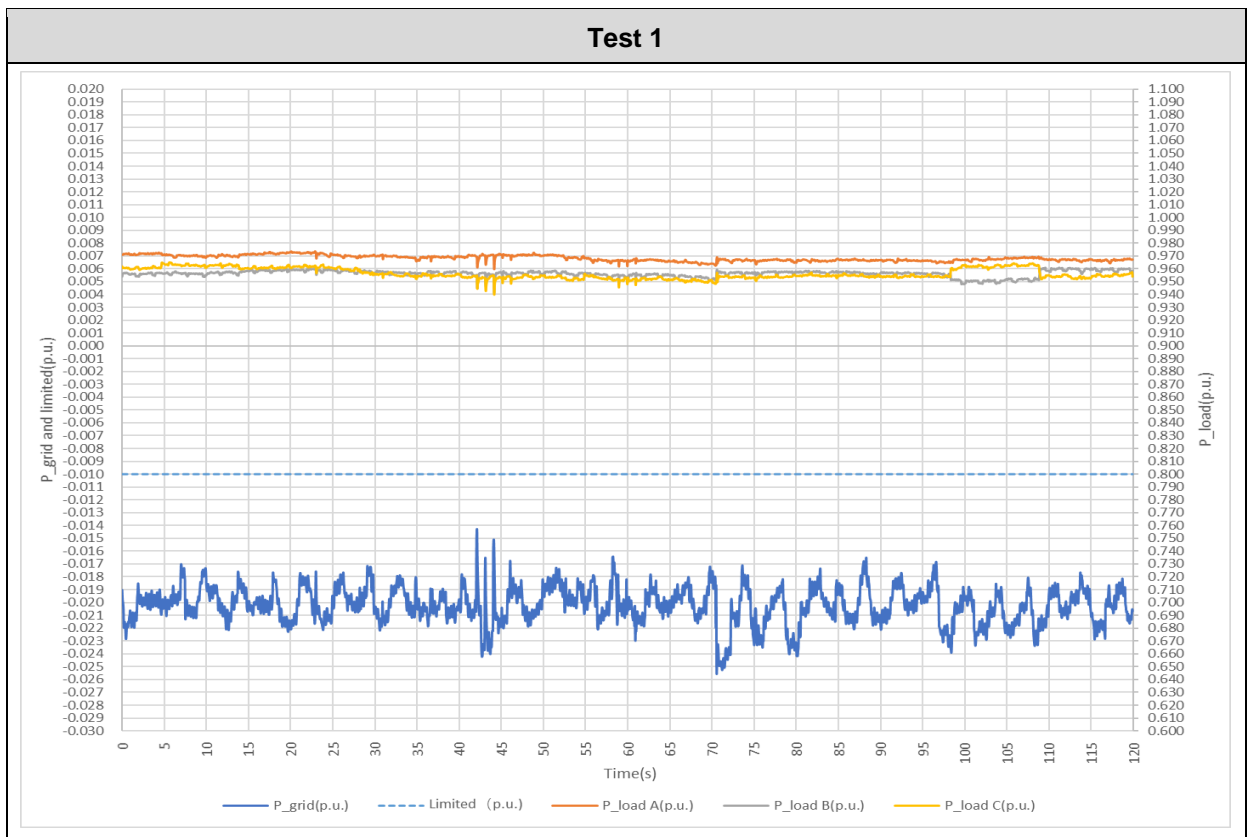


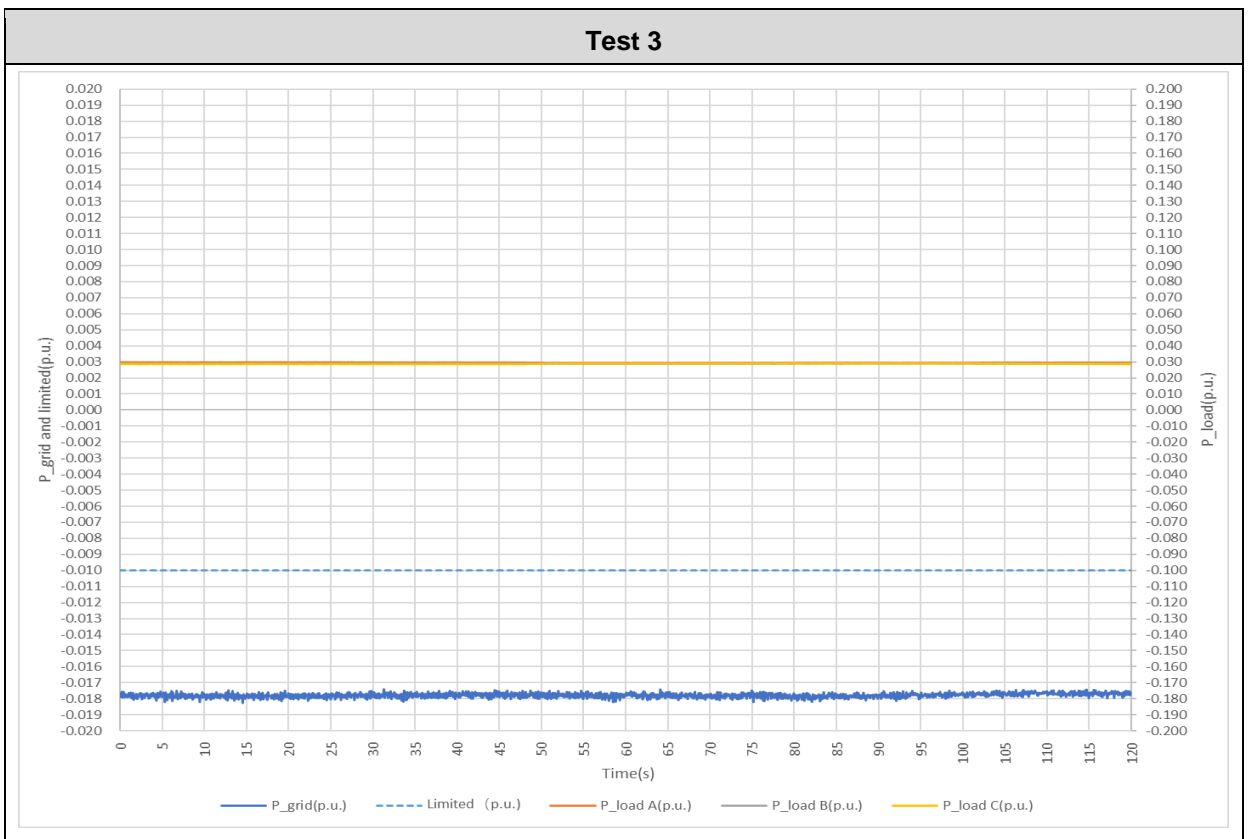
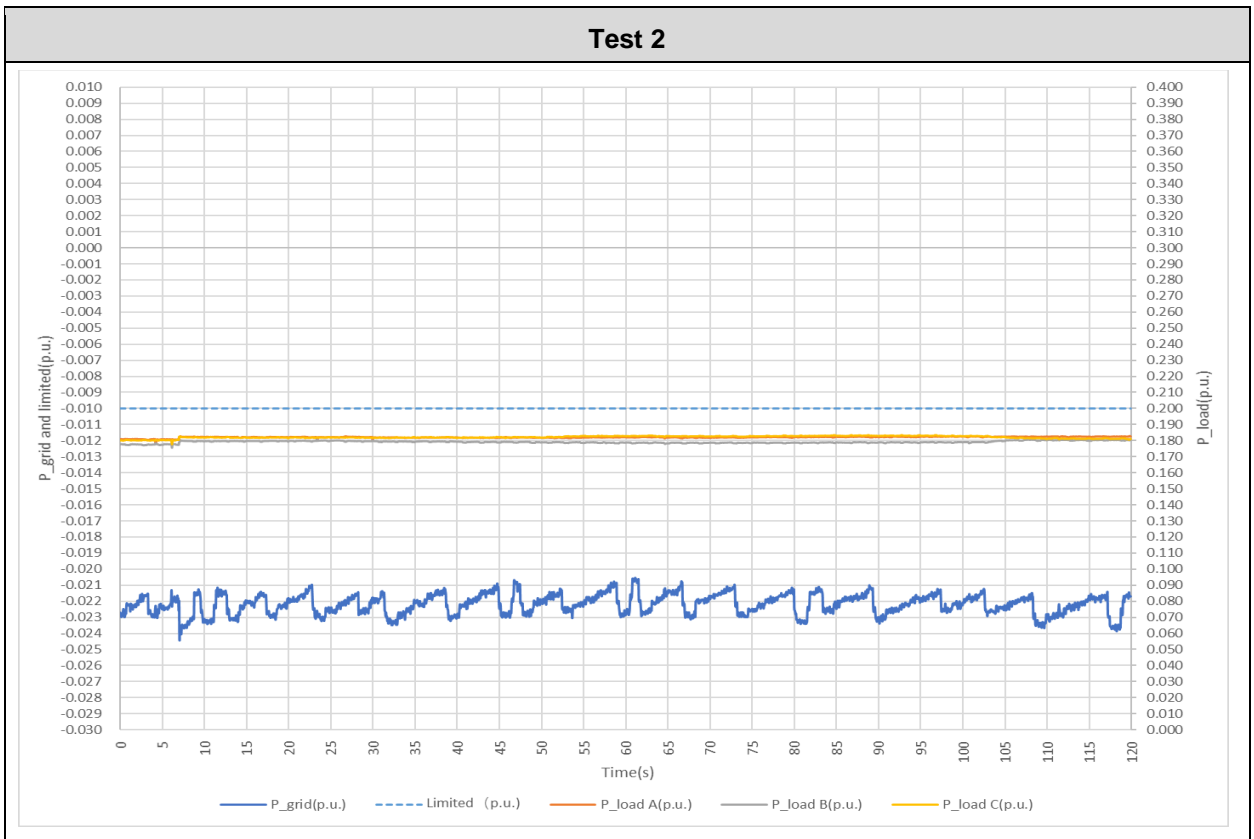
Type 2: With energy meter ACR10R-D24TE4									
Test model: HYD 8KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	96.8	90-100	95.6	90-100	95.6	2	-114	-80
2	10-20	18.2	10-20	17.9	10-20	18.2	2	-164	
3	0	3.0	0	2.9	0	2.9	2	-139	
4	90-100	95.0	60-70	68.3	60-70	68.4	2	-687	
5	60-70	68.8	60-70	67.8	60-70	67.6	2	-217	
6	30-40	38.0	60-70	67.4	60-70	68.1	2	-1018	
7	0	0.0	60-70	67.8	60-70	68.1	2	-2357	

Additional information:

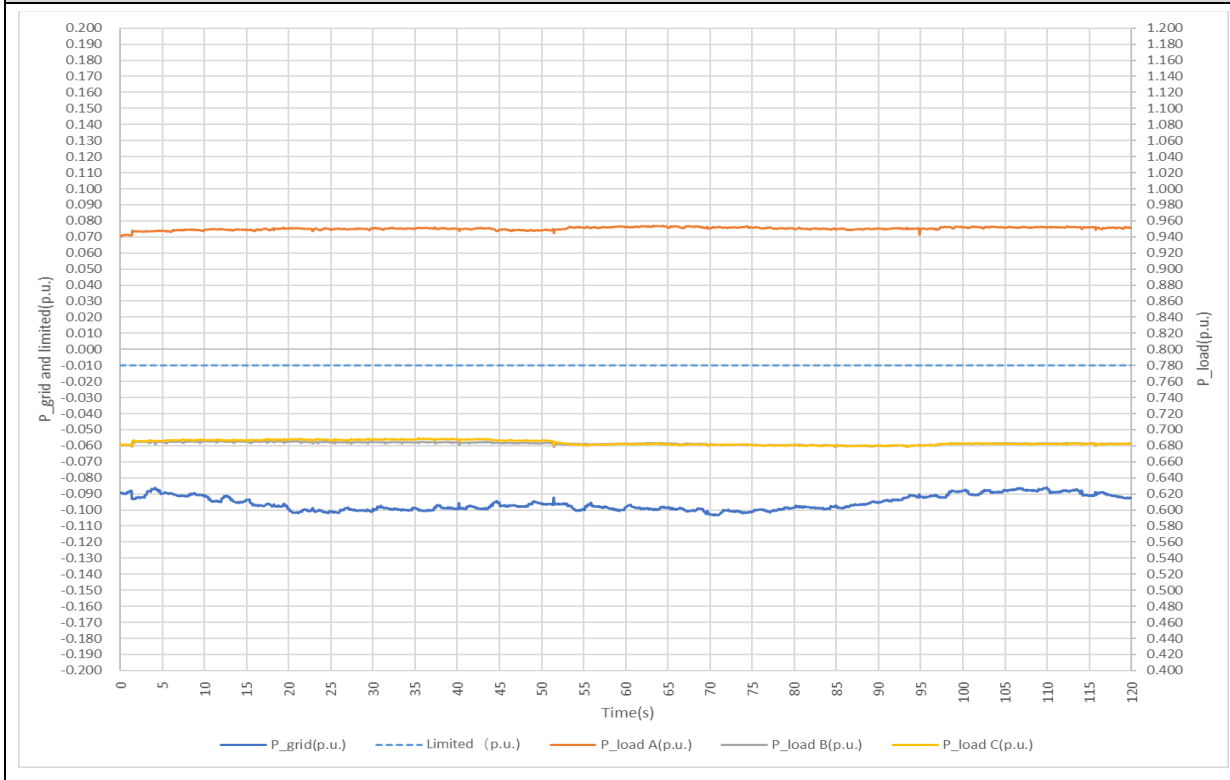
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.

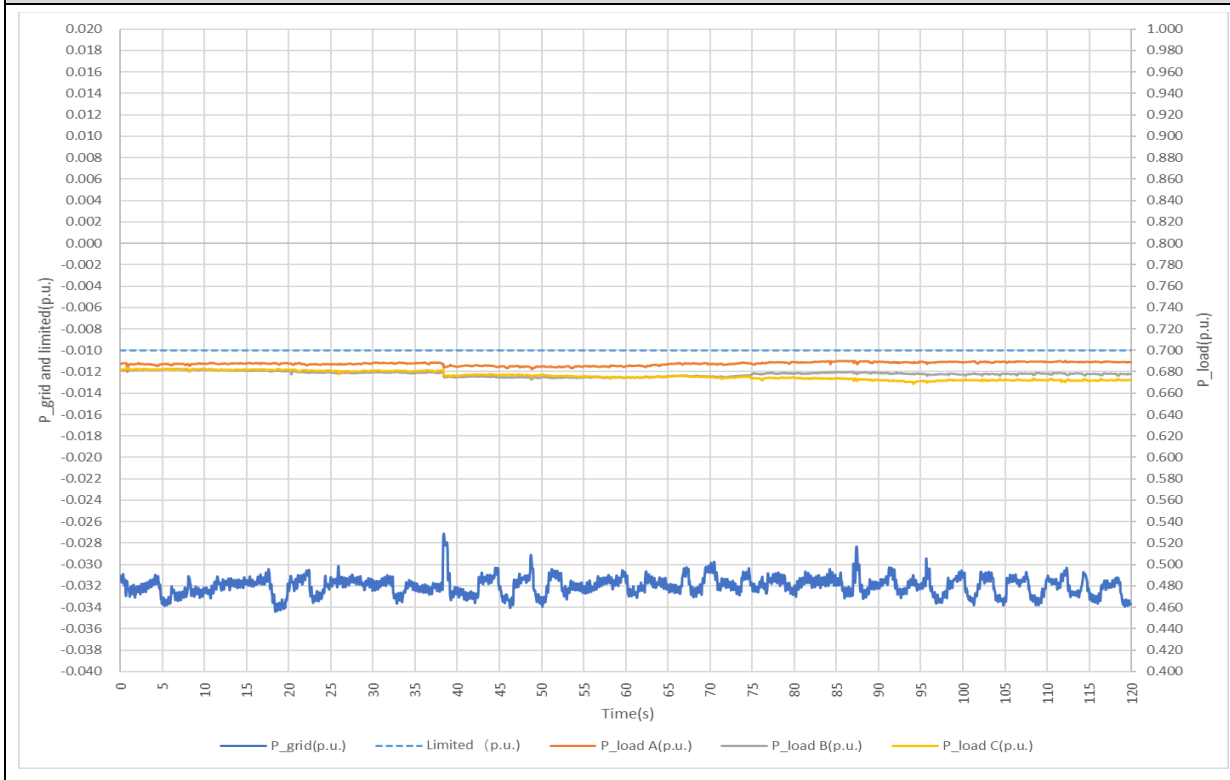


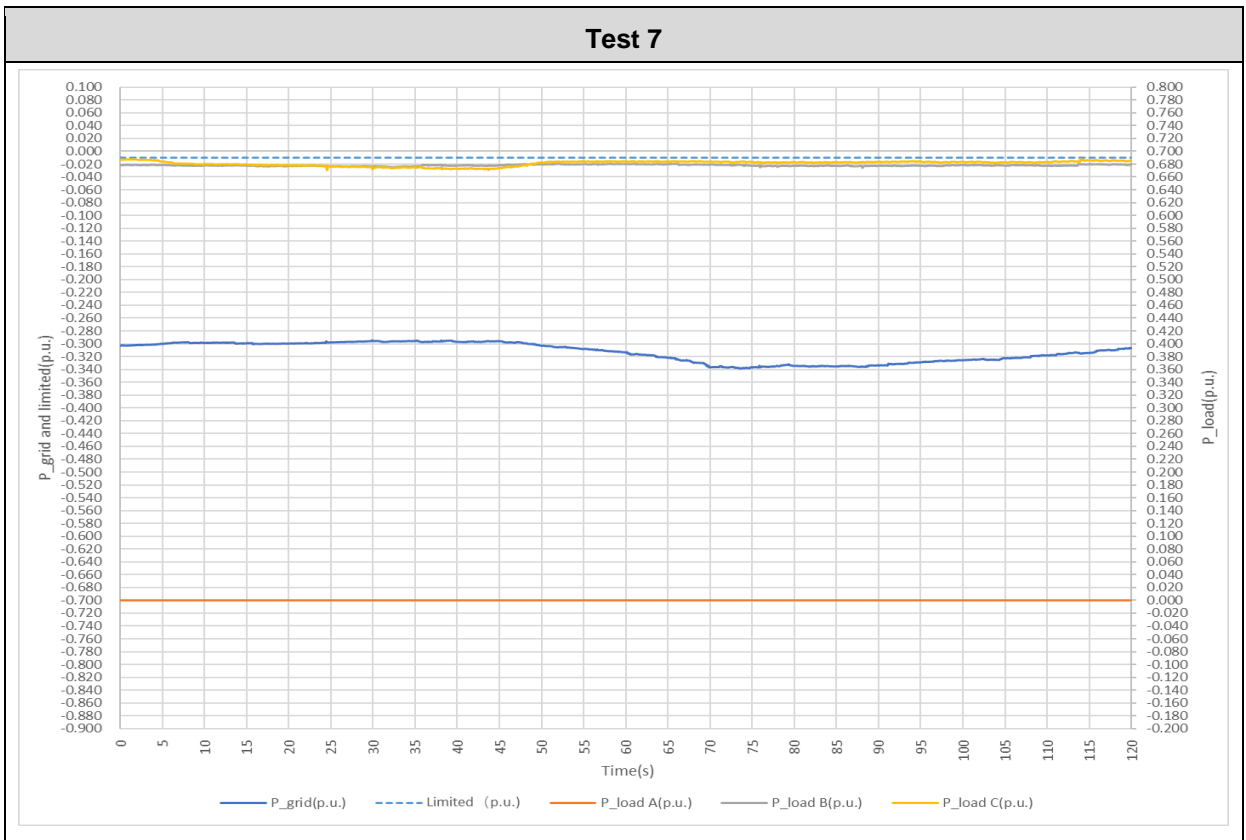
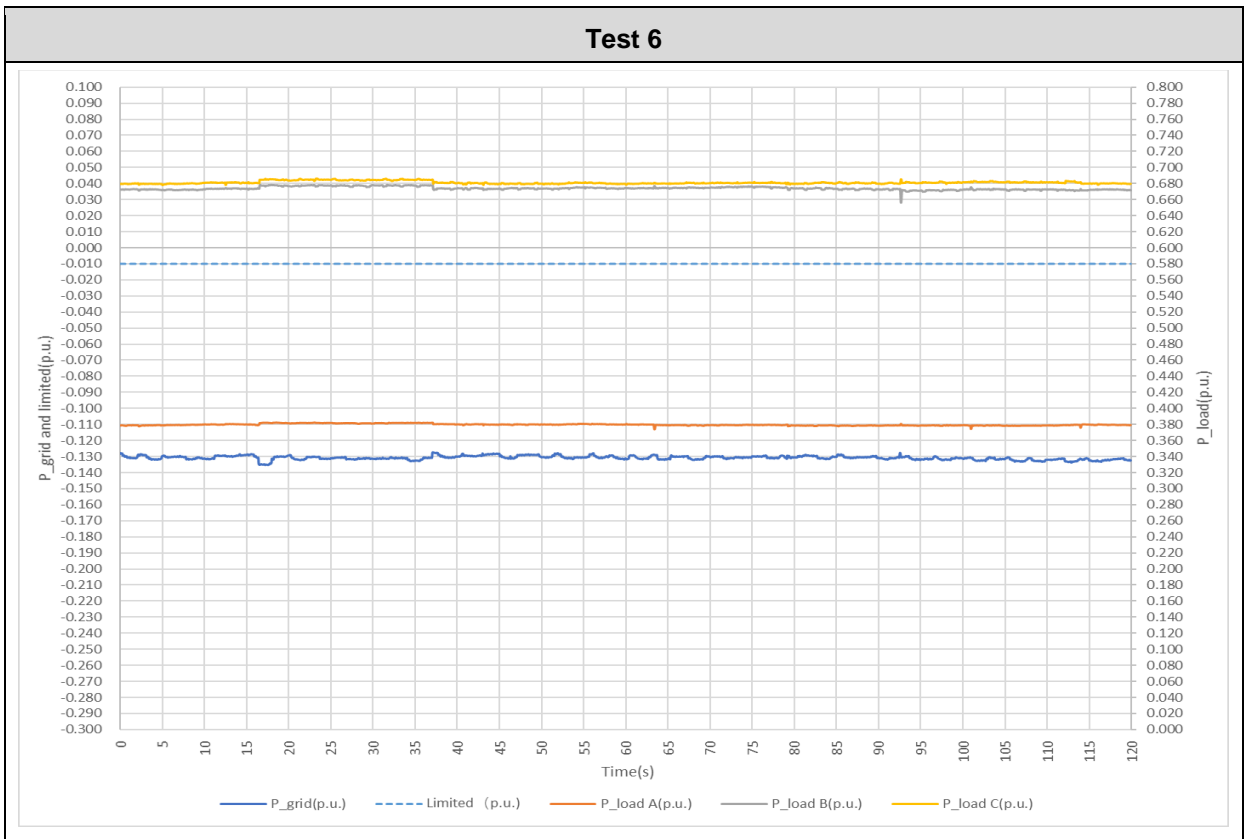


Test 4



Test 5



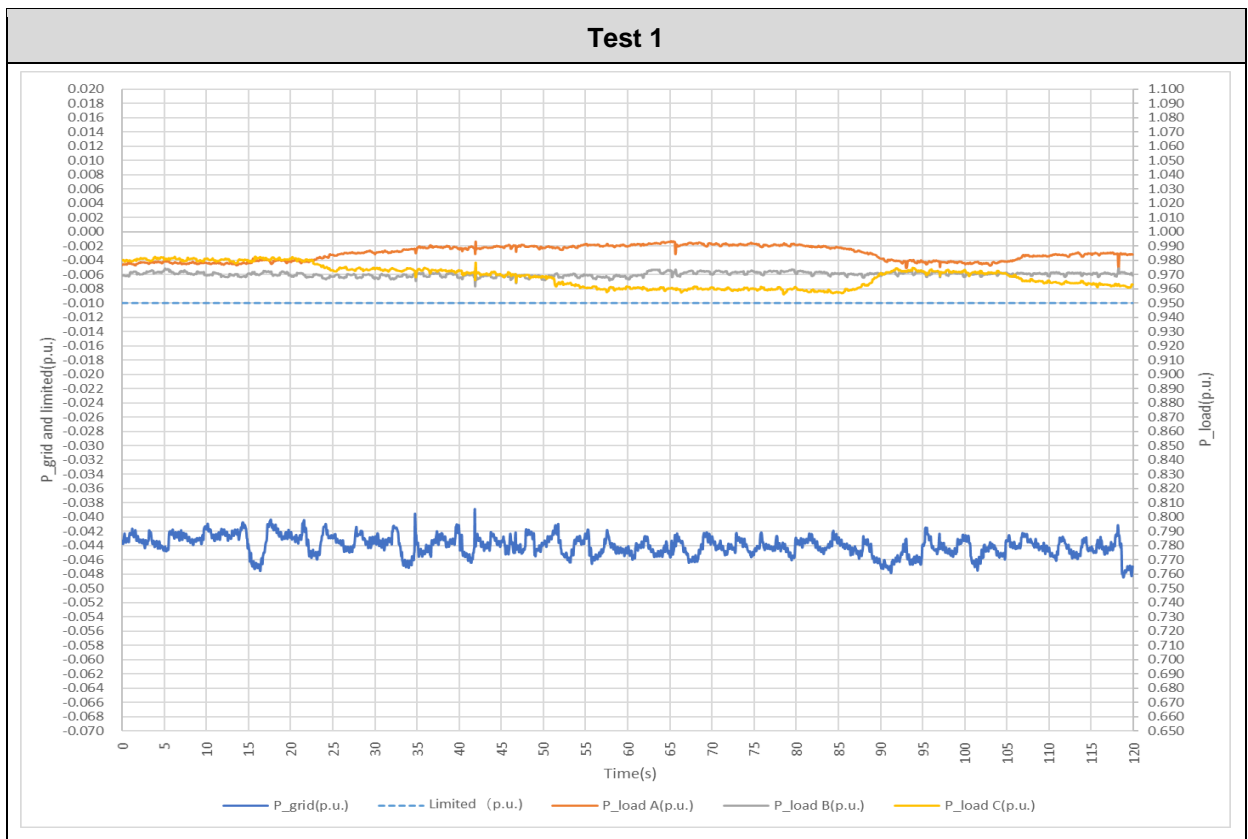


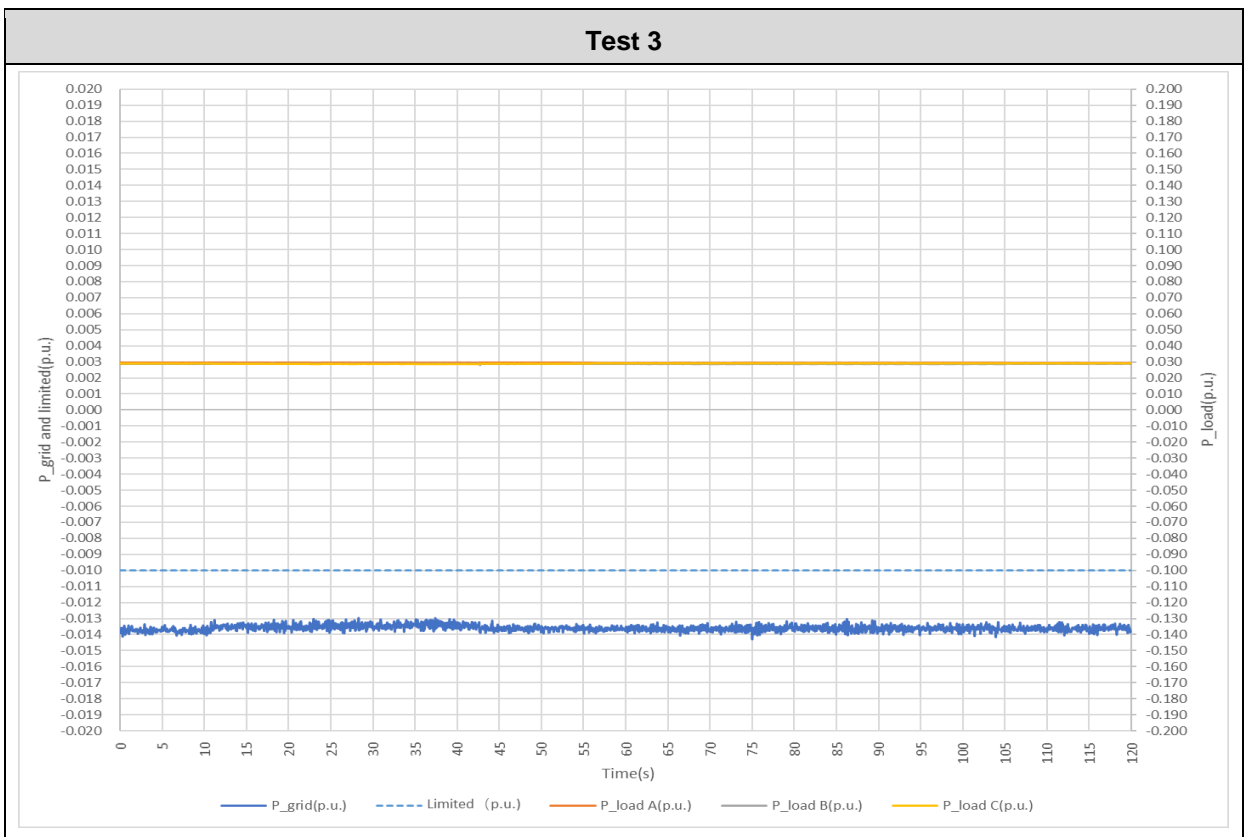
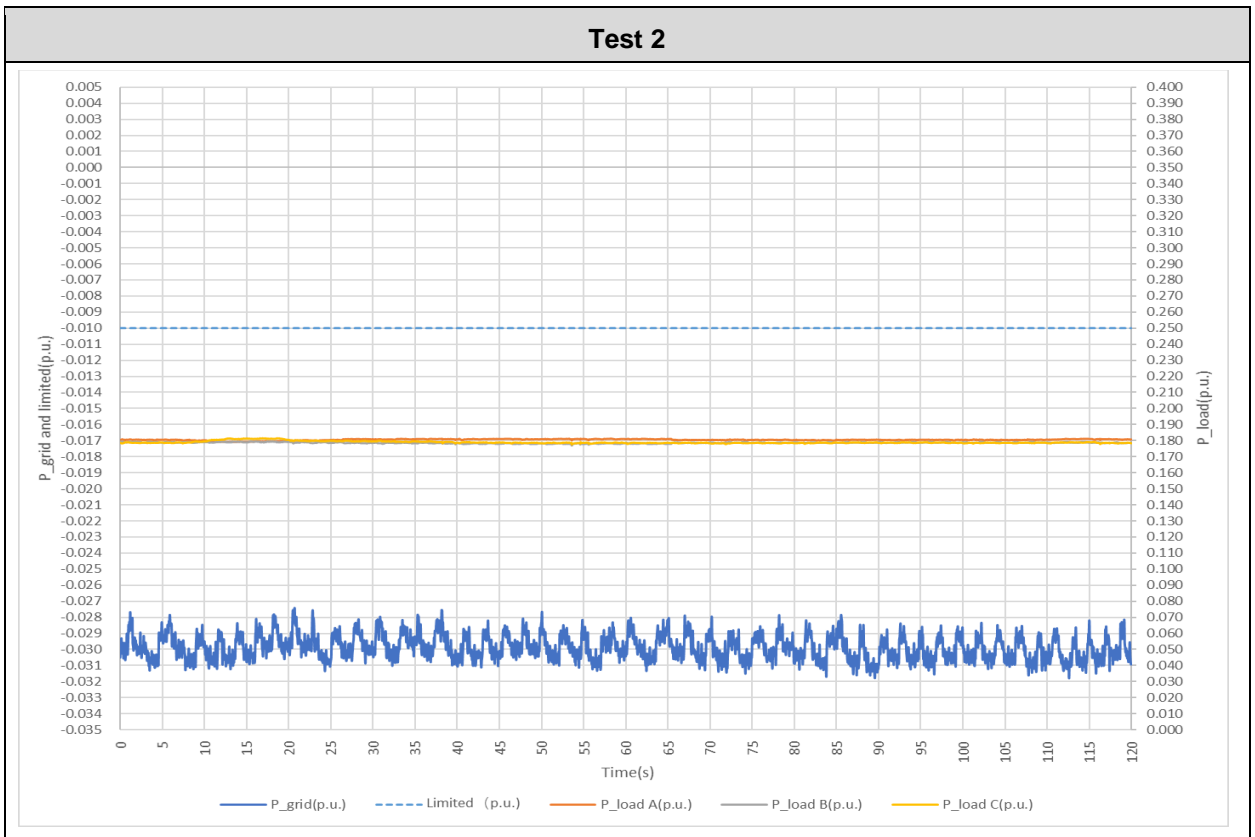
Type 2: With energy meter ACR10R-D24TE4									
Test model: HYD 6KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	98.5	90-100	97.0	90-100	96.9	2	-233	-60
2	10-20	18.1	10-20	17.9	10-20	17.9	2	-164	
3	0	3.0	0	2.9	0	2.9	2	-78	
4	90-100	97.1	60-70	67.9	60-70	68.3	2	-612	
5	60-70	67.8	60-70	67.7	60-70	67.7	2	-227	
6	30-40	38.6	60-70	67.8	60-70	68.0	2	-797	
7	0	0.0	60-70	67.4	60-70	67.6	2	-1514	

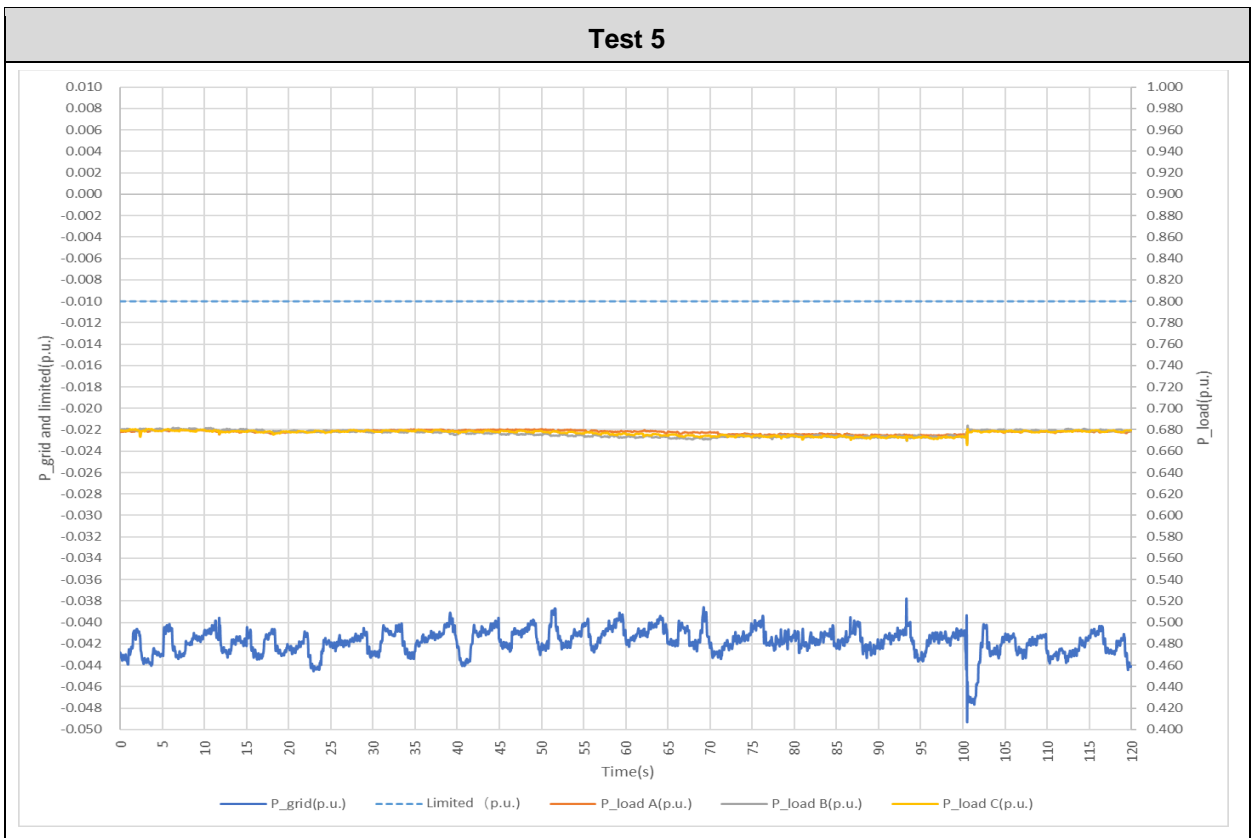
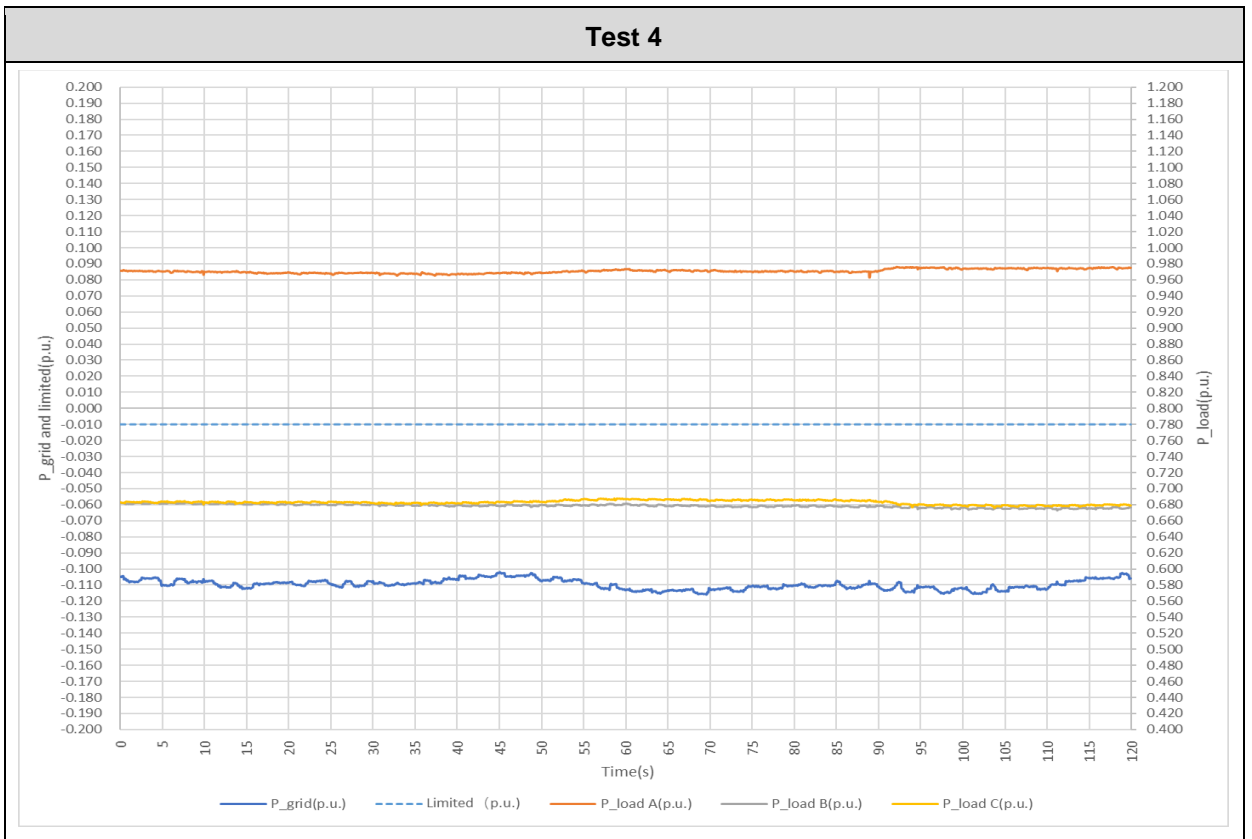
Additional information:

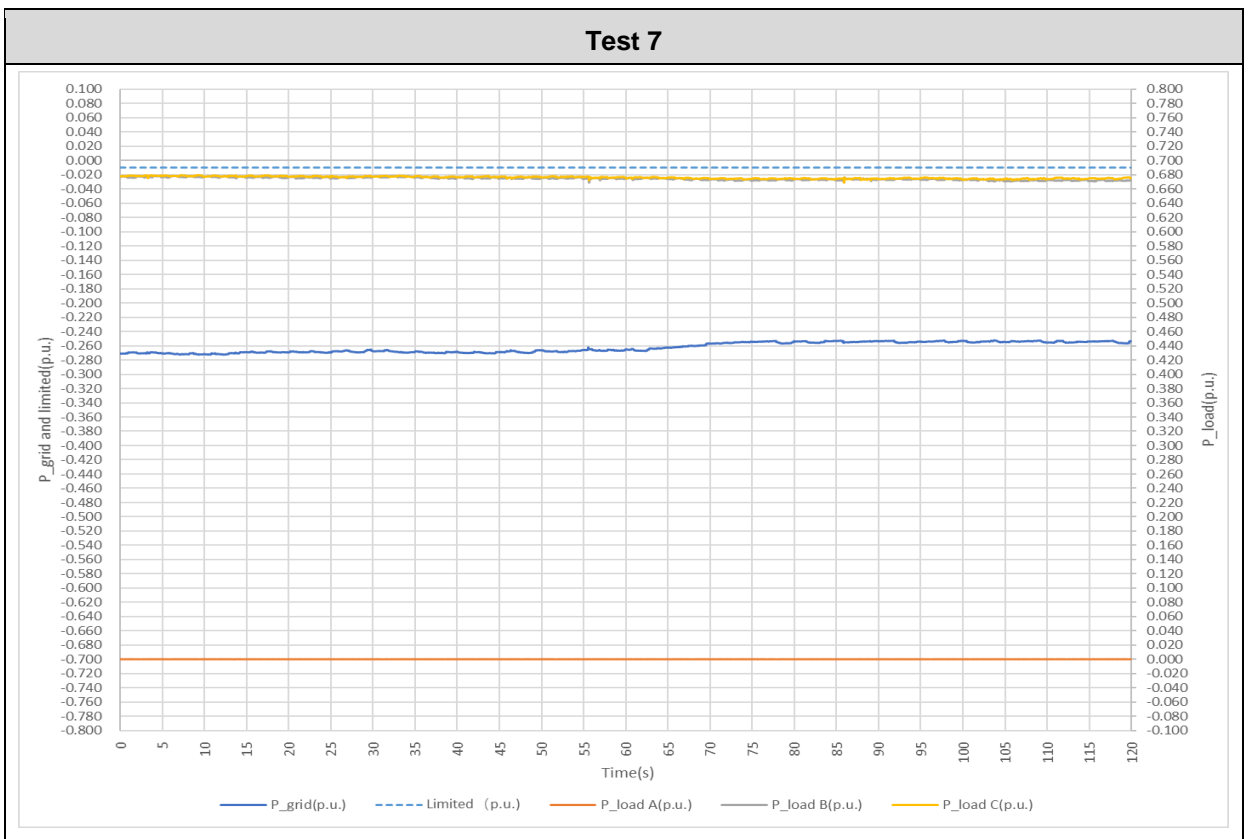
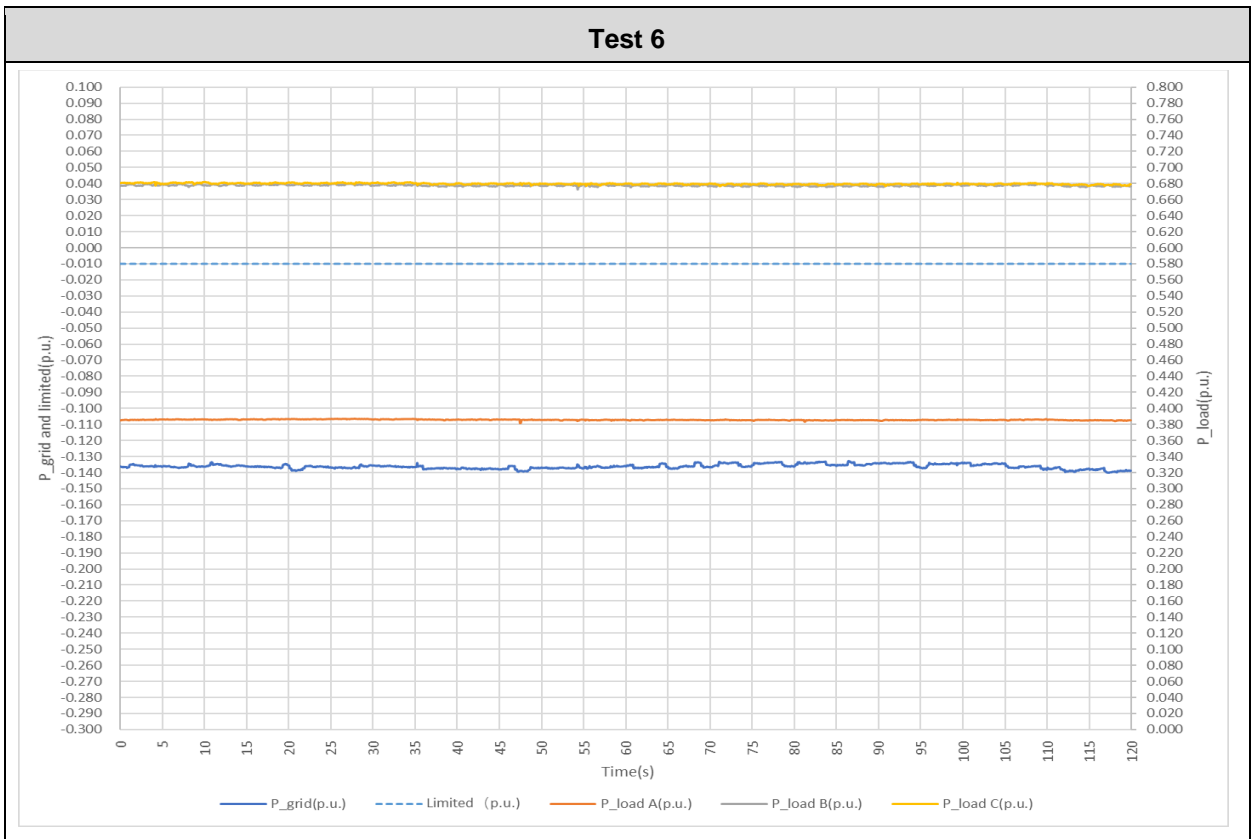
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.









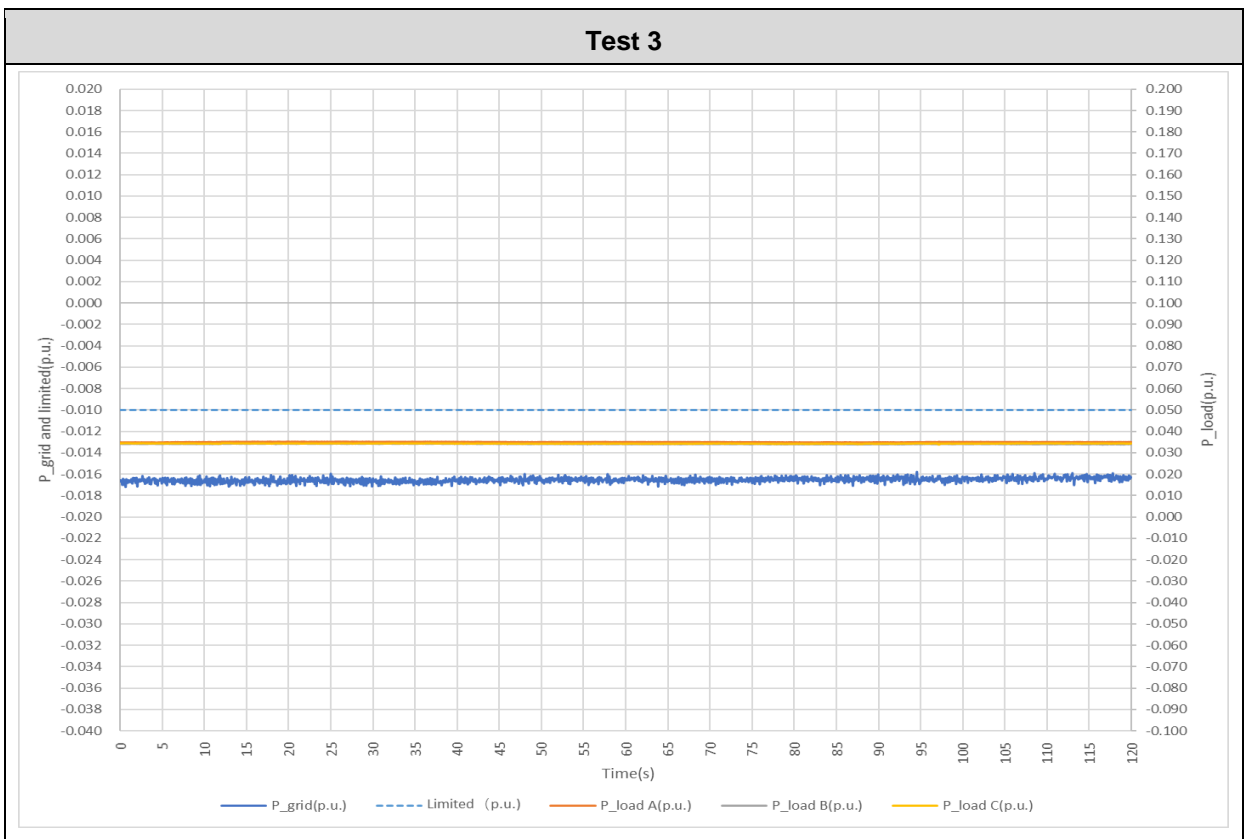
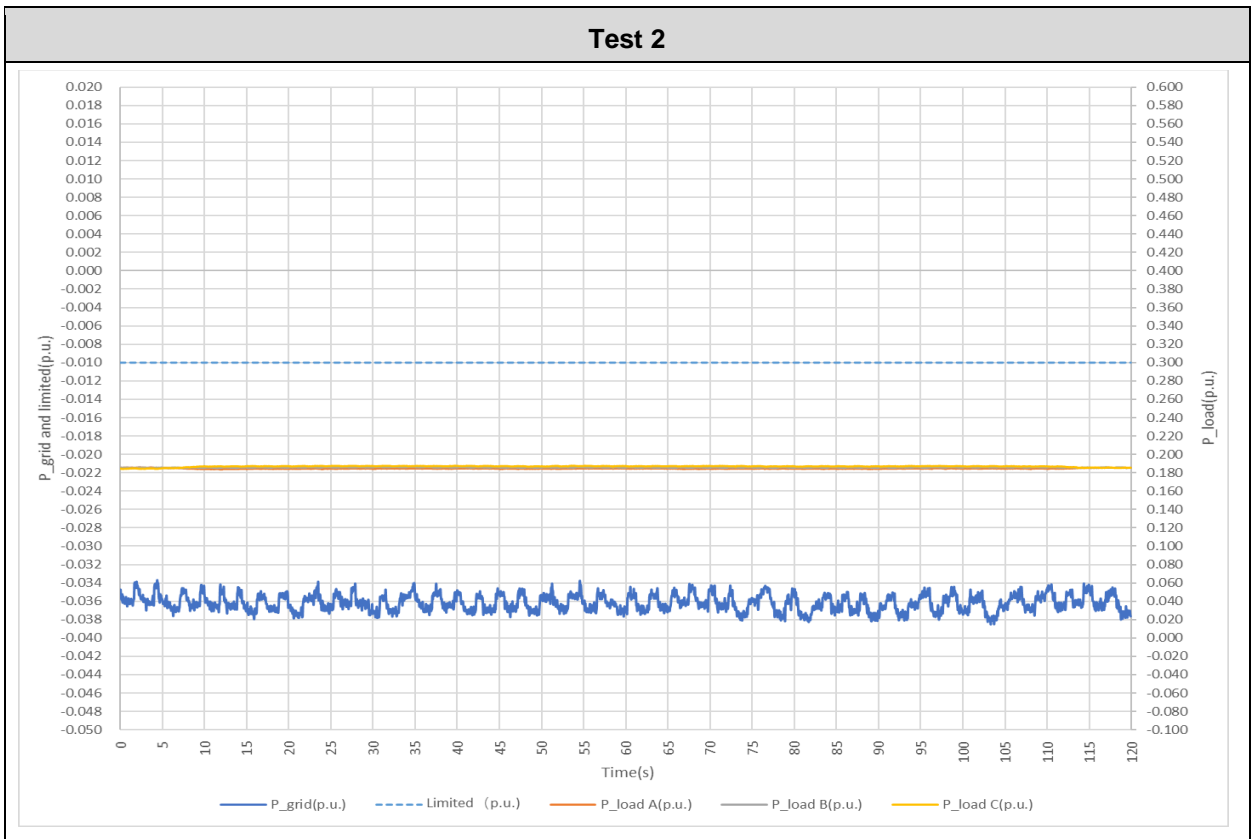
Type 2: With energy meter ACR10R-D24TE4									
Test model: HYD 5KTL-3PH									
Test No.	R phase Load (%Pn)		S phase Load (%Pn)		T phase Load (%Pn)		Test time (min)	Injected power (W) (*)	Injected power limit (W) (**)
	Desired	Measured	Desired	Measured	Desired	Measured			
1	90-100	97.1	90-100	97.6	90-100	97.4	2	-95	-50
2	10-20	18.5	10-20	18.6	10-20	18.7	2	-168	
3	0	3.5	0	3.4	0	3.5	2	-79	
4	90-100	97.4	60-70	67.4	60-70	67.7	2	-562	
5	60-70	68.0	60-70	67.8	60-70	67.9	2	-215	
6	30-40	38.3	60-70	67.3	60-70	68.0	2	-693	
7	0	0.0	60-70	67.1	60-70	68.0	2	-1287	

Additional information:

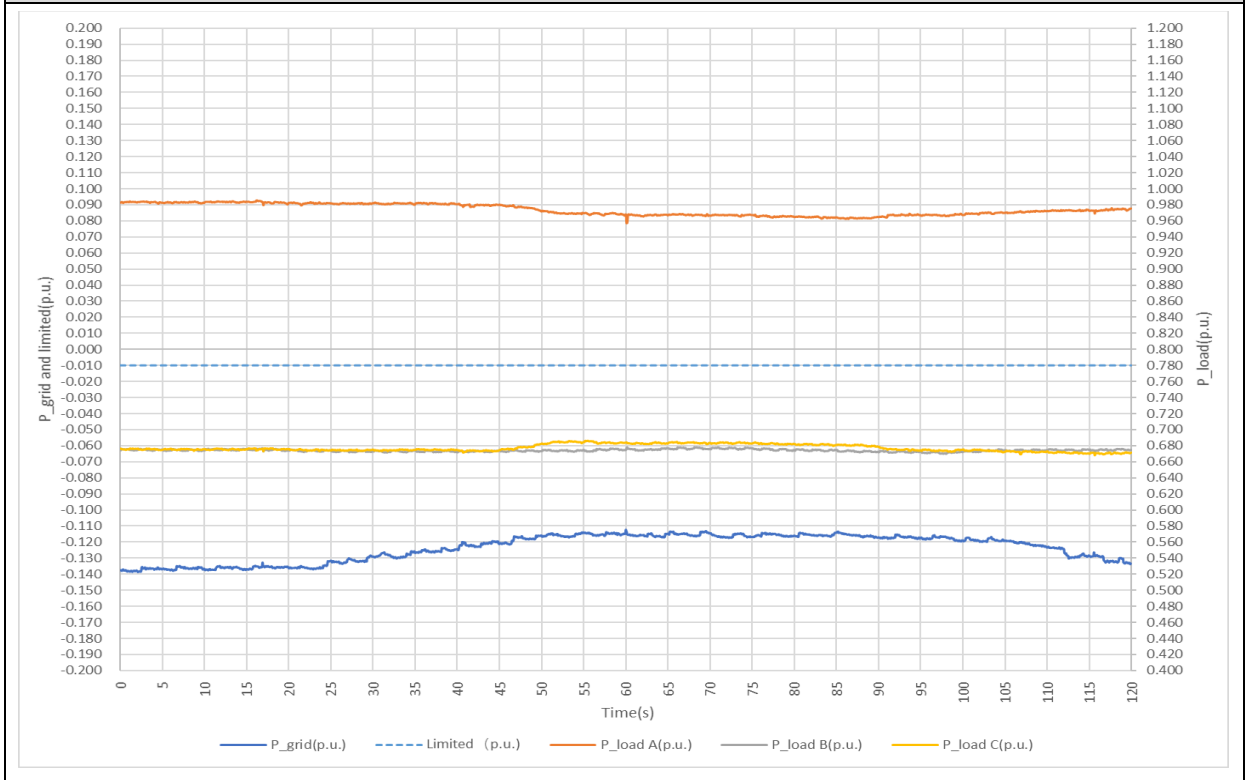
(*) Maximum power injected during the test time.

(**) This is the power limit injected is -1%Pn.

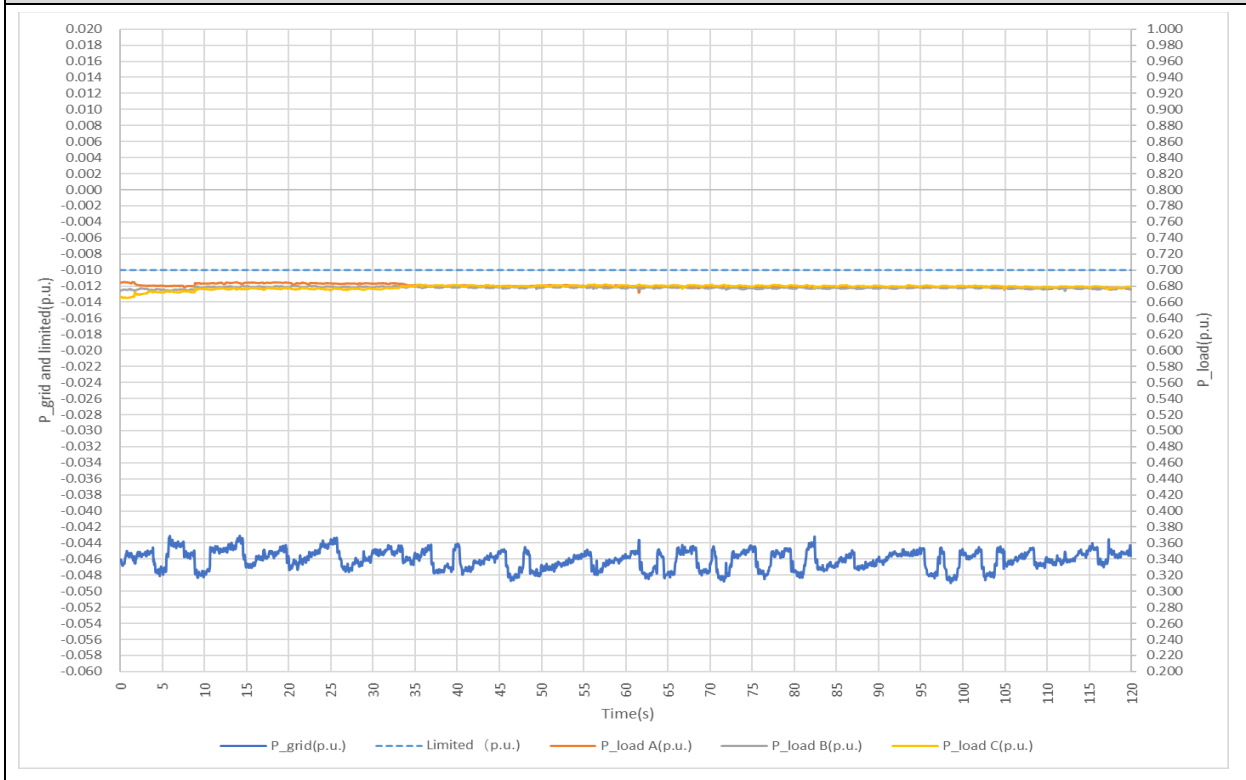


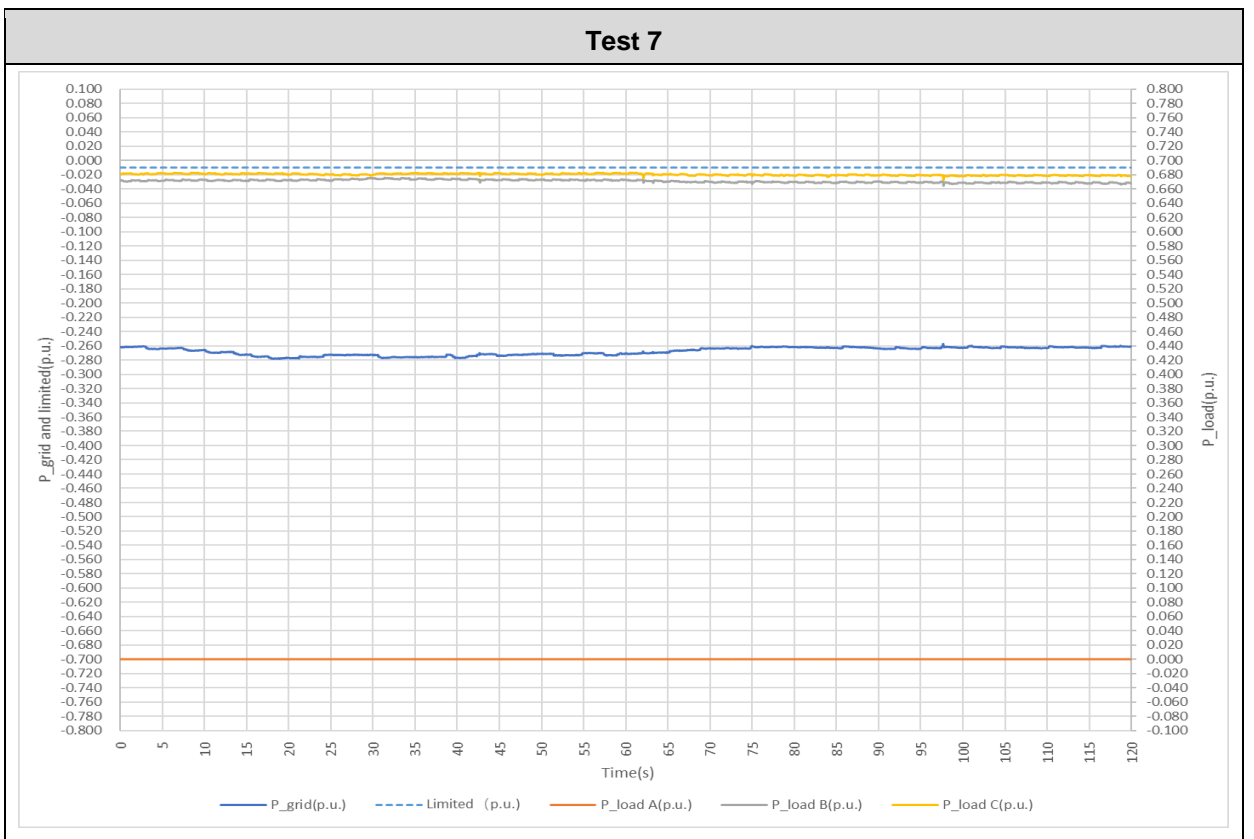
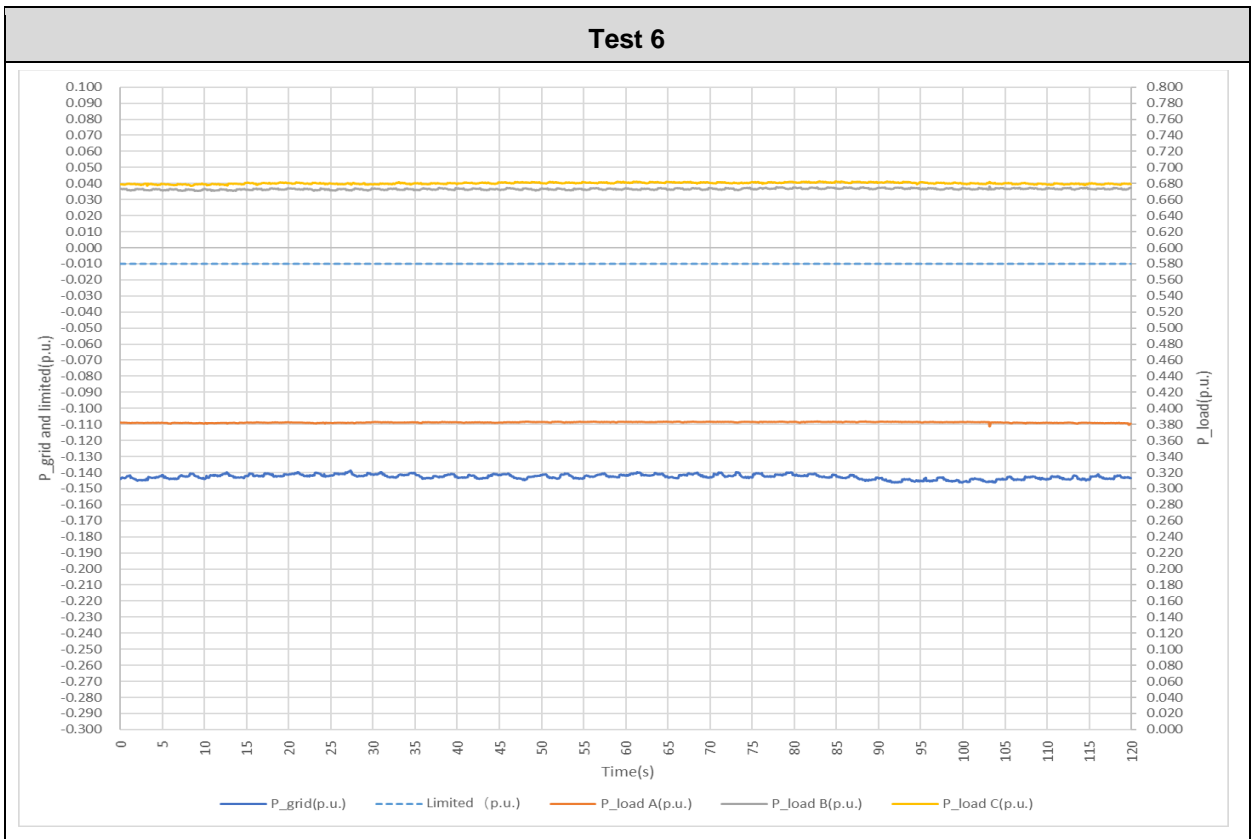


Test 4



Test 5





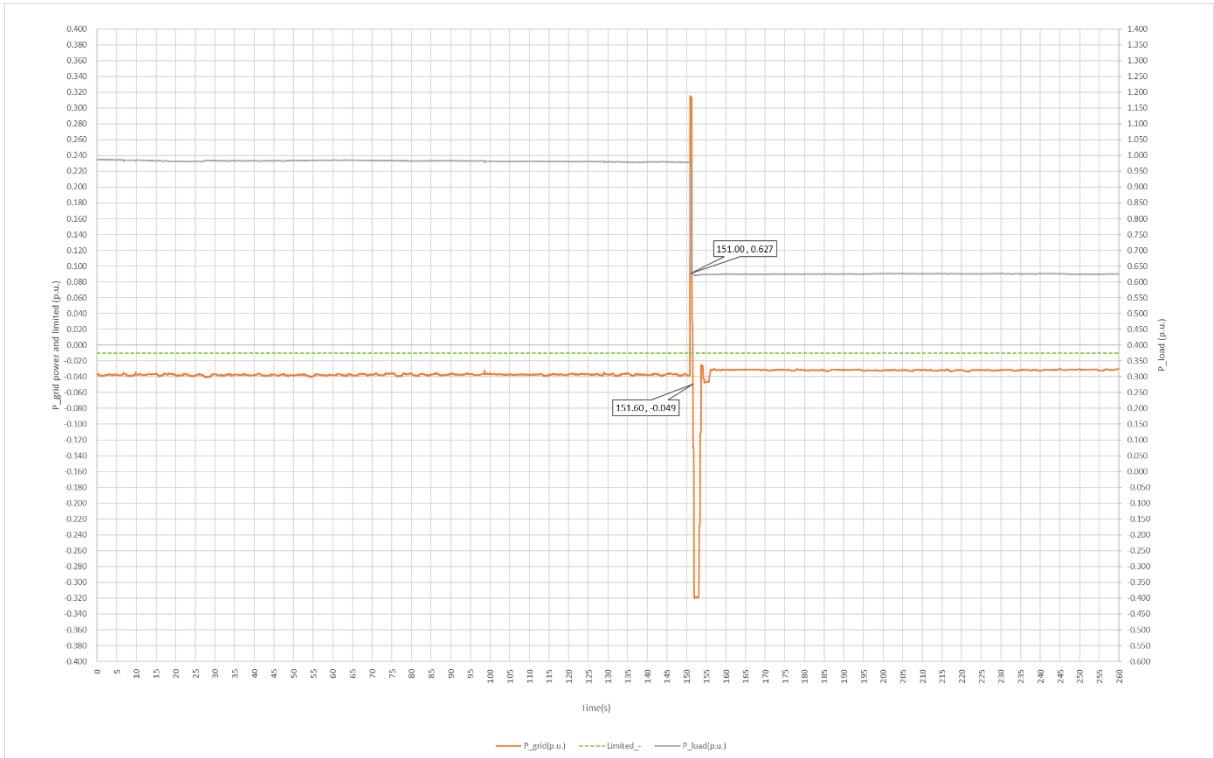
4.2 RESPONSE AFTER LOAD SUDDEN DISCONNECTION

The tests have been carried out in accordance with paragraph 5. 2 of UNE 217001:2015 IN (section I.3.2 of ITC-BT-40). The results obtained for the two configurations mentioned above are shown below:

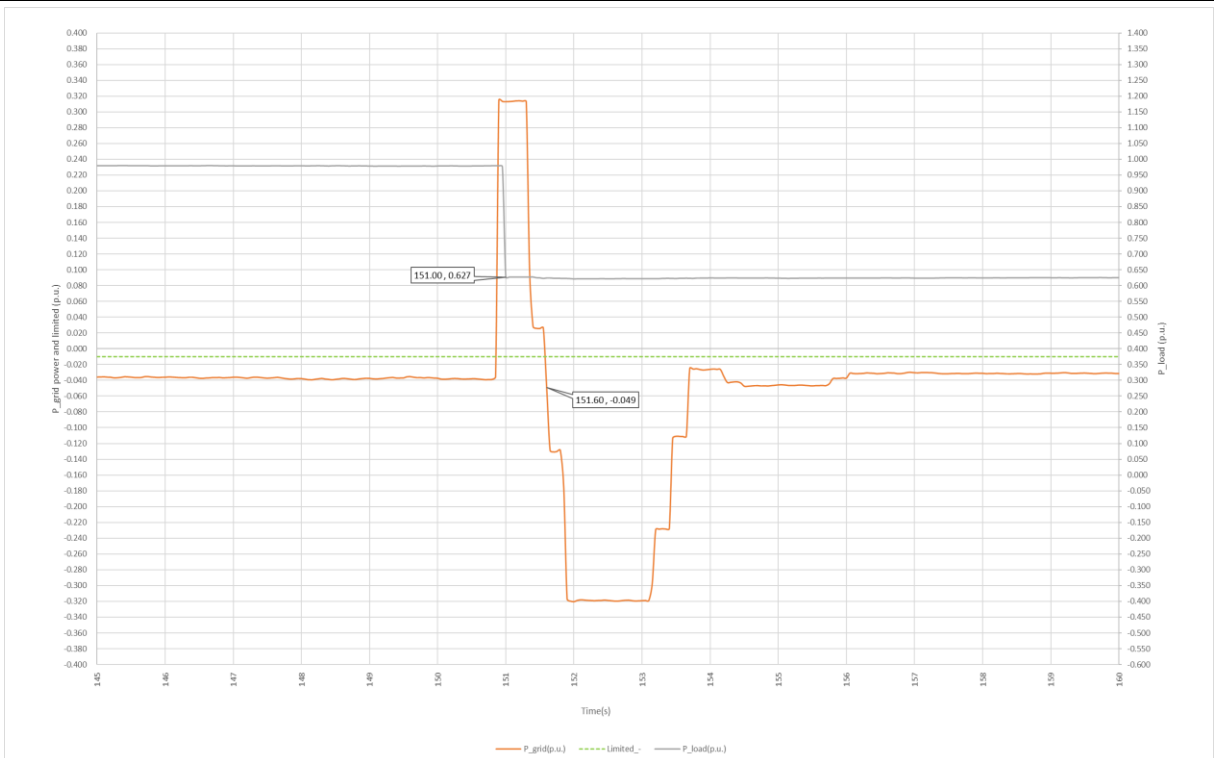
Type 1: With energy meter DTSU666								
Test No	Initial load (% P _n)		Final load (% P _n)		Adjust time (s)	Time limit (s)	Frequency (Hz)	Frequency Limited (Hz)
	Desired	Measured	Desired	Measured				
1.1	90-100	98.2	60-70	62.5	0.60	2	Max. 50.05 Min. 49.95	49.5-50.2
1.2	90-100	98.8	60-70	62.7	0.70		Max. 50.06 Min. 49.94	
1.3	90-100	98.7	60-70	62.4	0.65		Max. 50.07 Min. 49.93	
2.1	90-100	98.3	30-40	36.1	0.50		Max. 50.10 Min. 49.96	
2.2	90-100	98.2	30-40	36.1	0.80		Max. 50.05 Min. 49.93	
2.3	90-100	98.1	30-40	36.3	0.55		Max. 50.05 Min. 49.92	
3.1	90-100	98.5	0	2.2	0.75		Max. 50.07 Min. 49.93	
3.2	90-100	98.6	0	2.2	0.85		Max. 50.06 Min. 49.88	
3.3	90-100	97.9	0	2.2	0.90		Max. 50.05 Min. 49.93	
4.1	60-70	67.2	30-40	38.4	0.70		Max. 50.02 Min. 49.95	
4.2	60-70	66.7	30-40	38.4	0.65		Max. 50.05 Min. 49.94	
4.3	60-70	67.3	30-40	38.4	1.05		Max. 50.06 Min. 49.93	
5.1	60-70	66.7	0	2.0	0.80		Max. 50.06 Min. 49.93	
5.2	60-70	66.9	0	2.0	0.65		Max. 50.05 Min. 49.95	
5.3	60-70	66.5	0	2.0	0.55		Max. 50.05 Min. 49.94	
6.1	30-40	38.2	0	2.0	0.75		Max. 50.06 Min. 49.95	
6.2	30-40	38.2	0	2.0	0.60		Max. 50.05 Min. 49.95	
6.3	30-40	38.2	0	2.0	0.80		Max. 50.07 Min. 49.94	
Additional information:								
The power limit injected is -1%P _n .								

Test 1.1

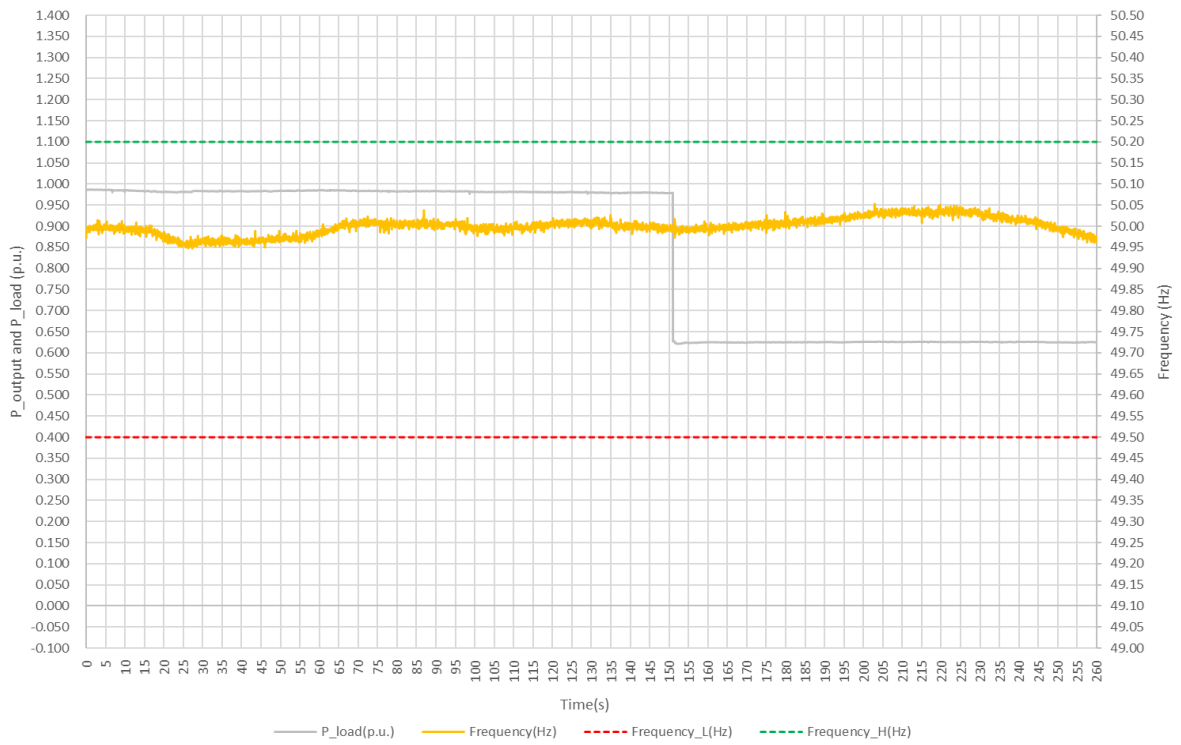
Over view



Zoom in

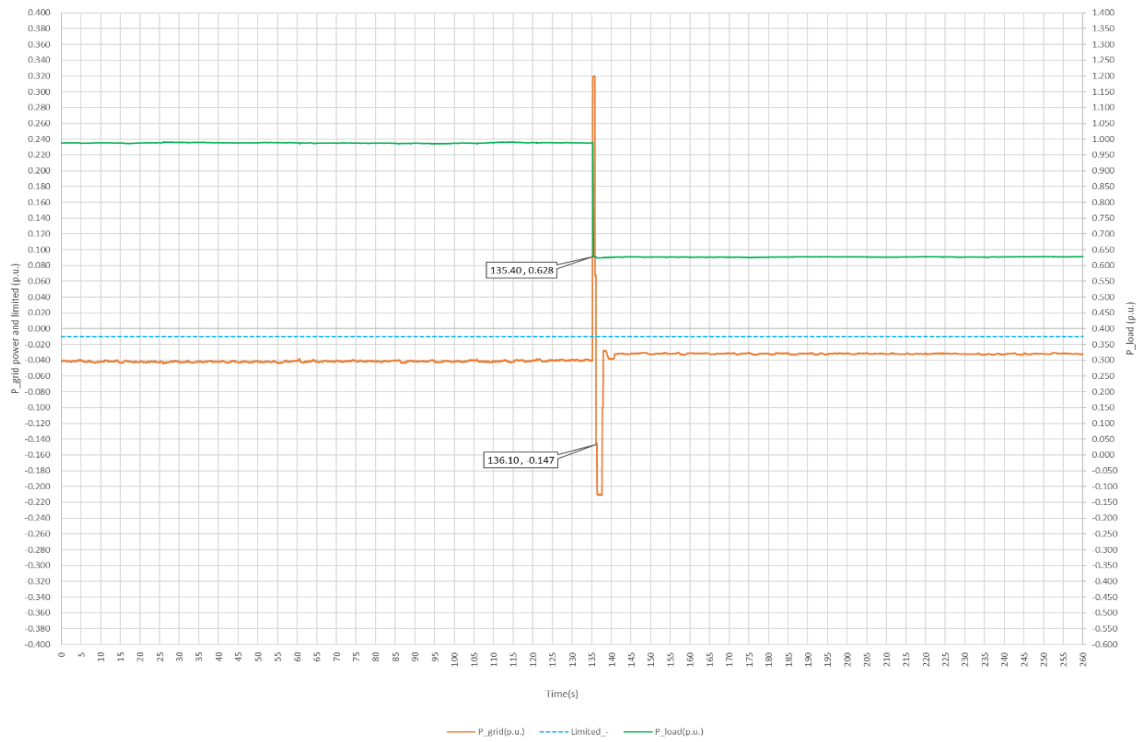


Power-Frequency

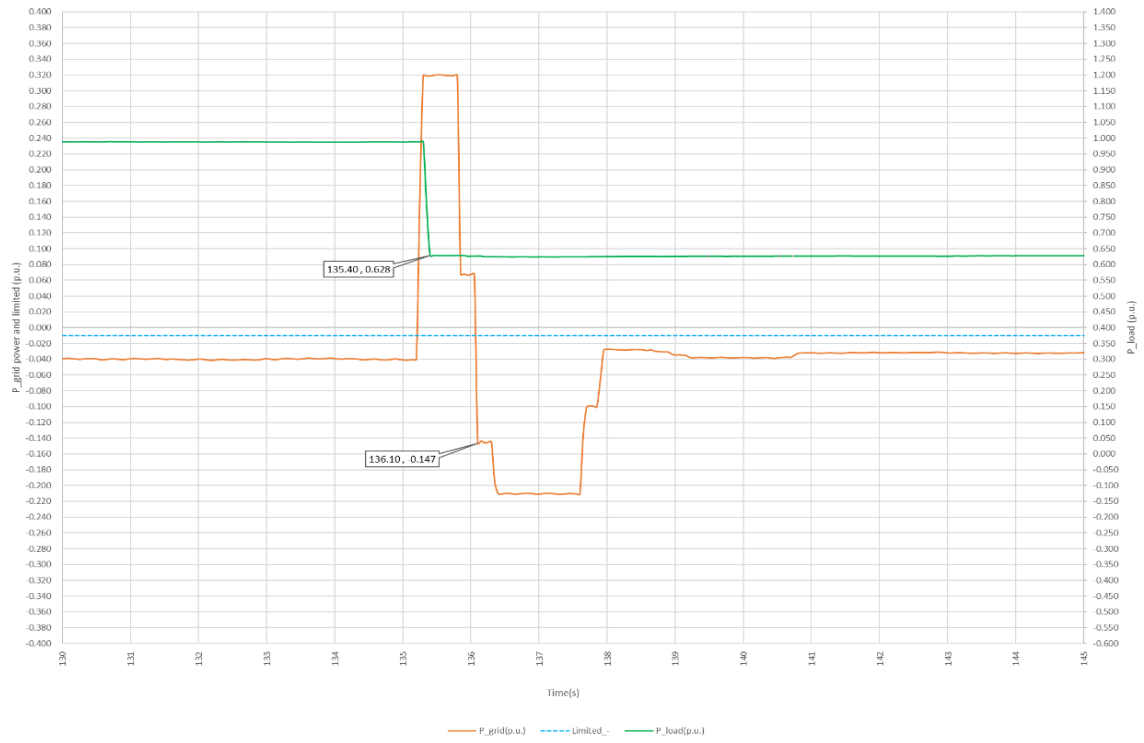


Test 1.2

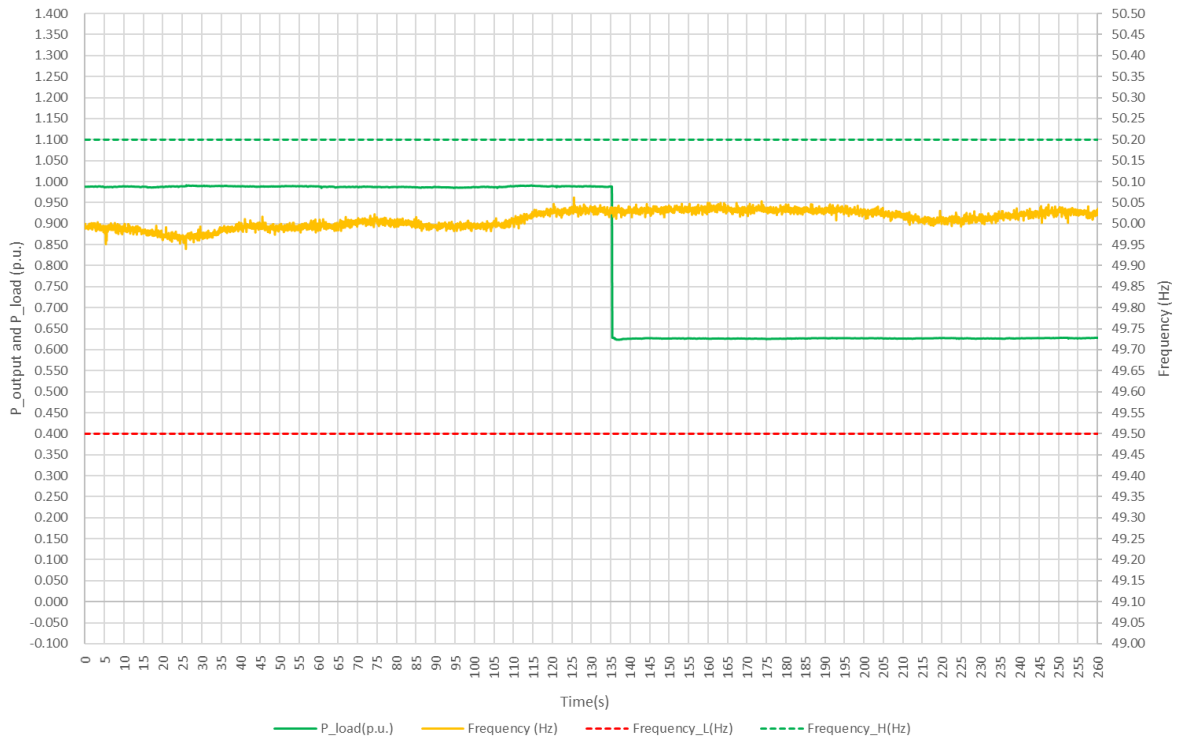
Over view



Zoom in

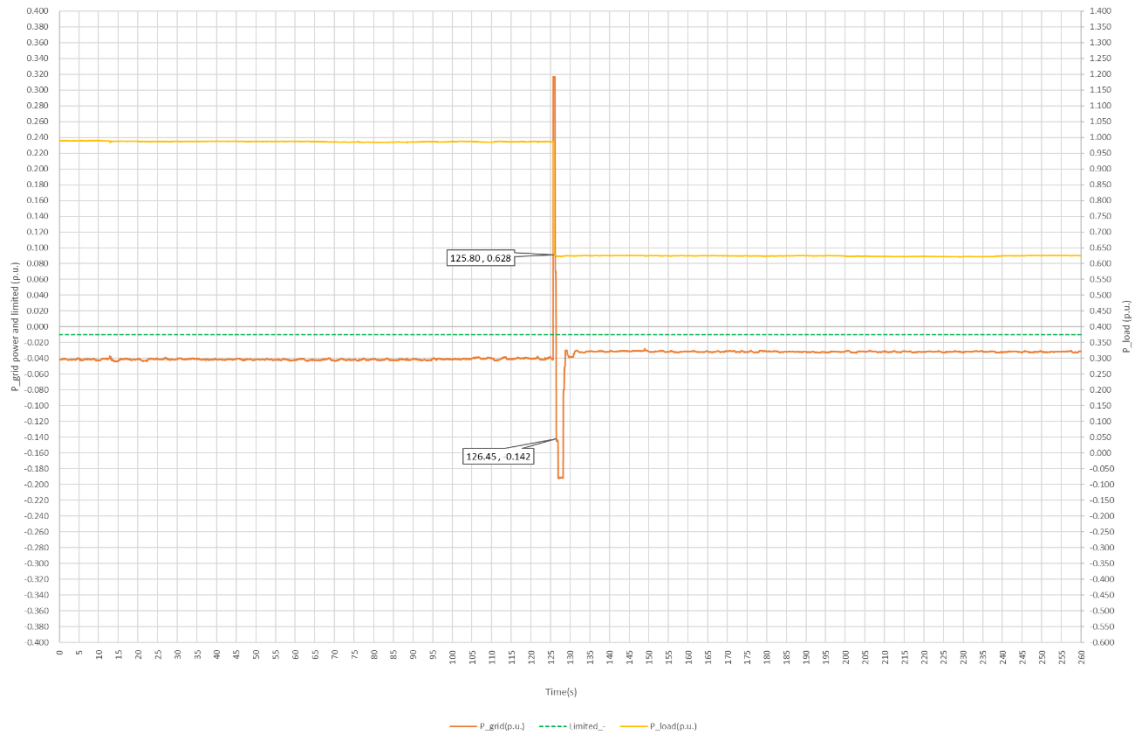


Power-Frequency

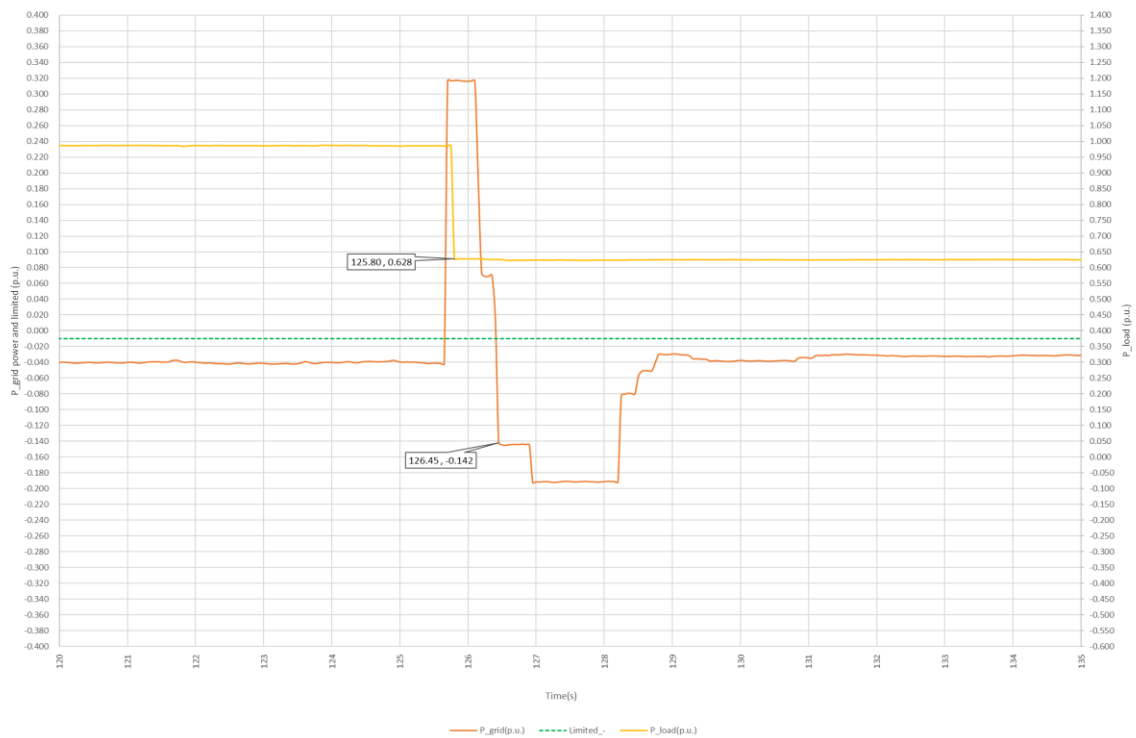


Test 1.3

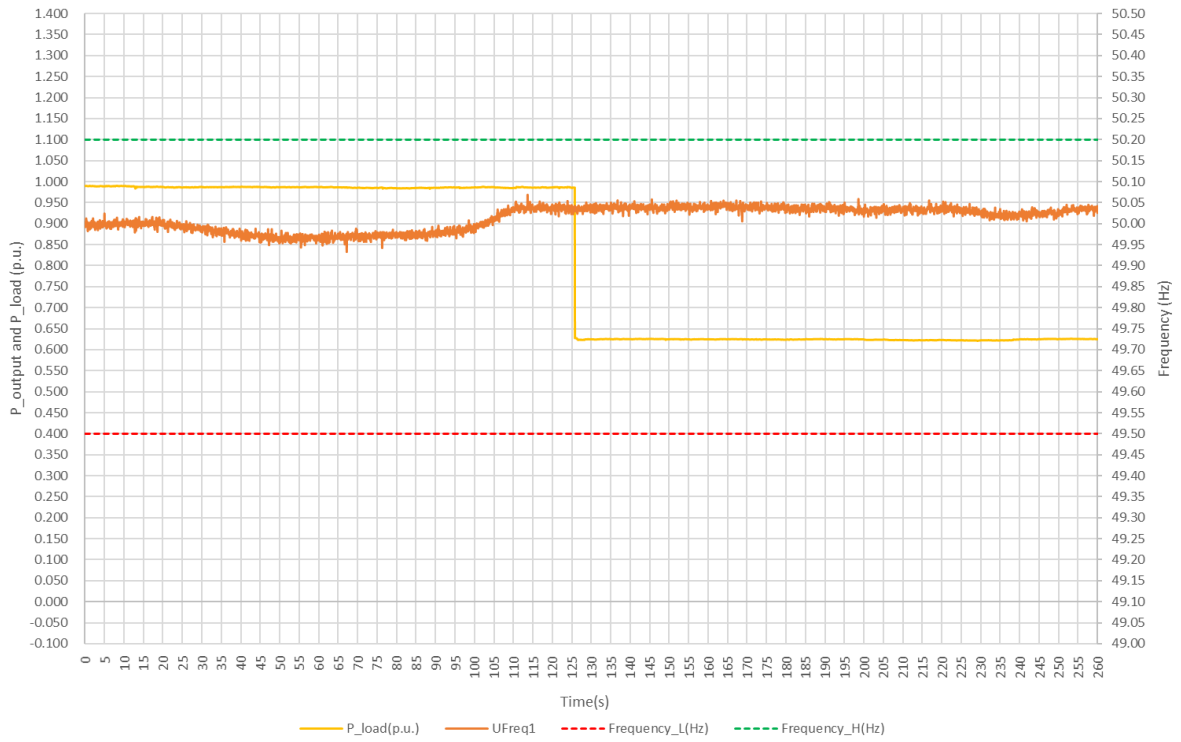
Over view



Zoom in

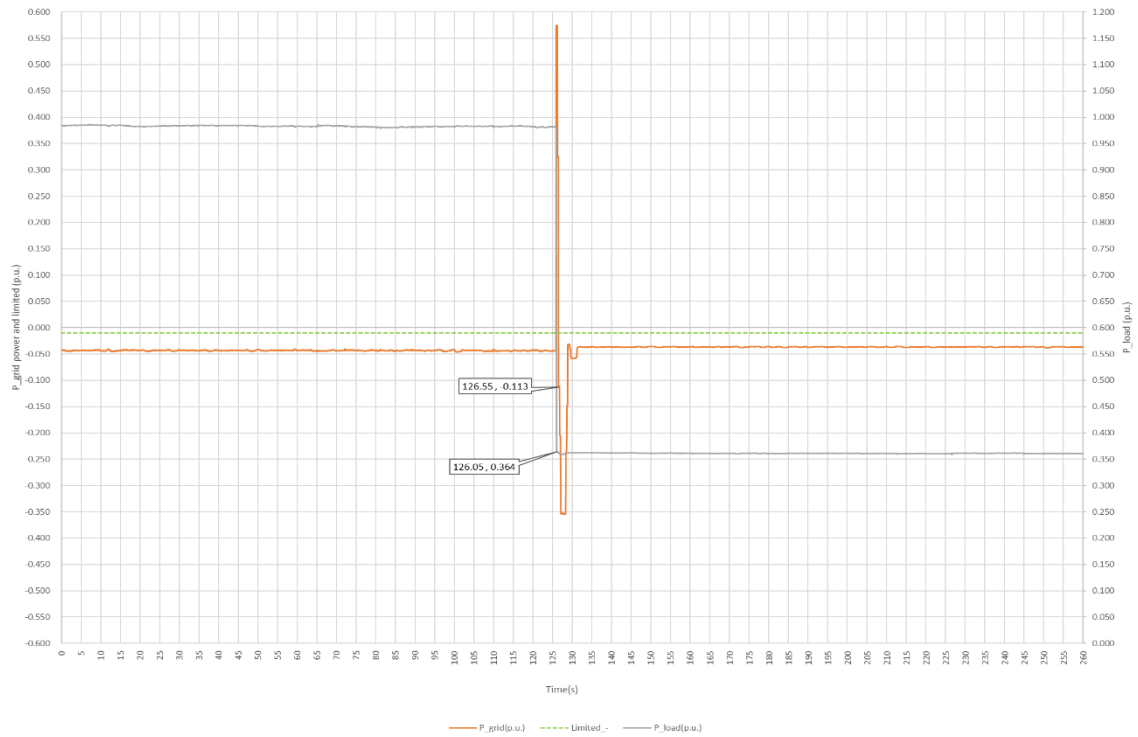


Power-Frequency

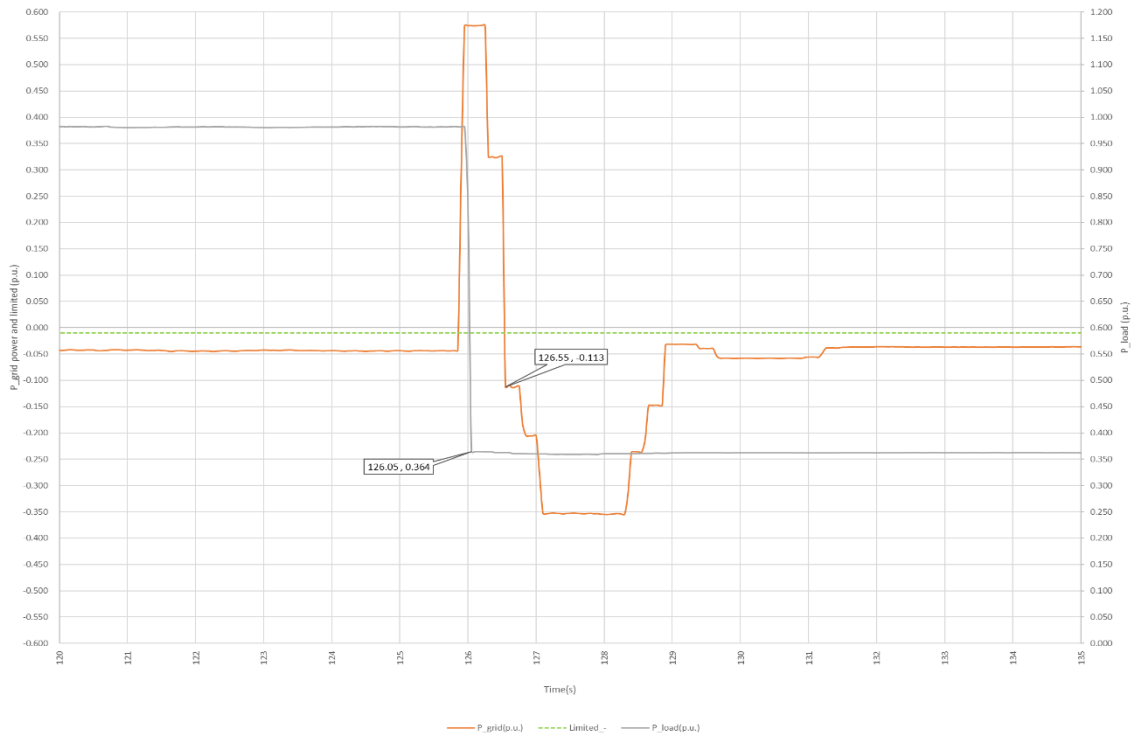


Test 2.1

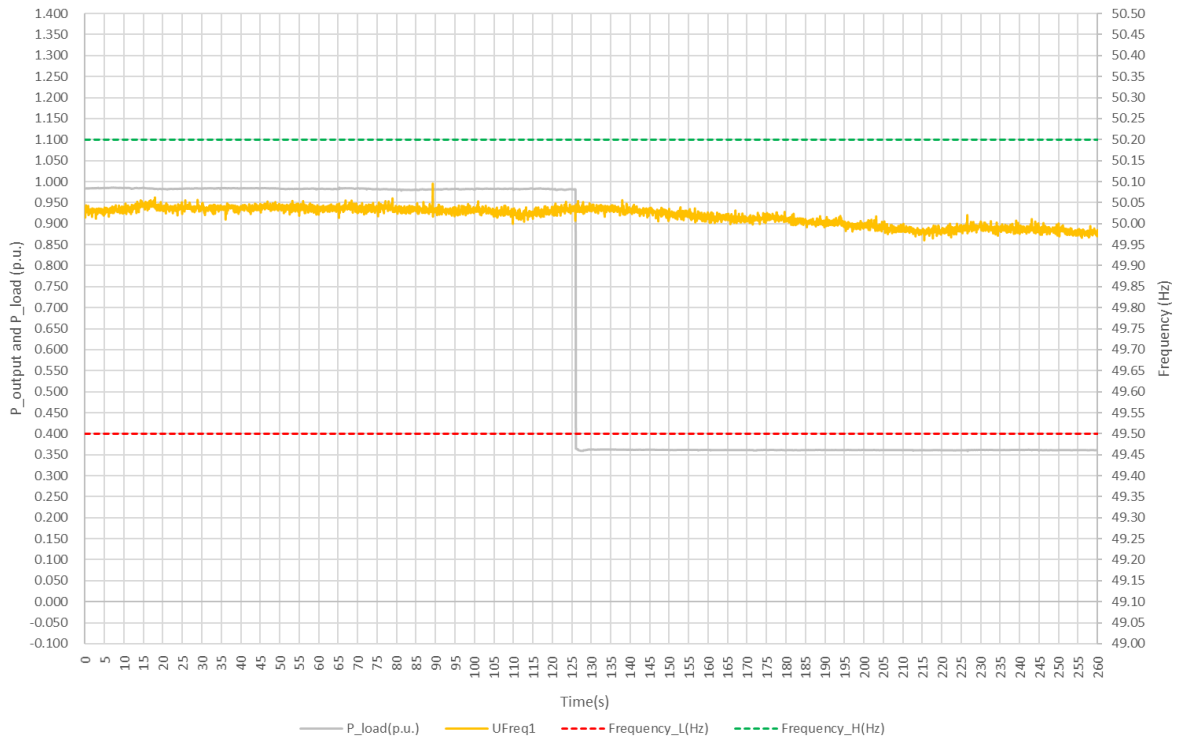
Over view



Zoom in

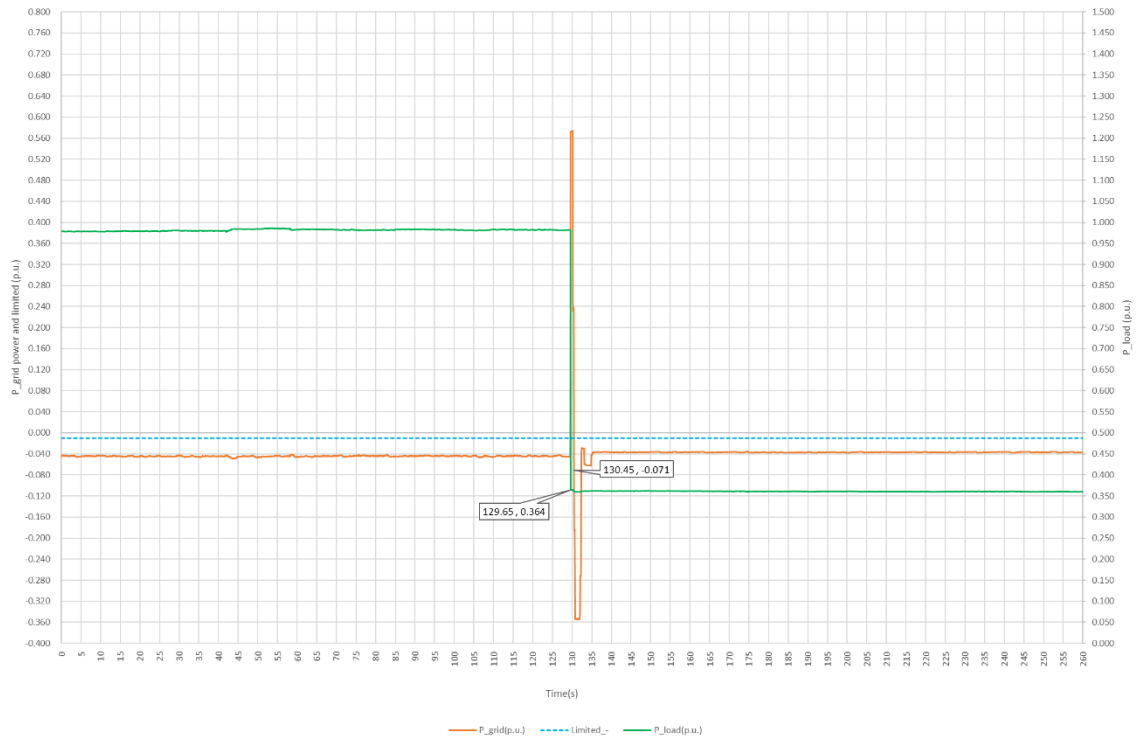


Power-Frequency

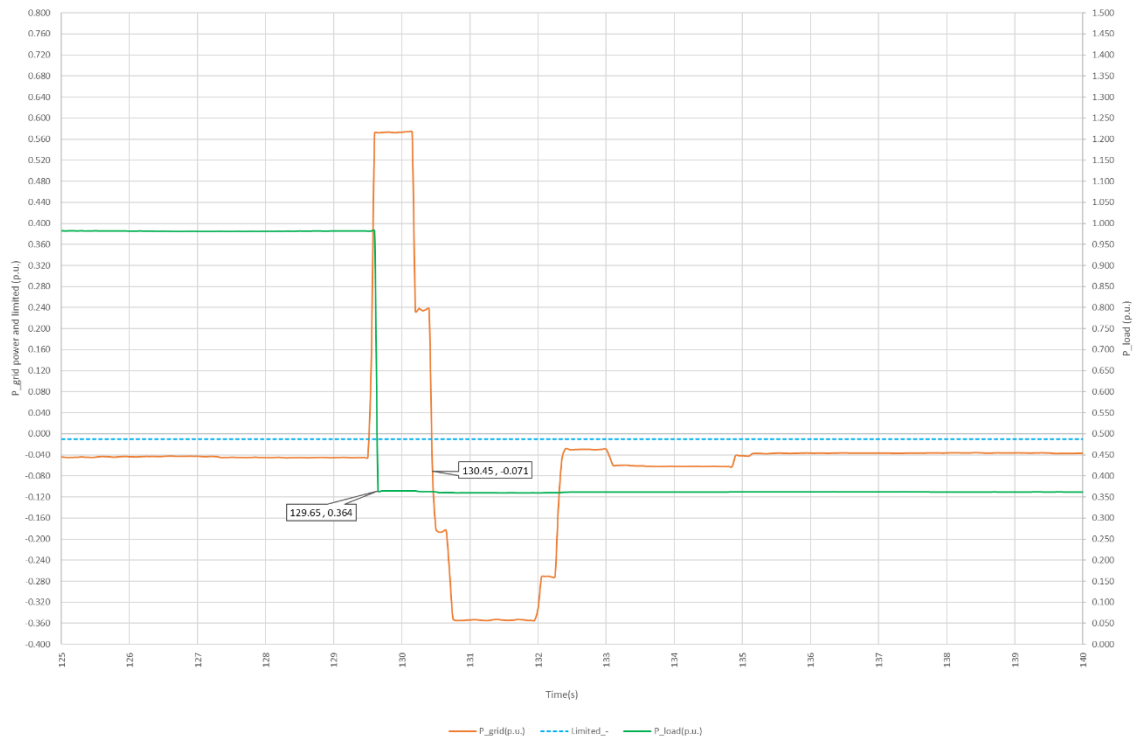


Test 2.2

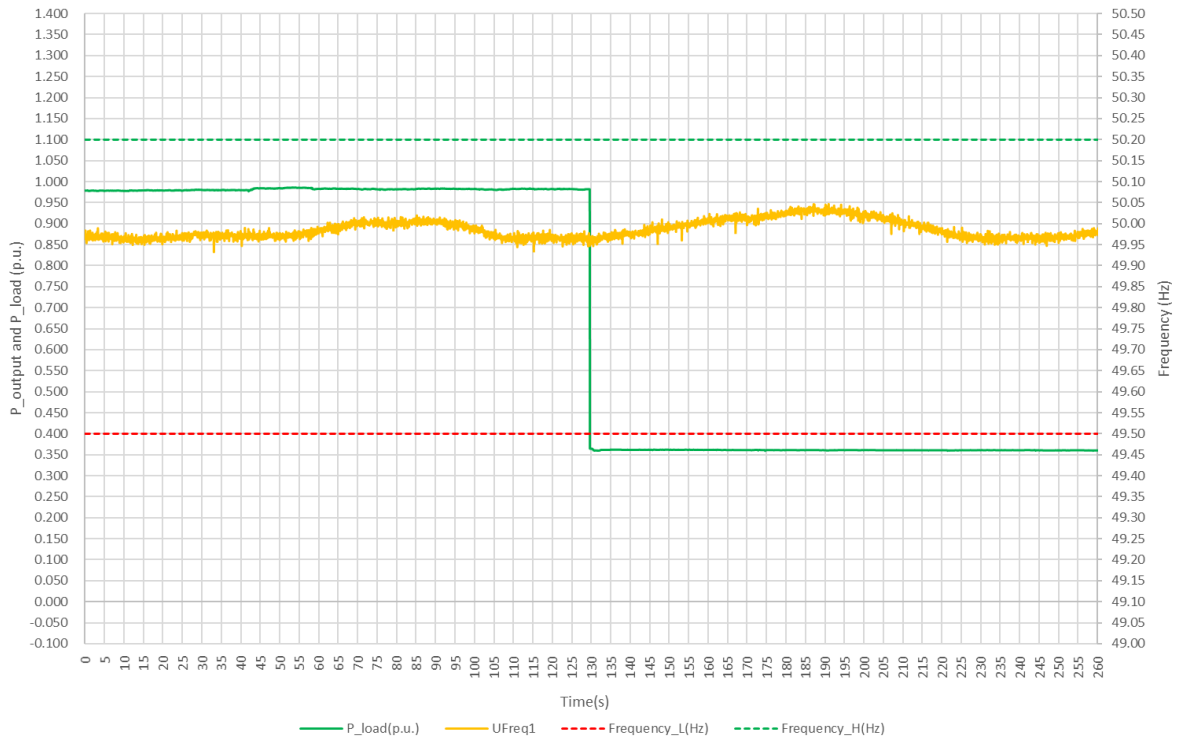
Over view



Zoom In

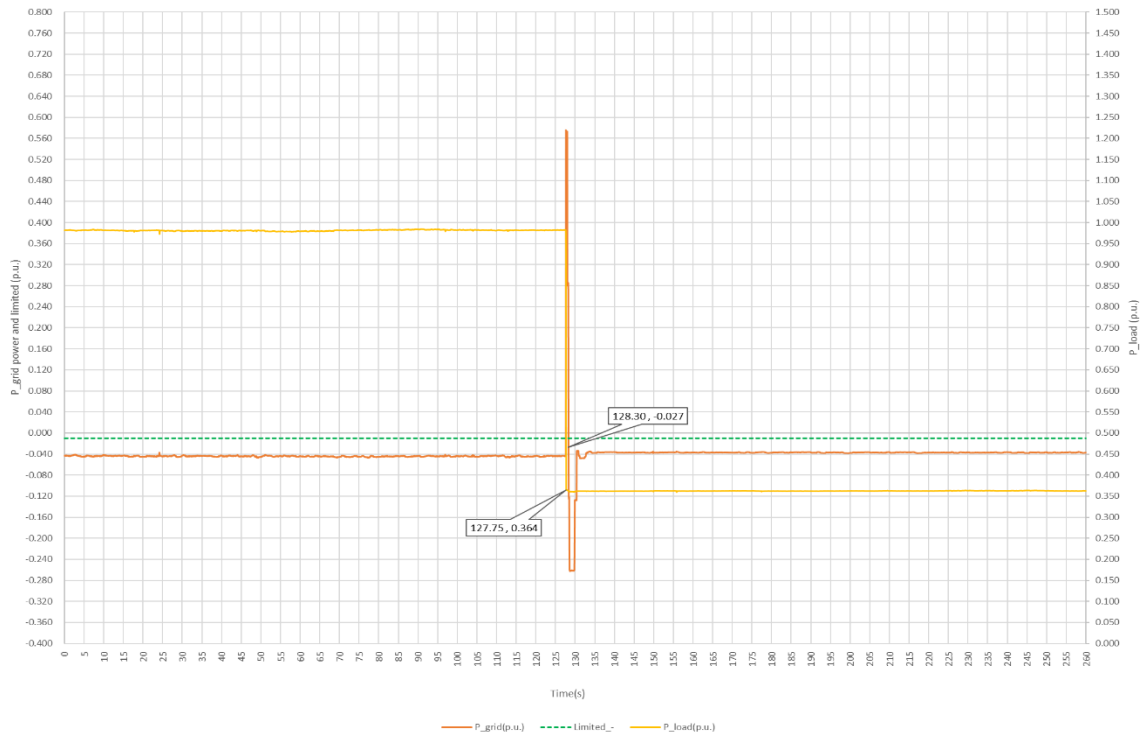


Power-Frequency

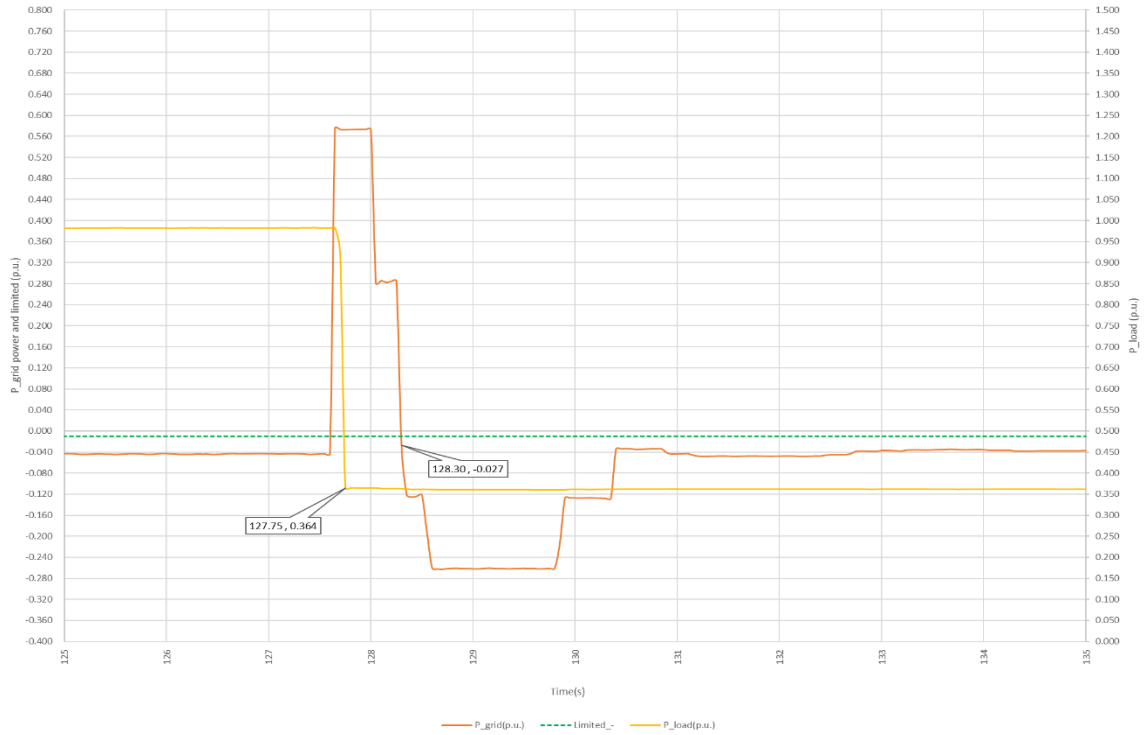


Test 2.3

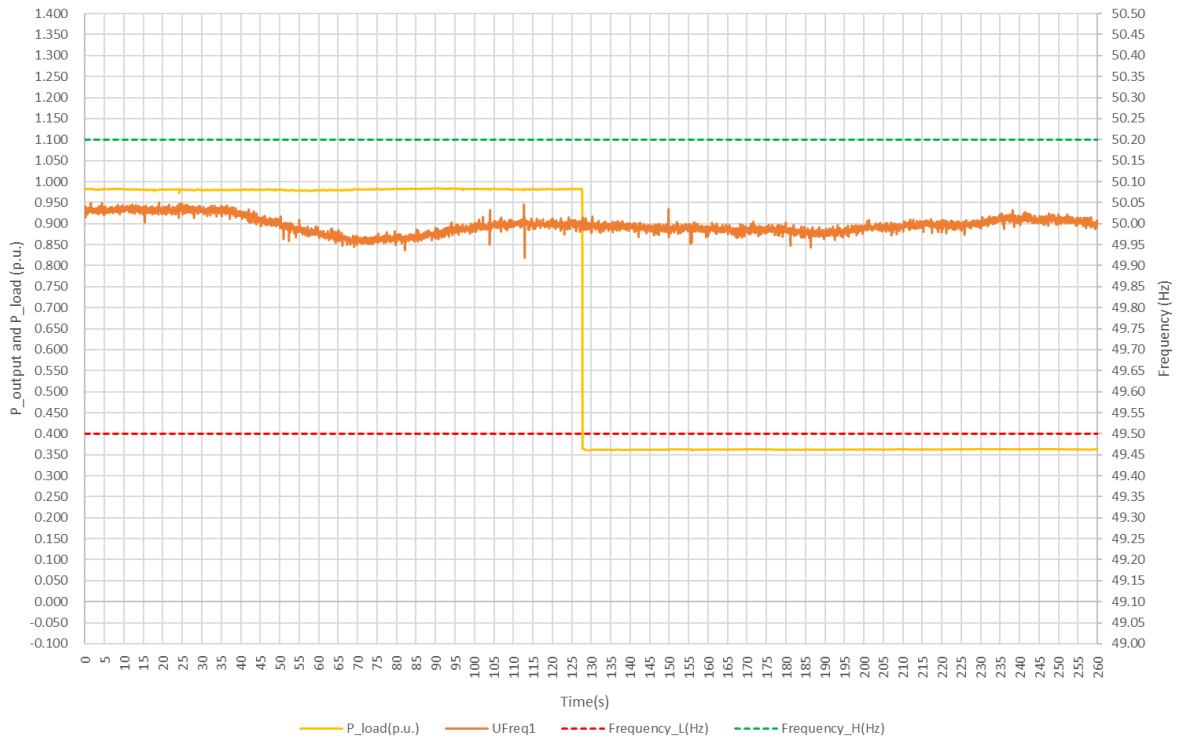
Over view



Zoom in

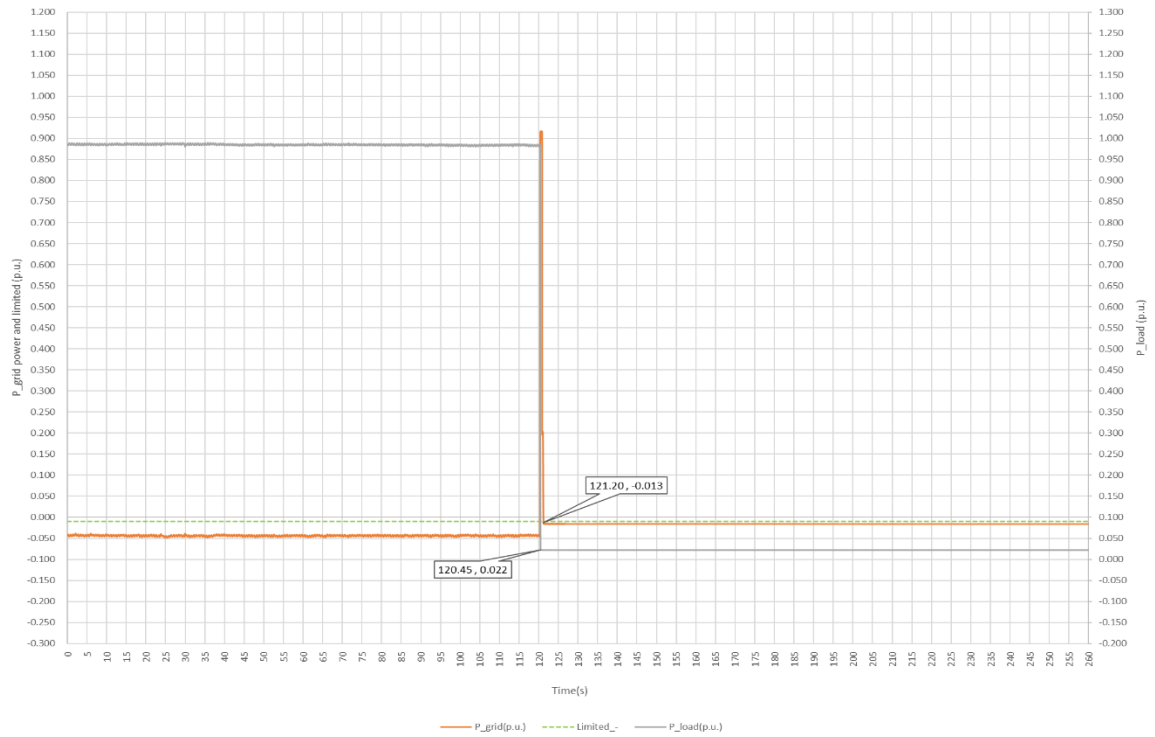


Power-Frequency

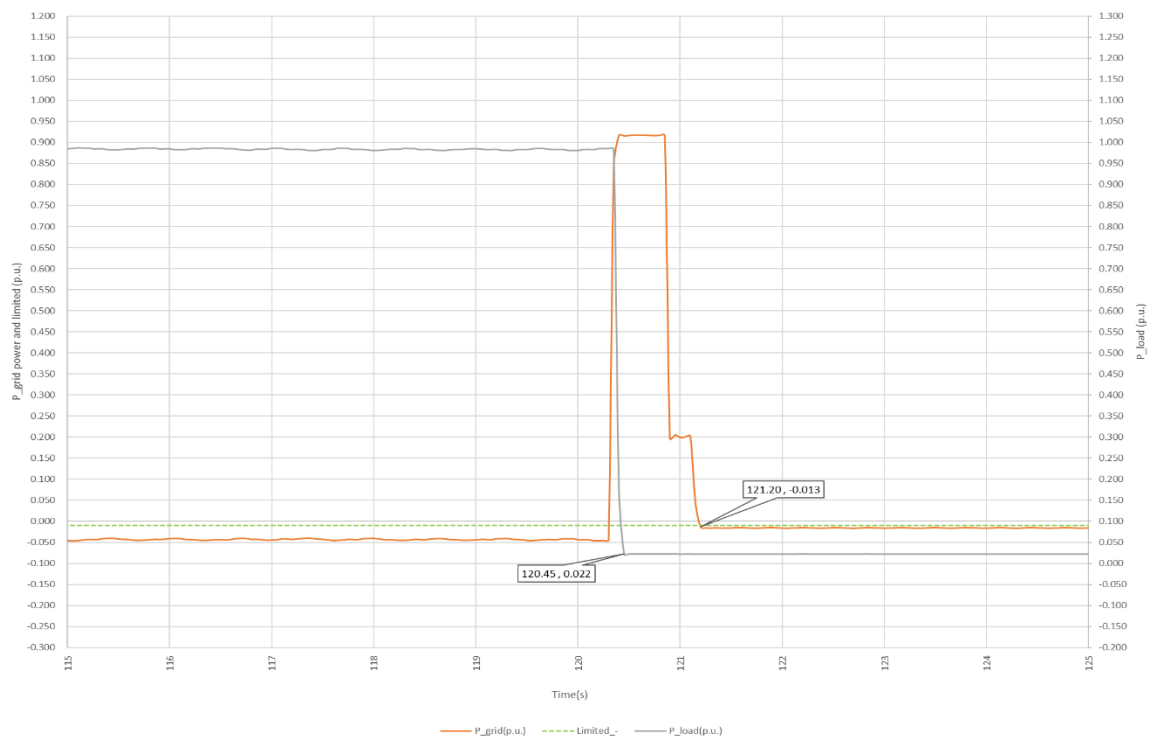


Test 3.1

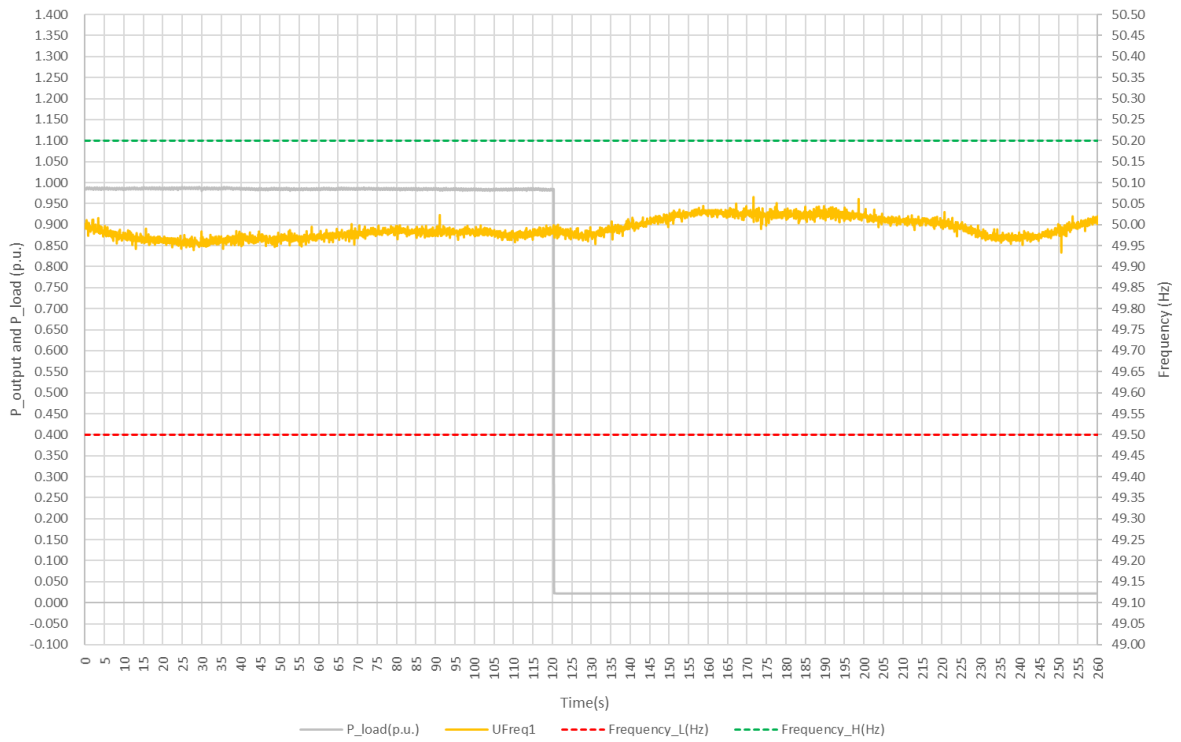
Over view



Zoom in

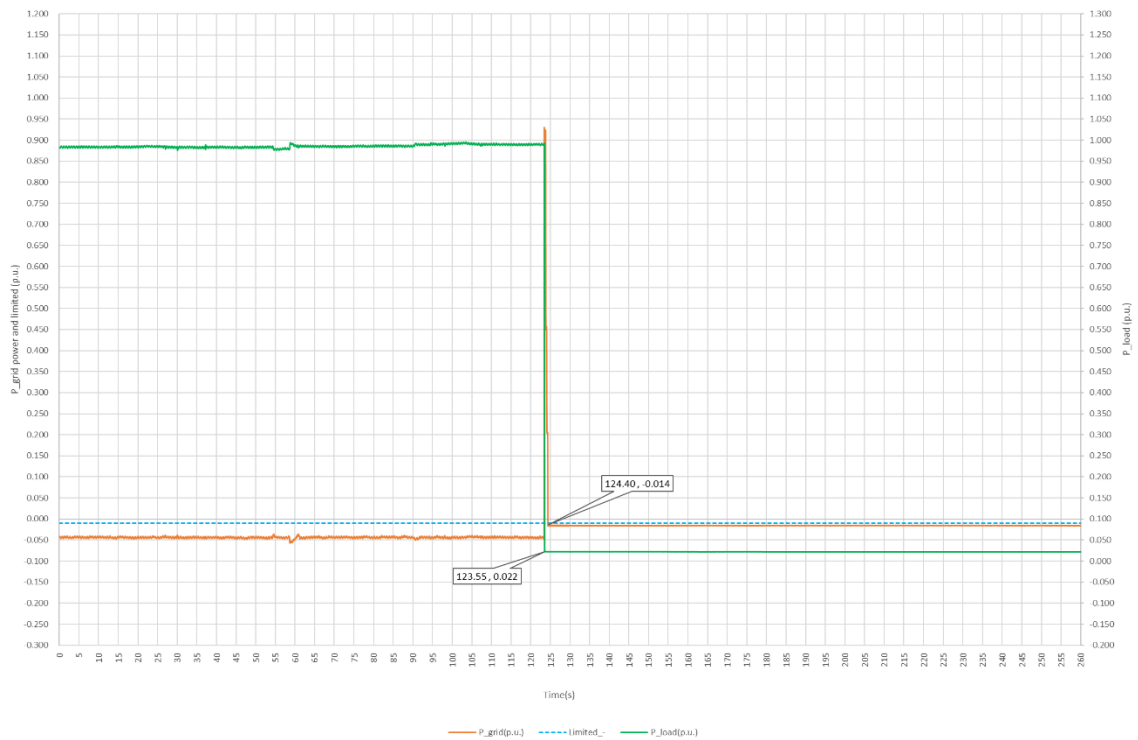


Power-Frequency

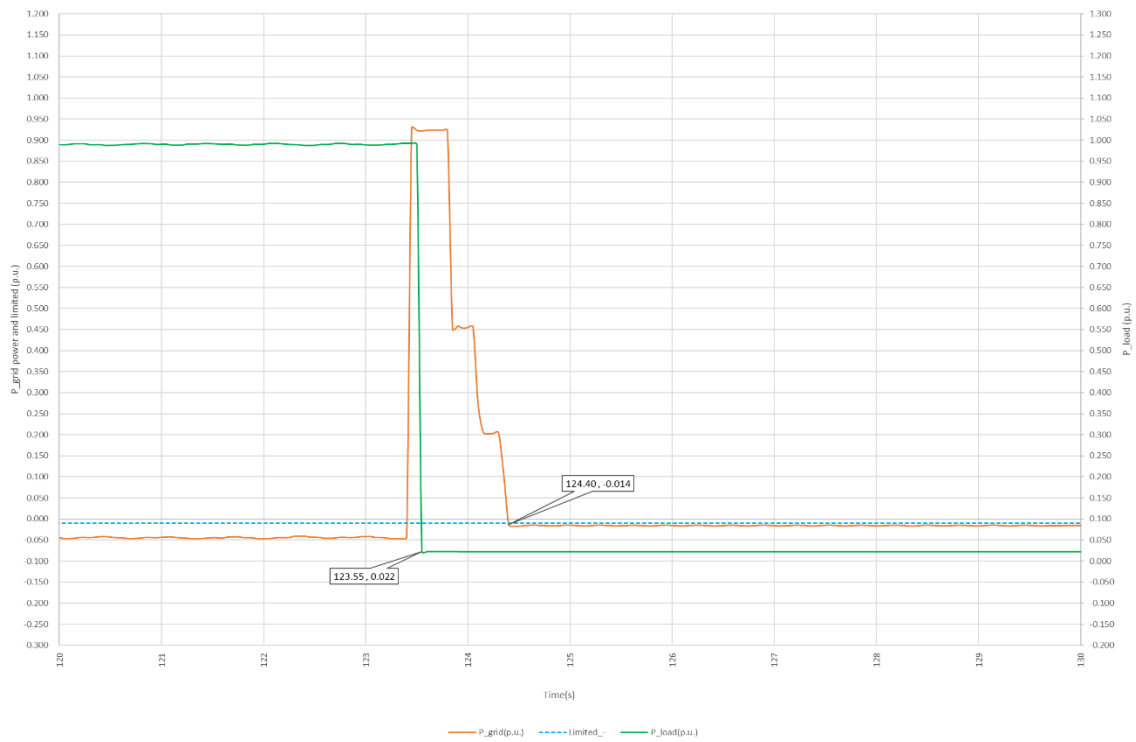


Test 3.2

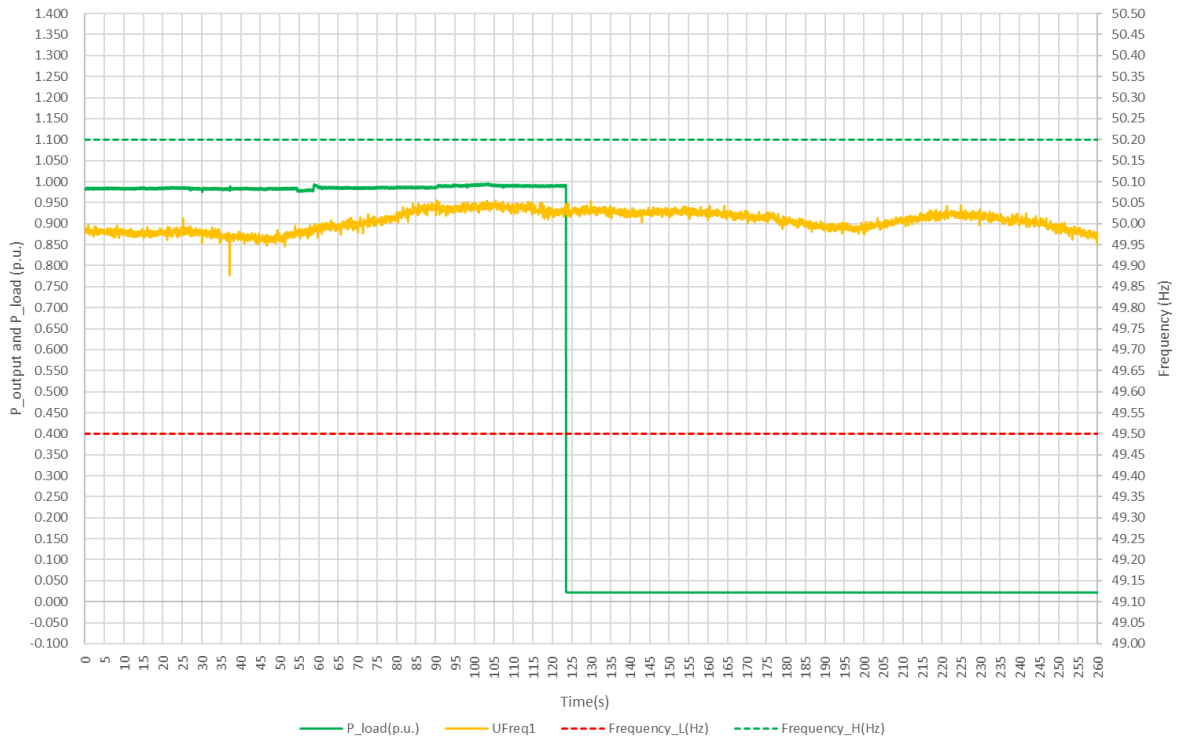
Over view



Zoom in

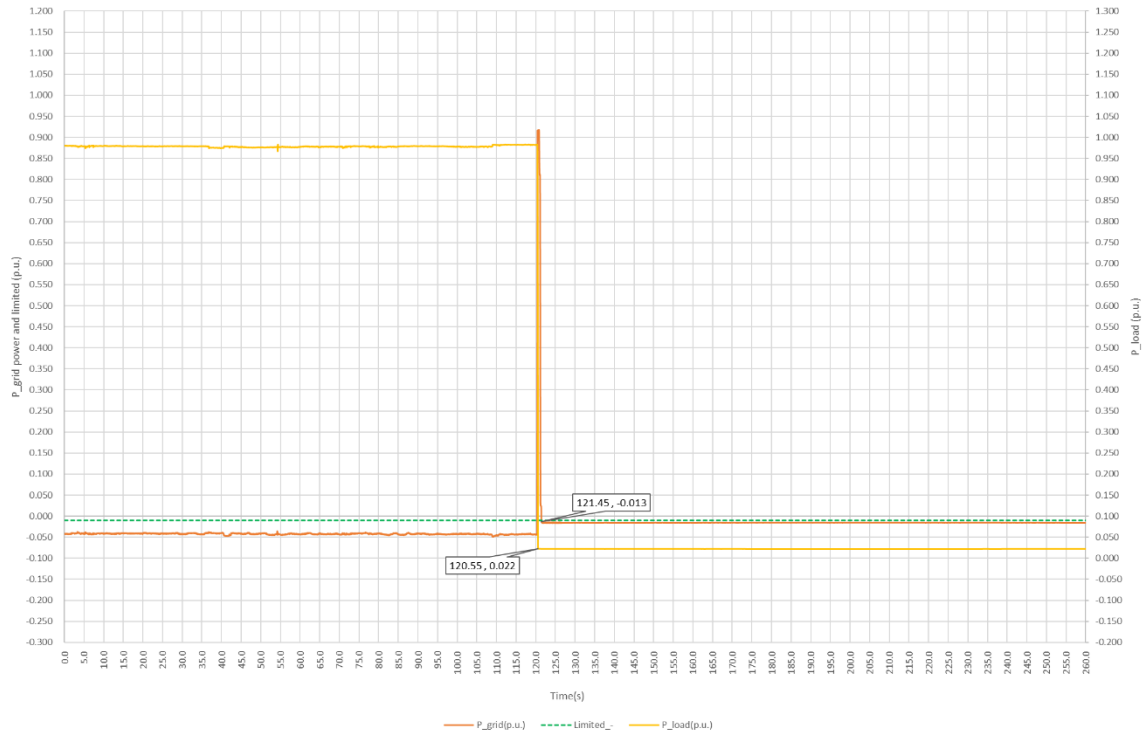


Power-Frequency

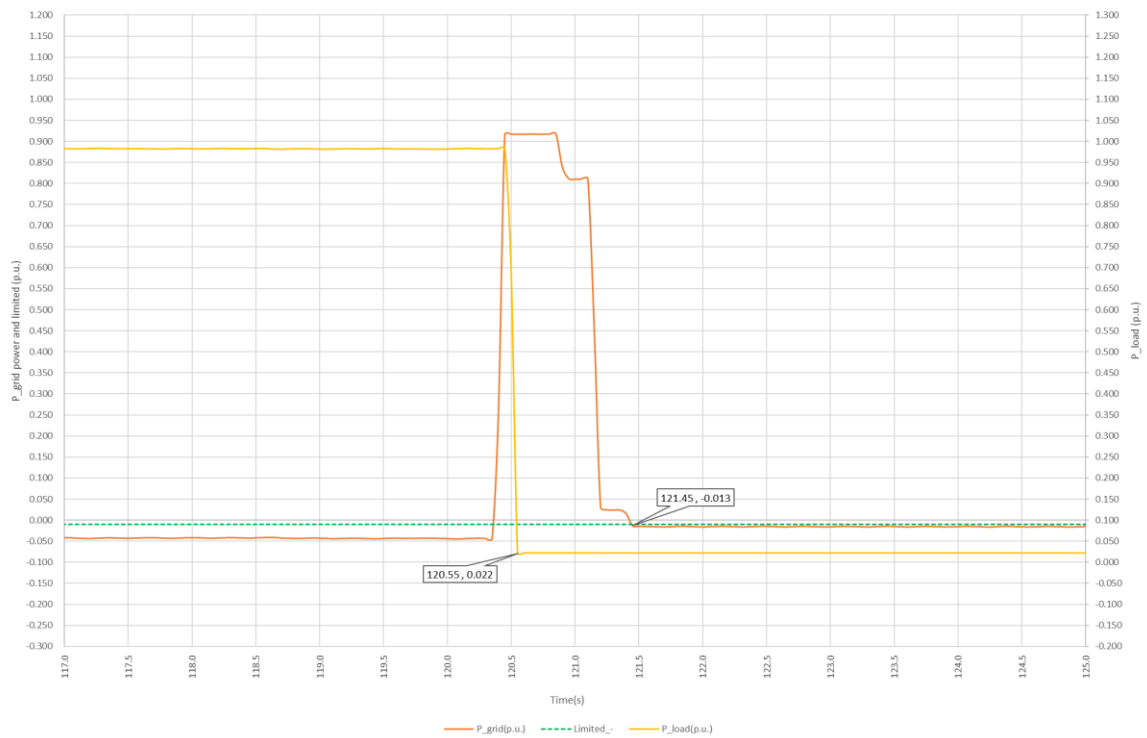


Test 3.3

Over view



Zoom in

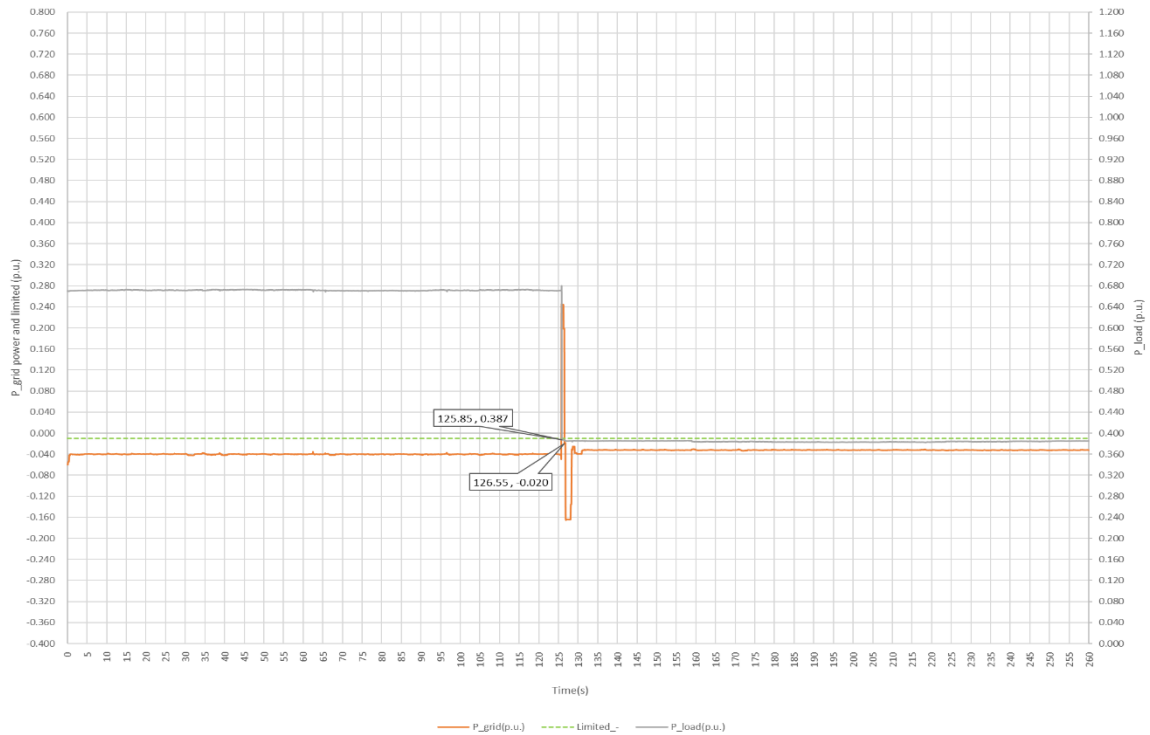


Power-Frequency

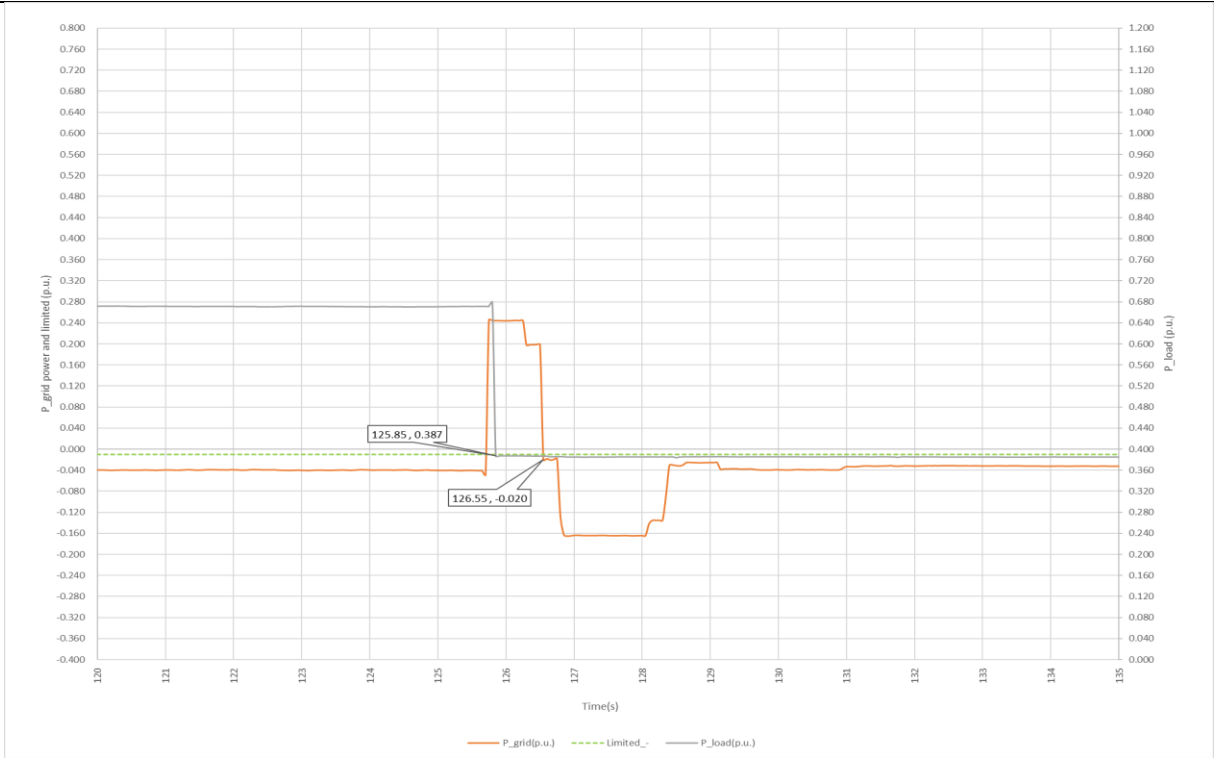


Test 4.1

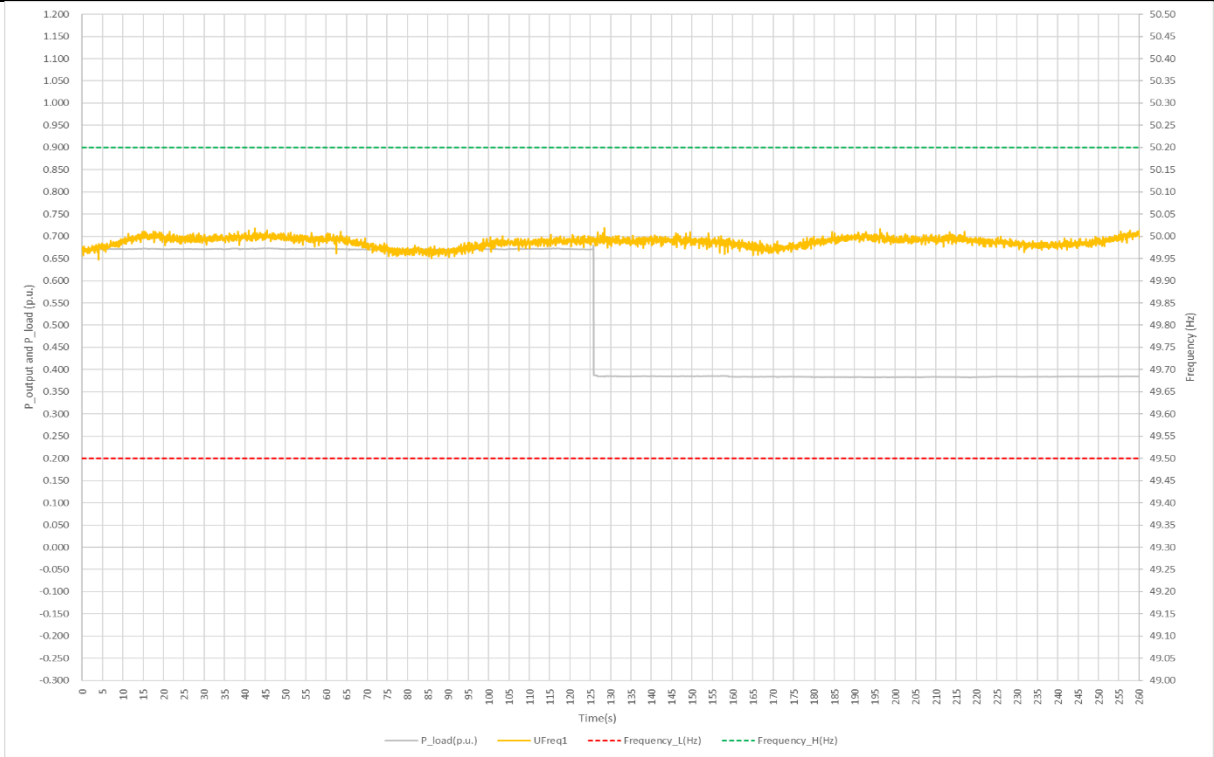
Over view



Zoom in

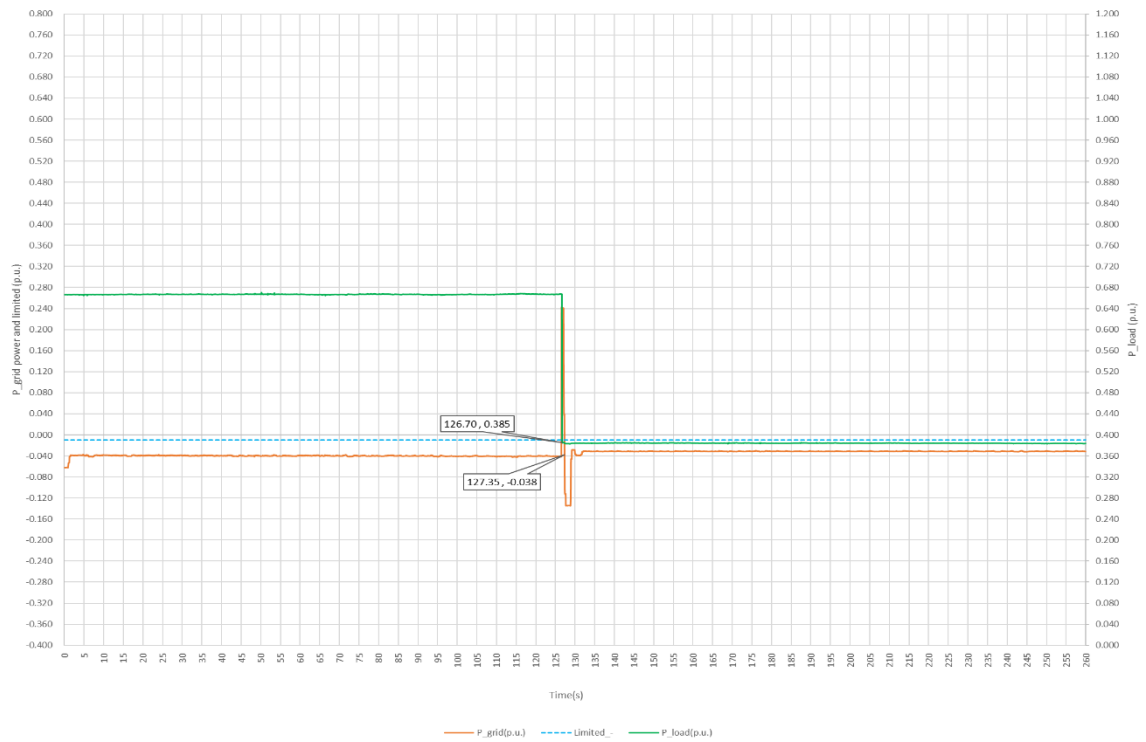


Power-Frequency

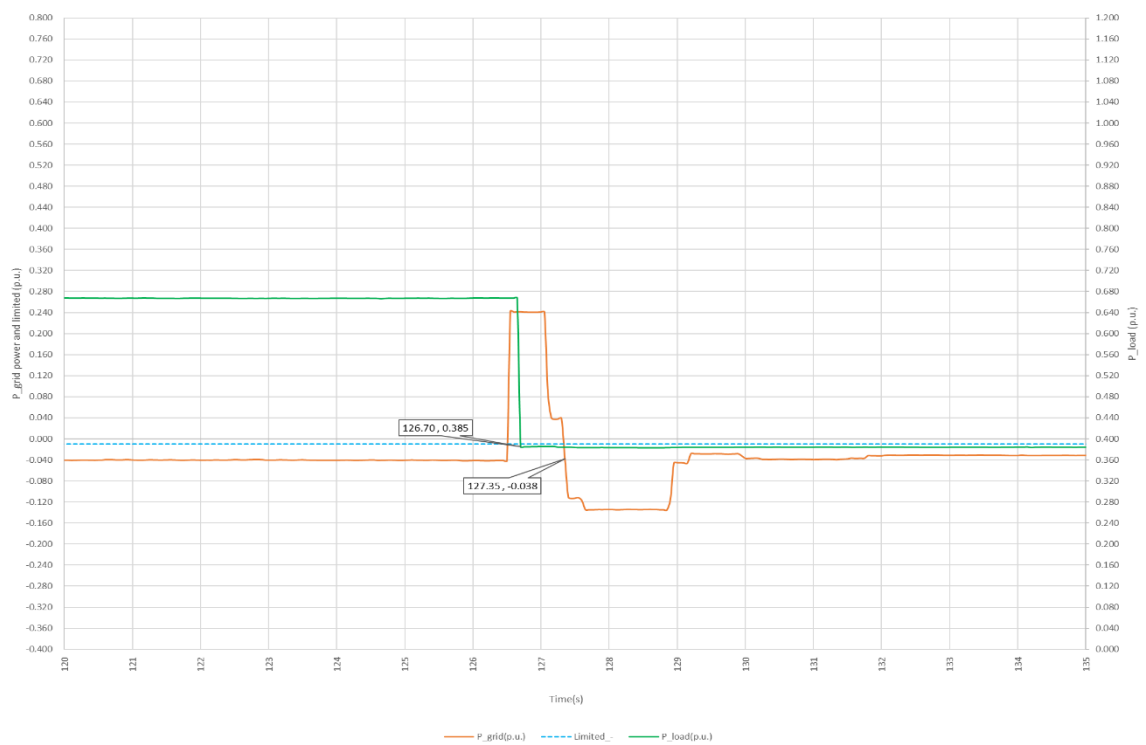


Test 4.2

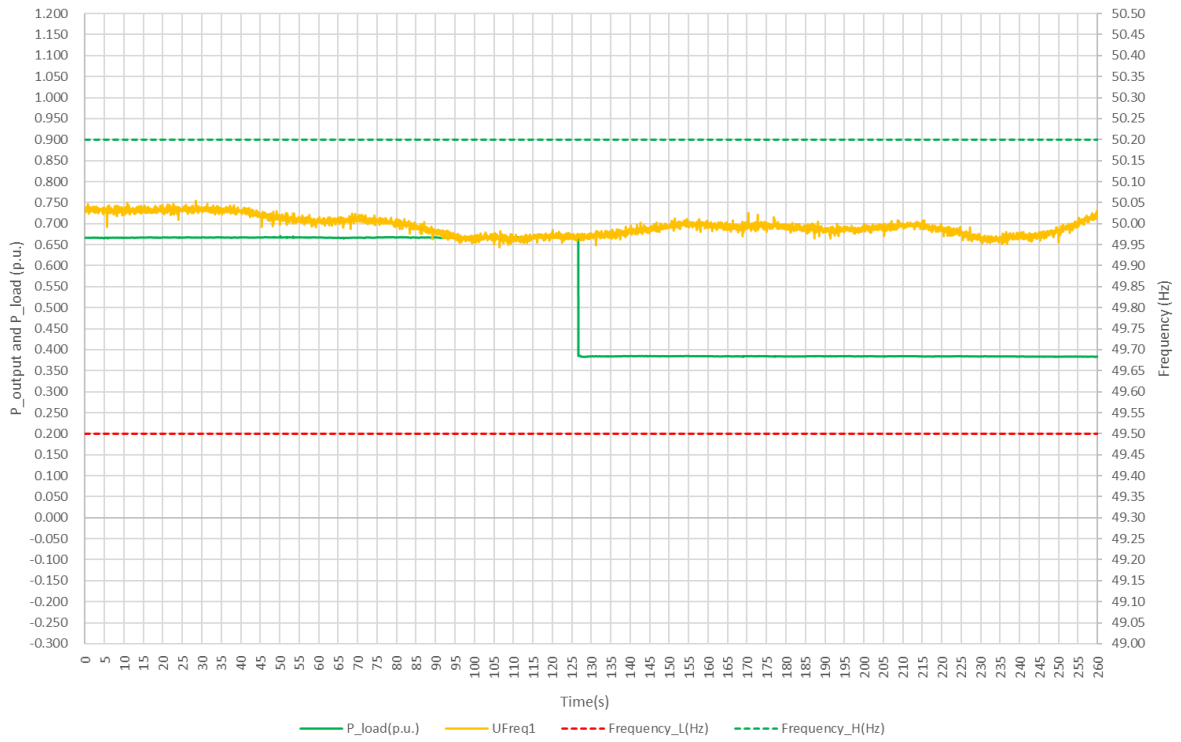
Over view



Zoom in

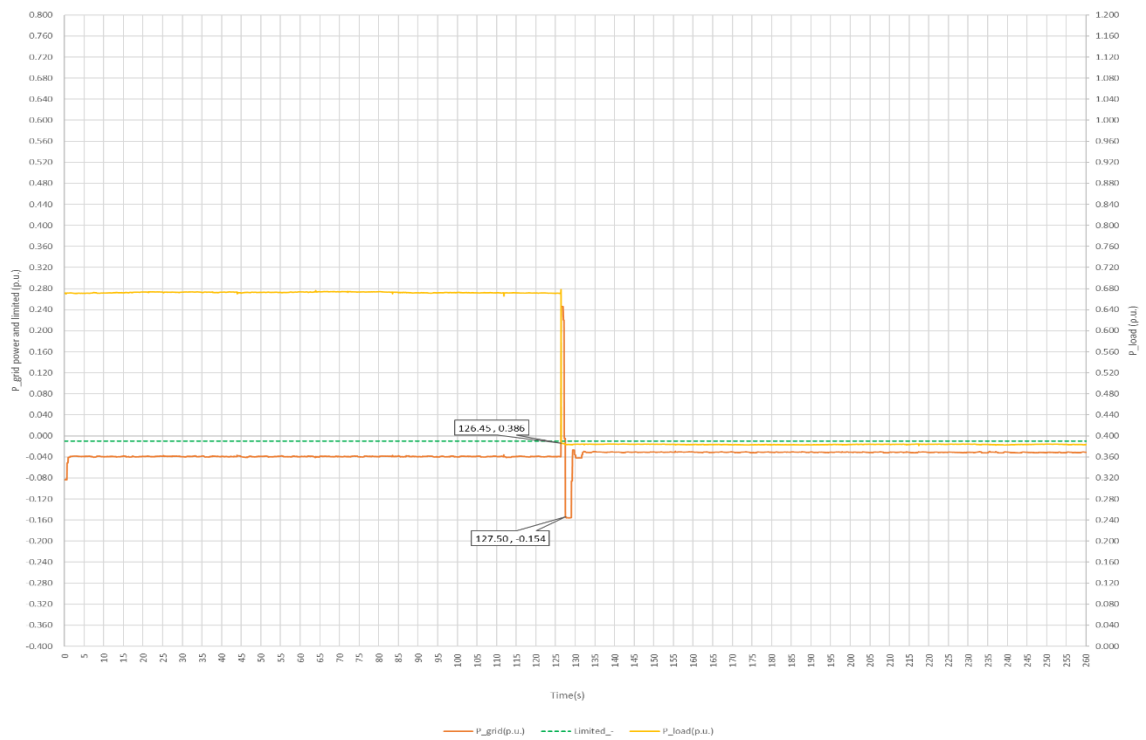


Power-Frequency

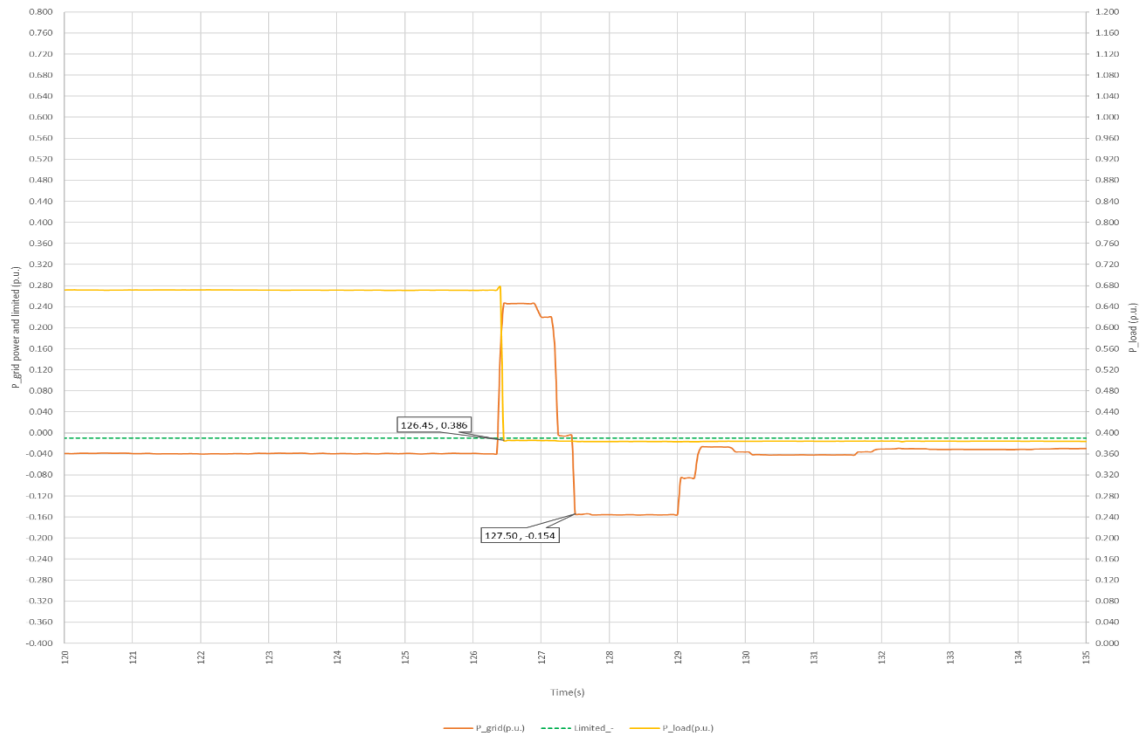


Test 4.3

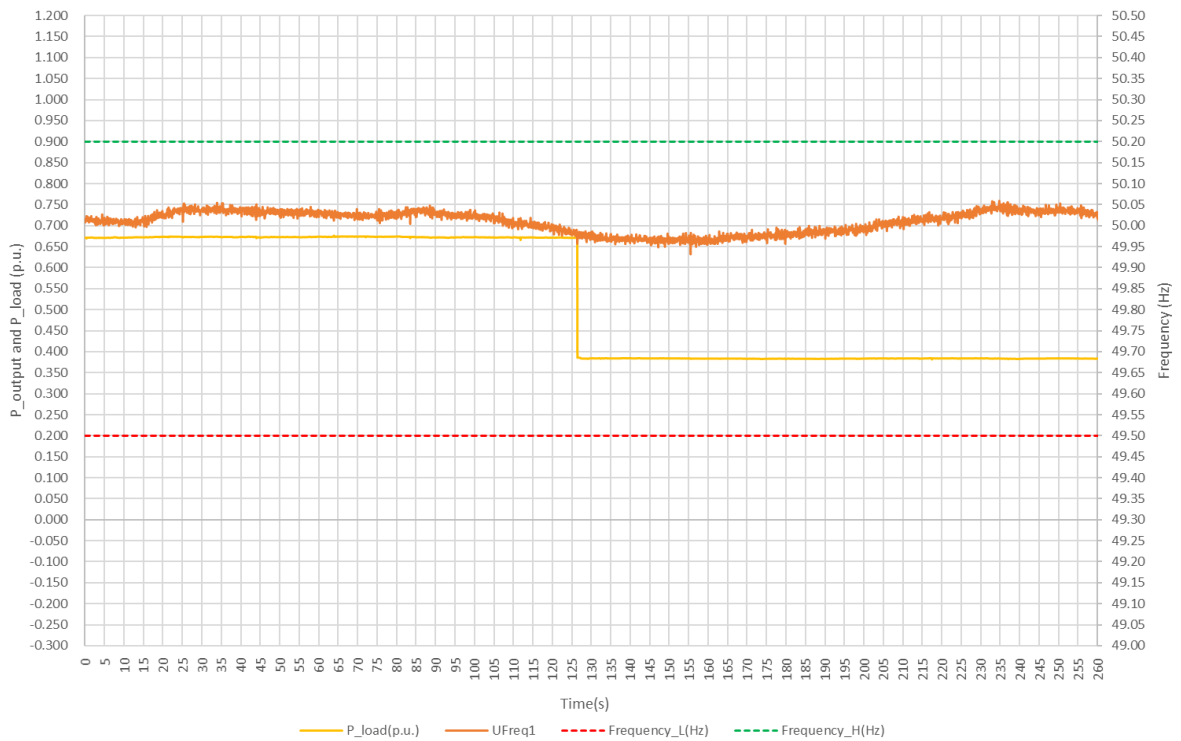
Over view



Zoom in

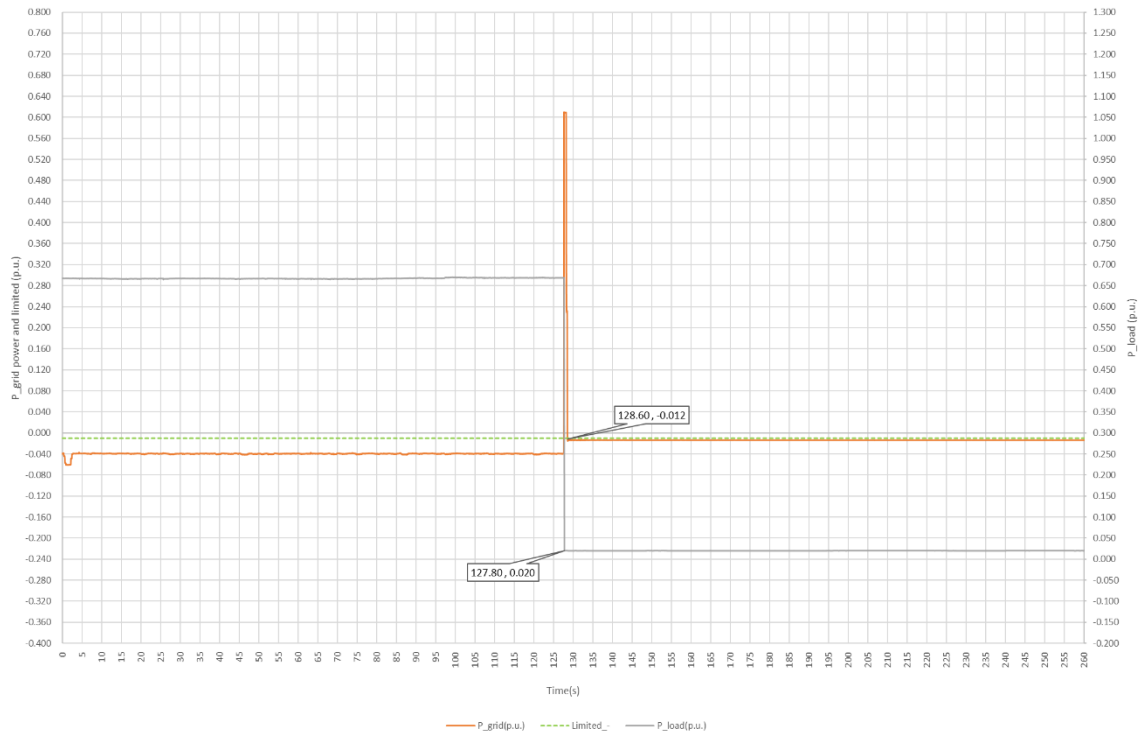


Power-Frequency

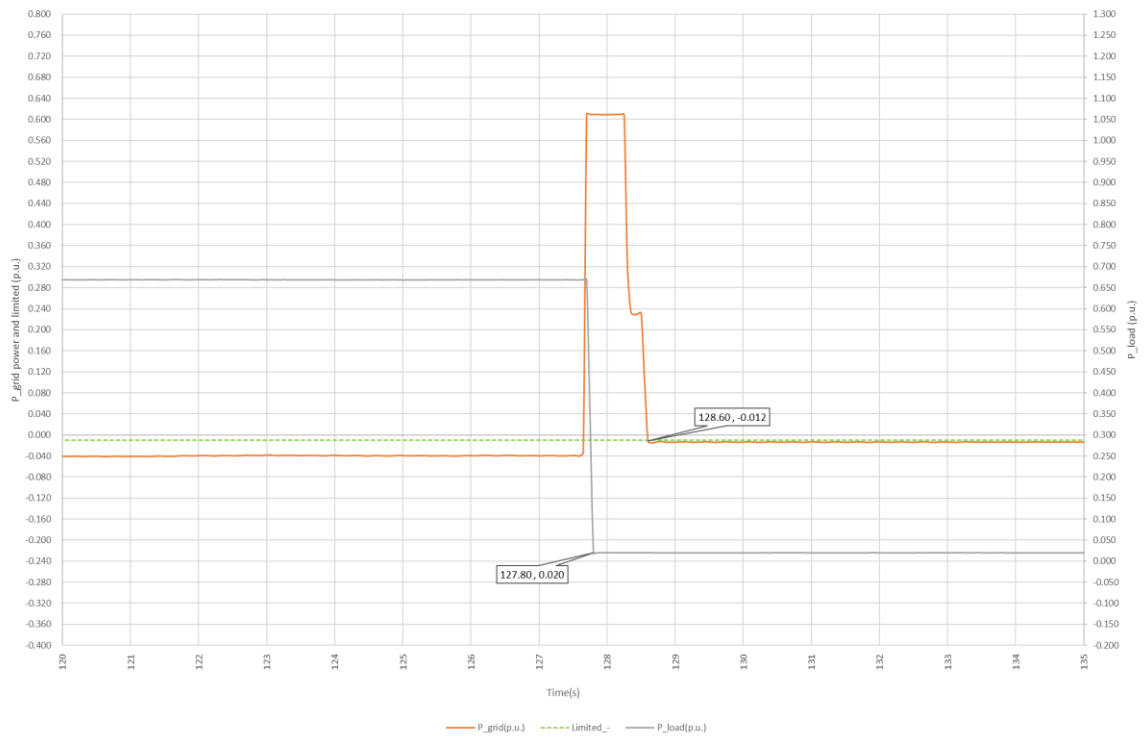


Test 5.1

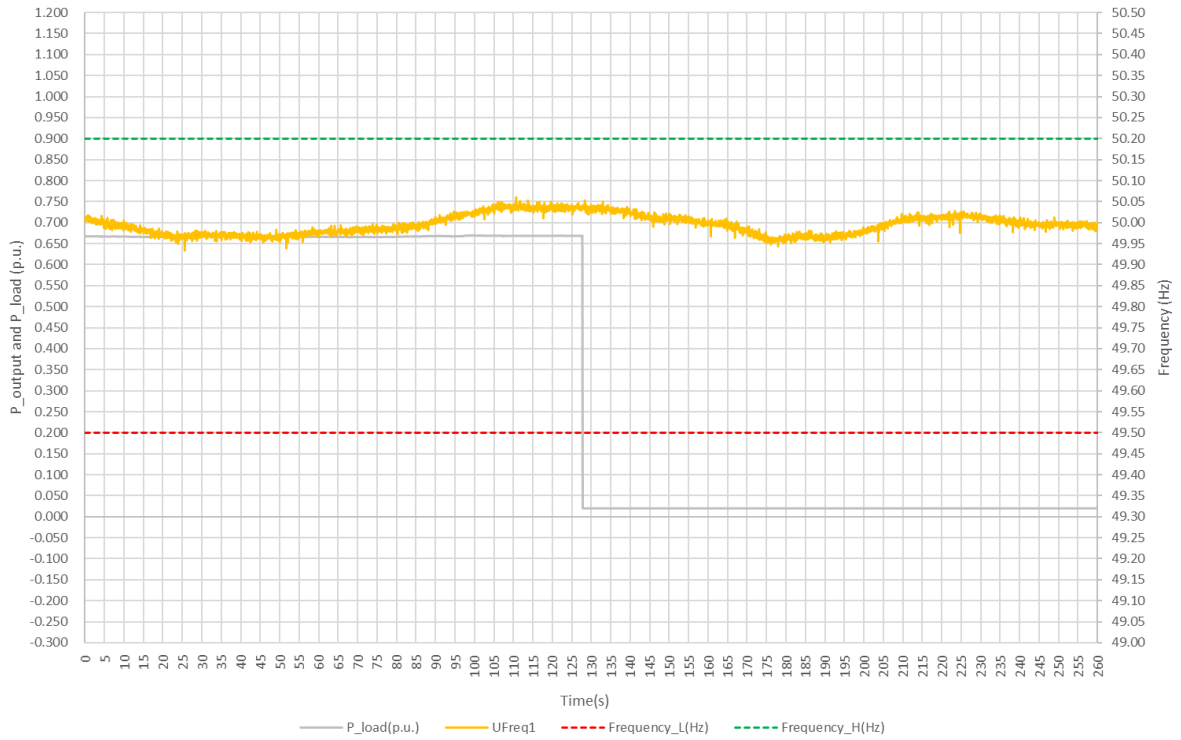
Over view



Zoom in

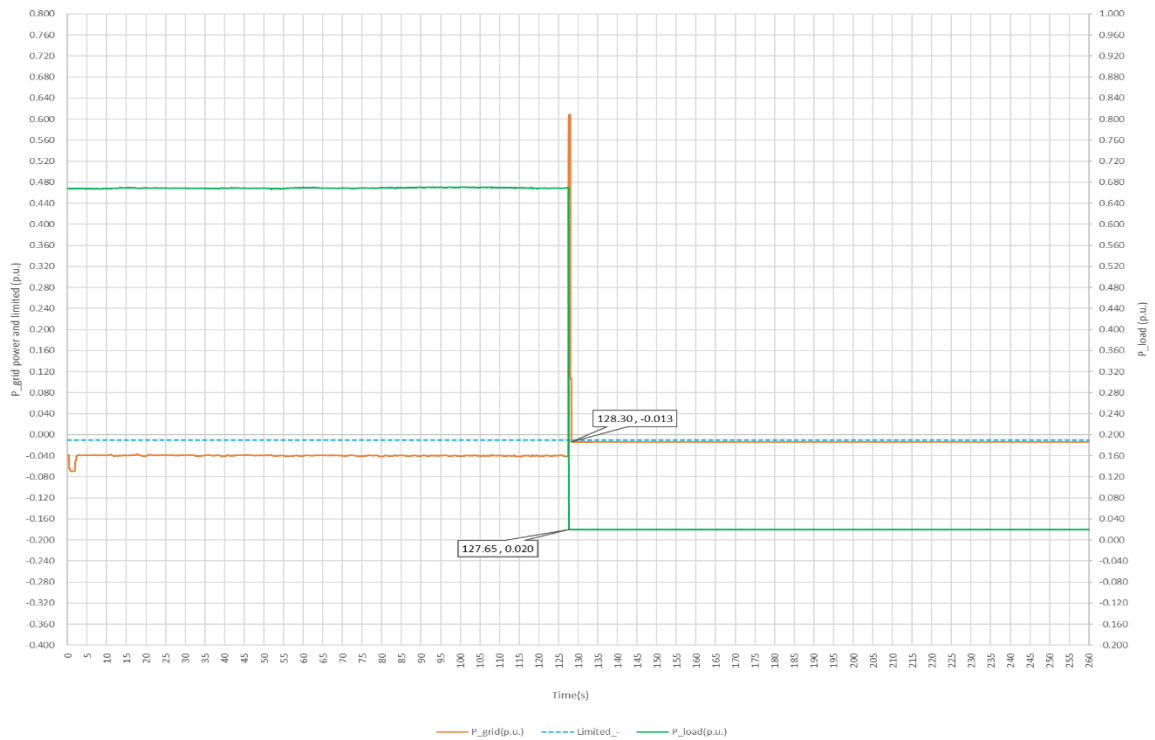


Power-Frequency

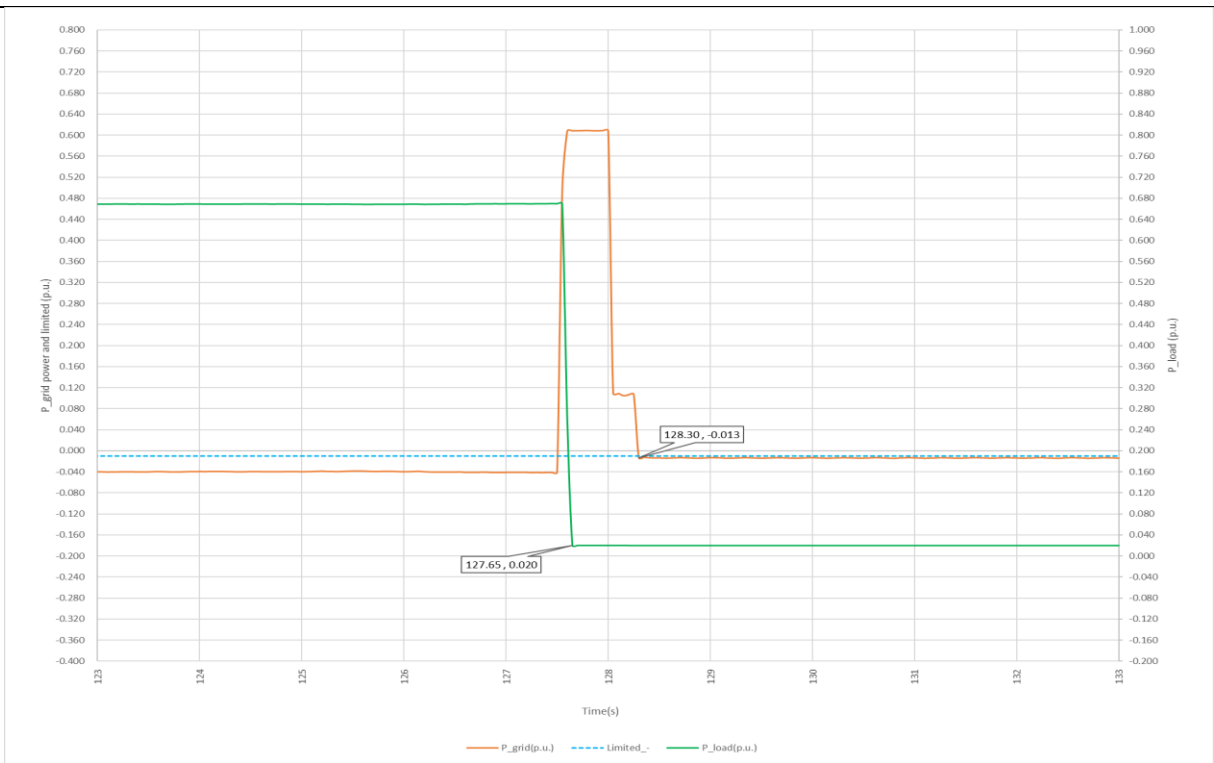


Test 5.2

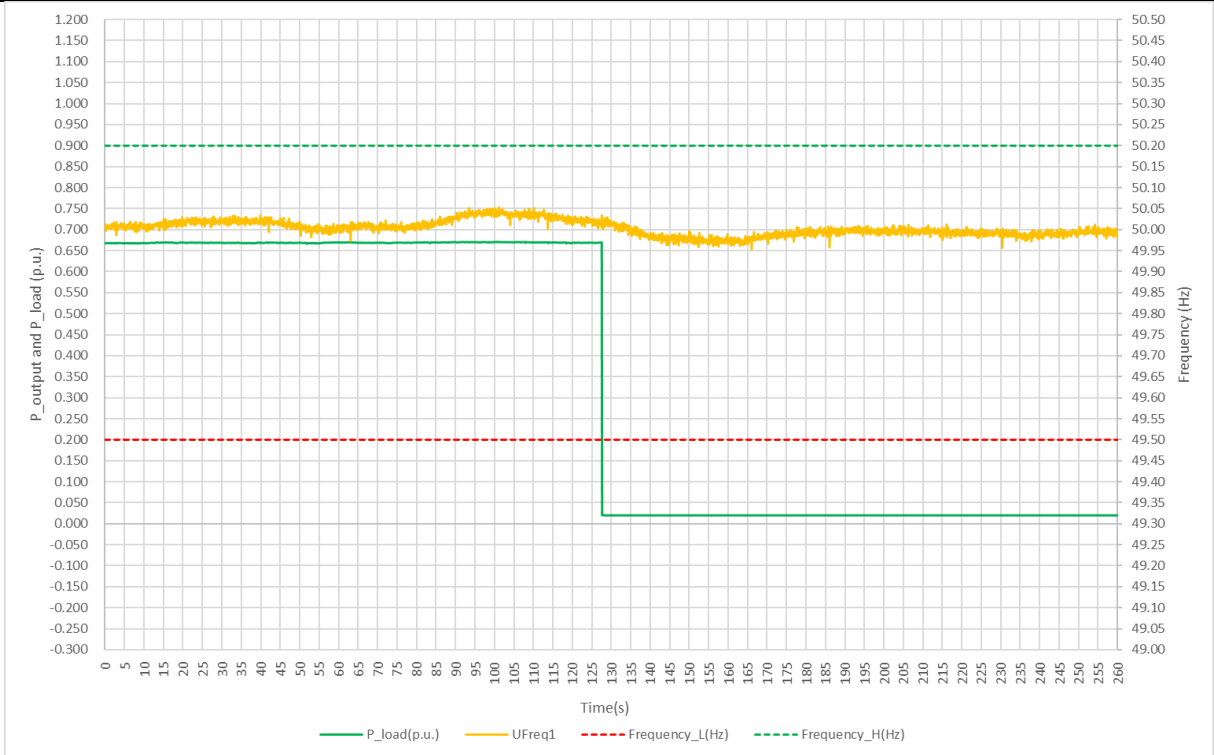
Over view



Zoom in

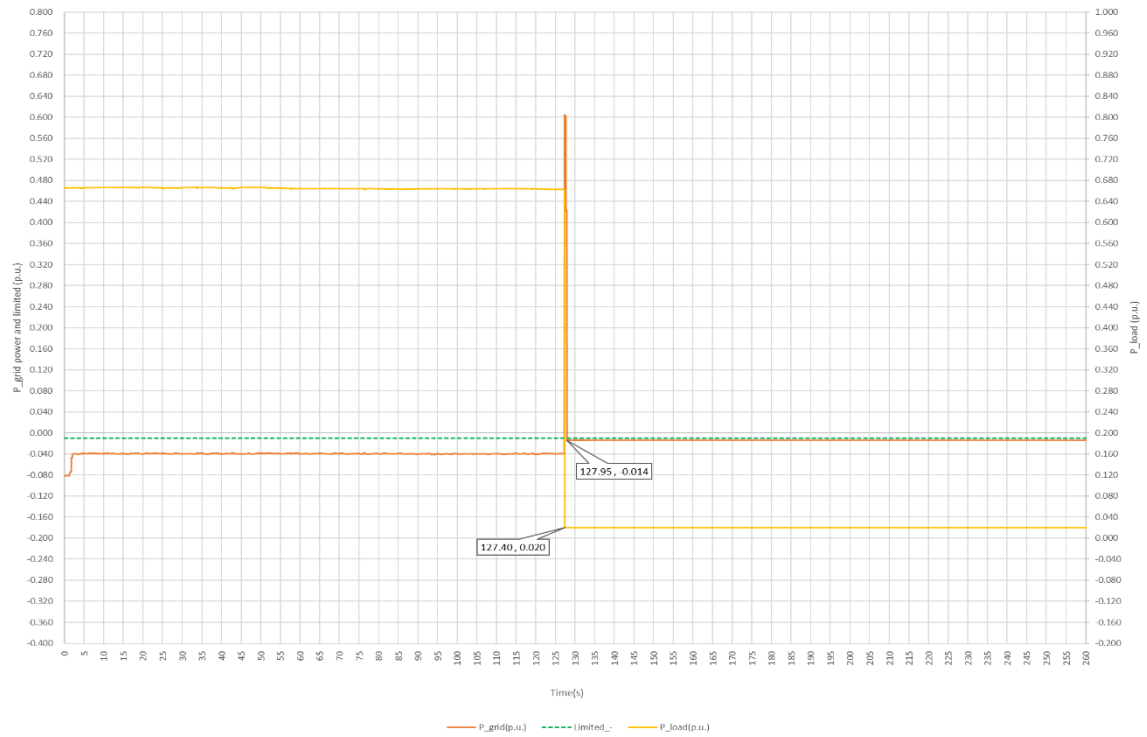


Power-Frequency

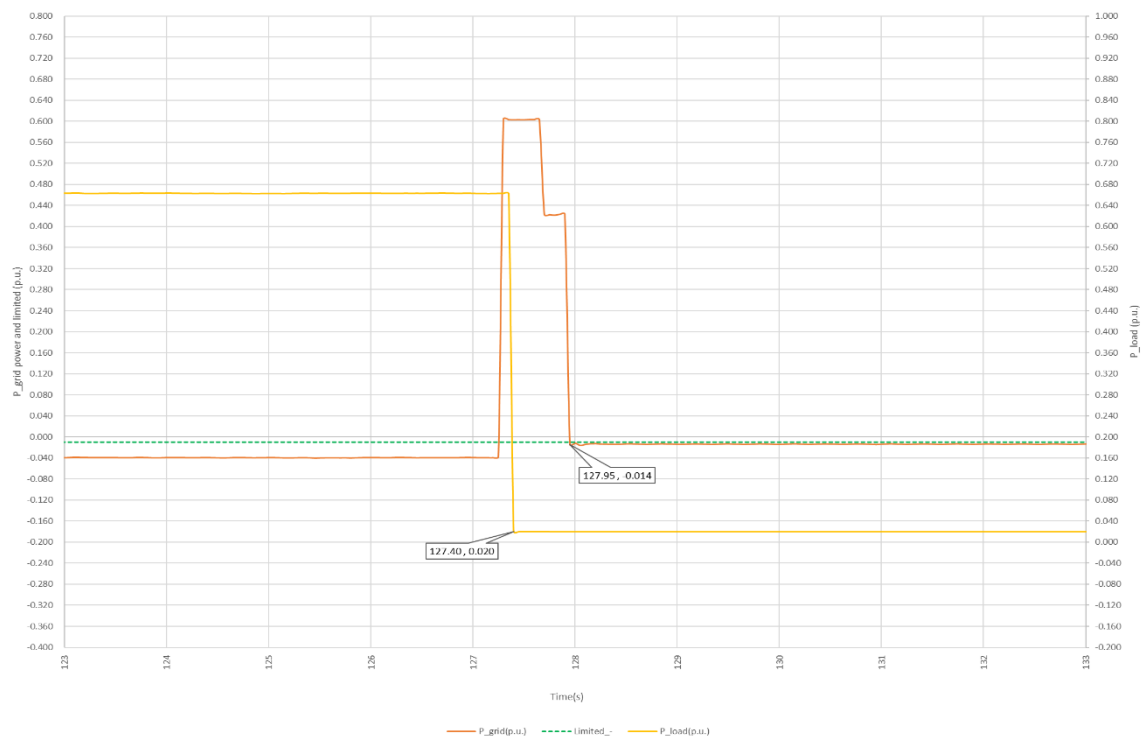


Test 5.3

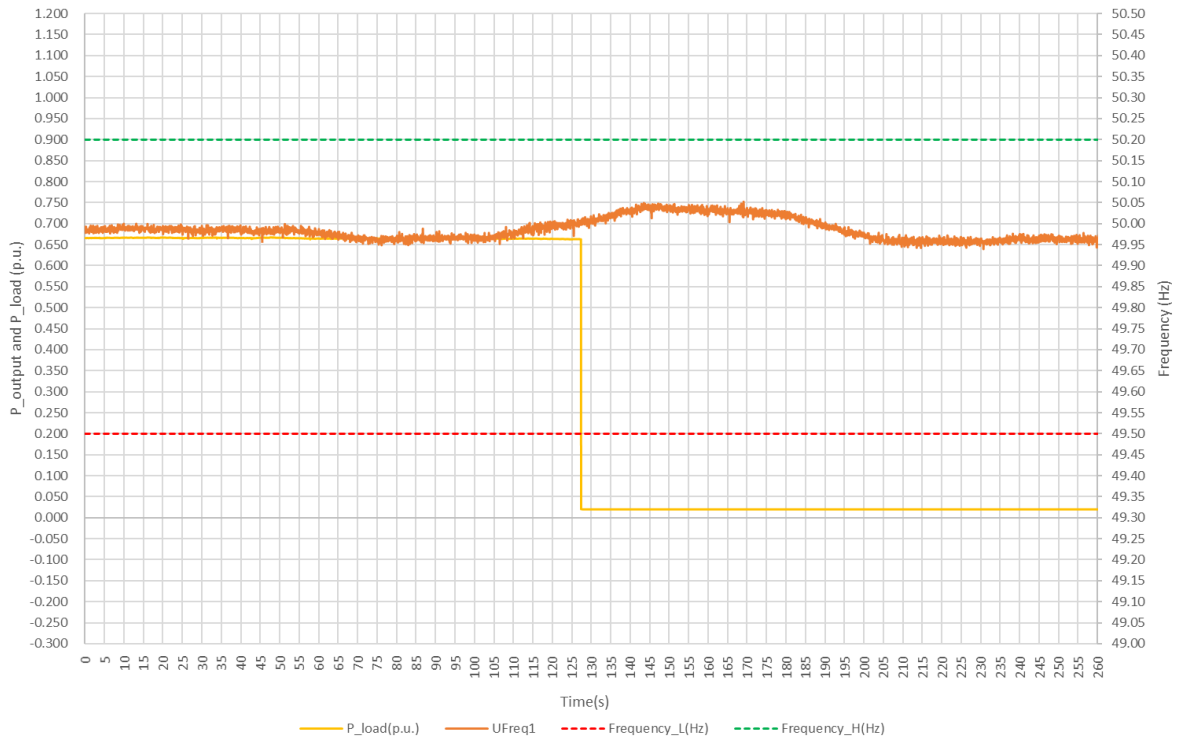
Over view



Zoom in

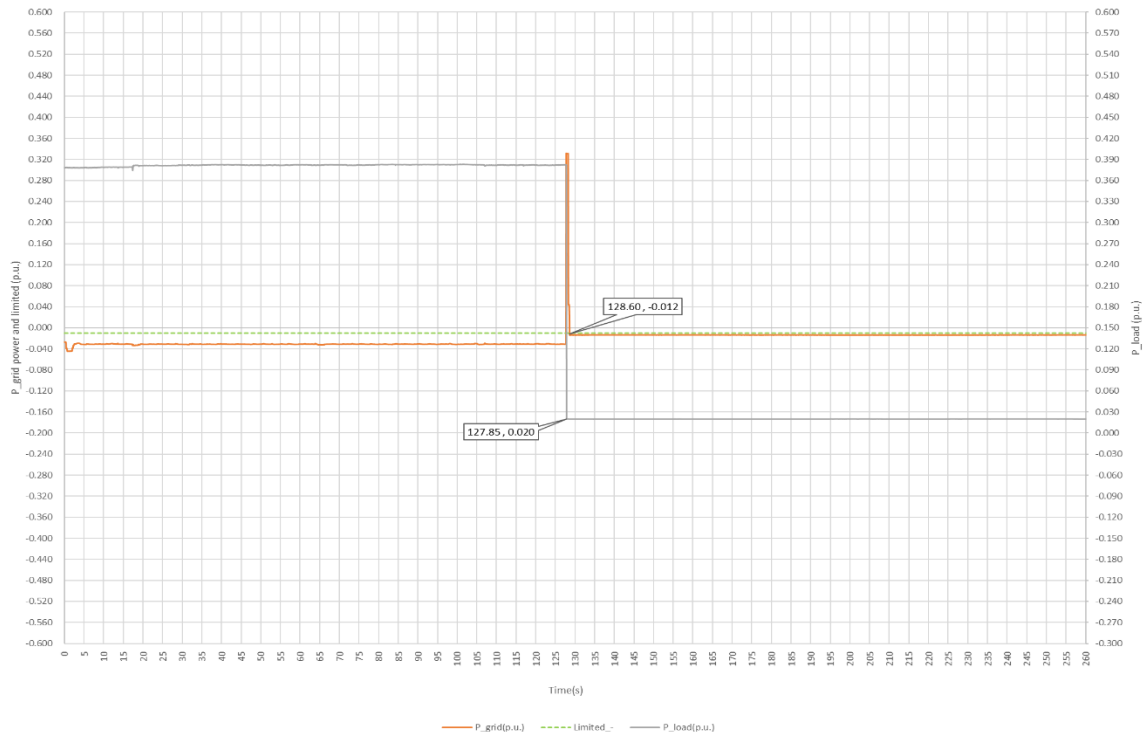


Power-Frequency

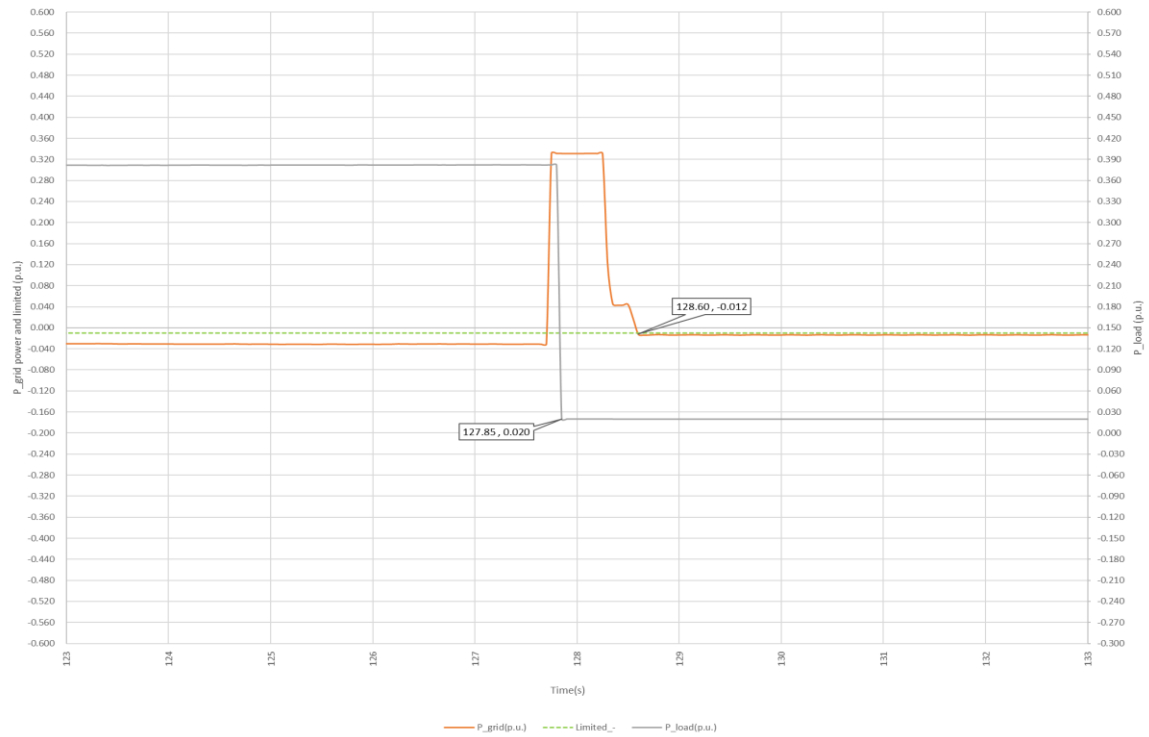


Test 6.1

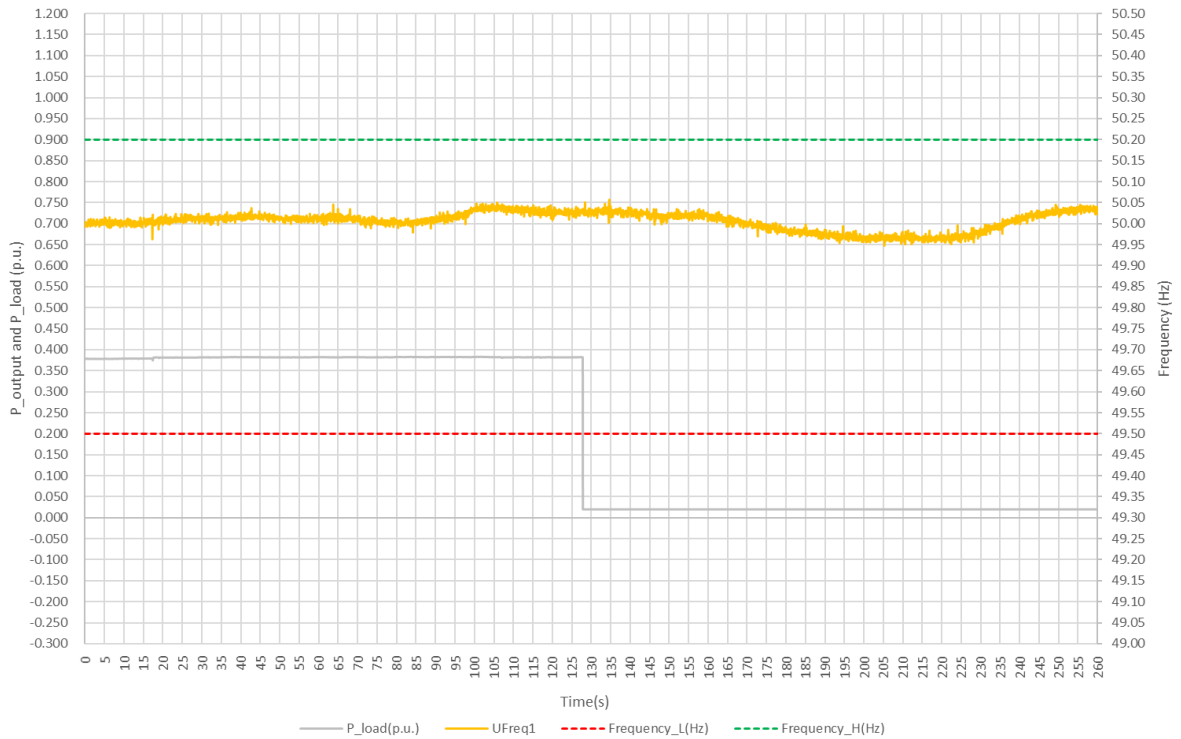
Over view



Zoom in

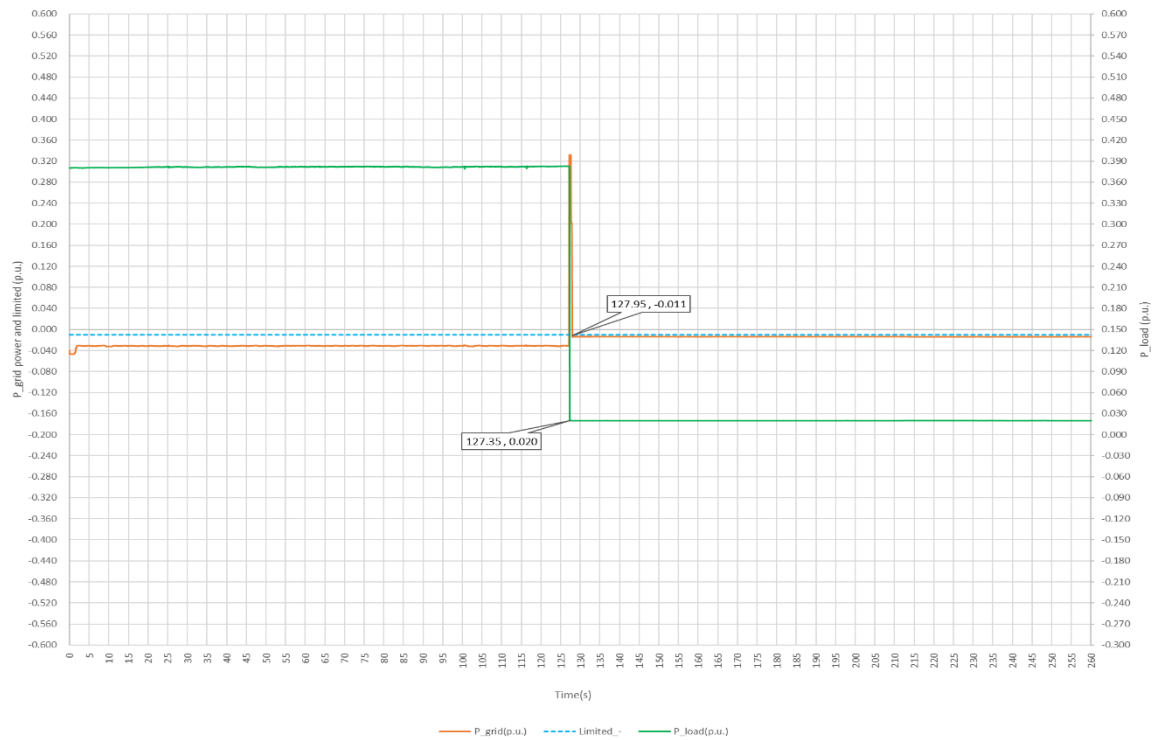


Power-Frequency

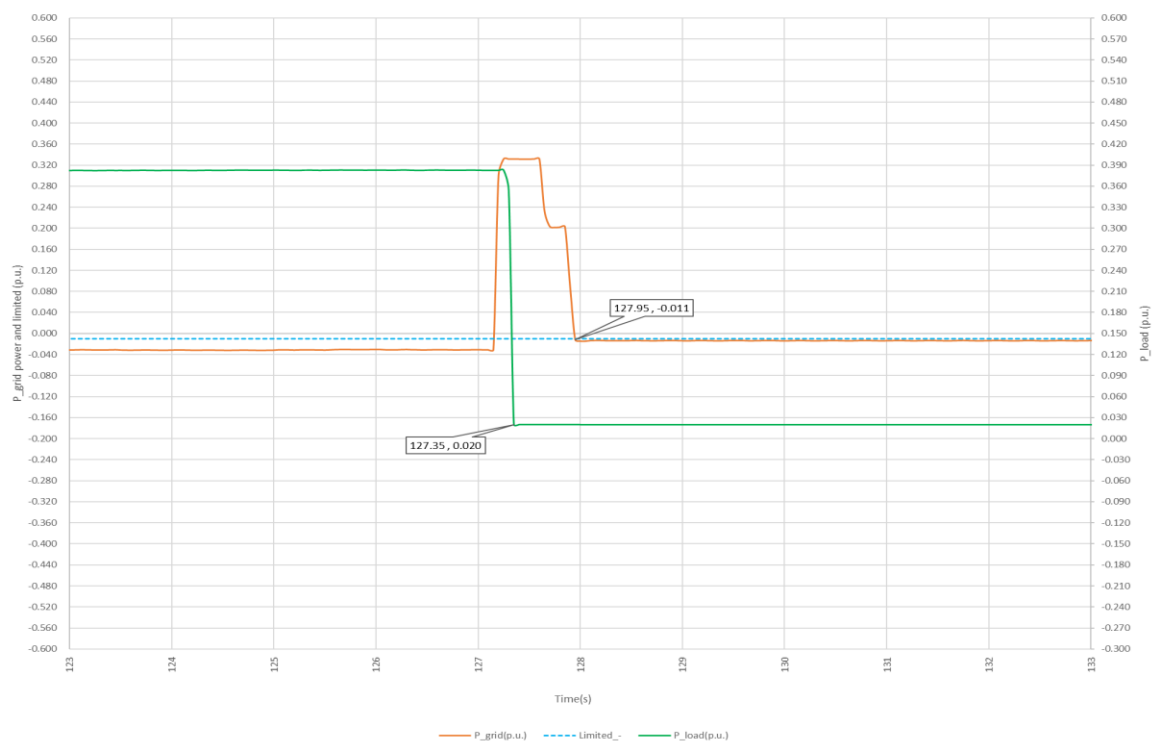


Test 6.2

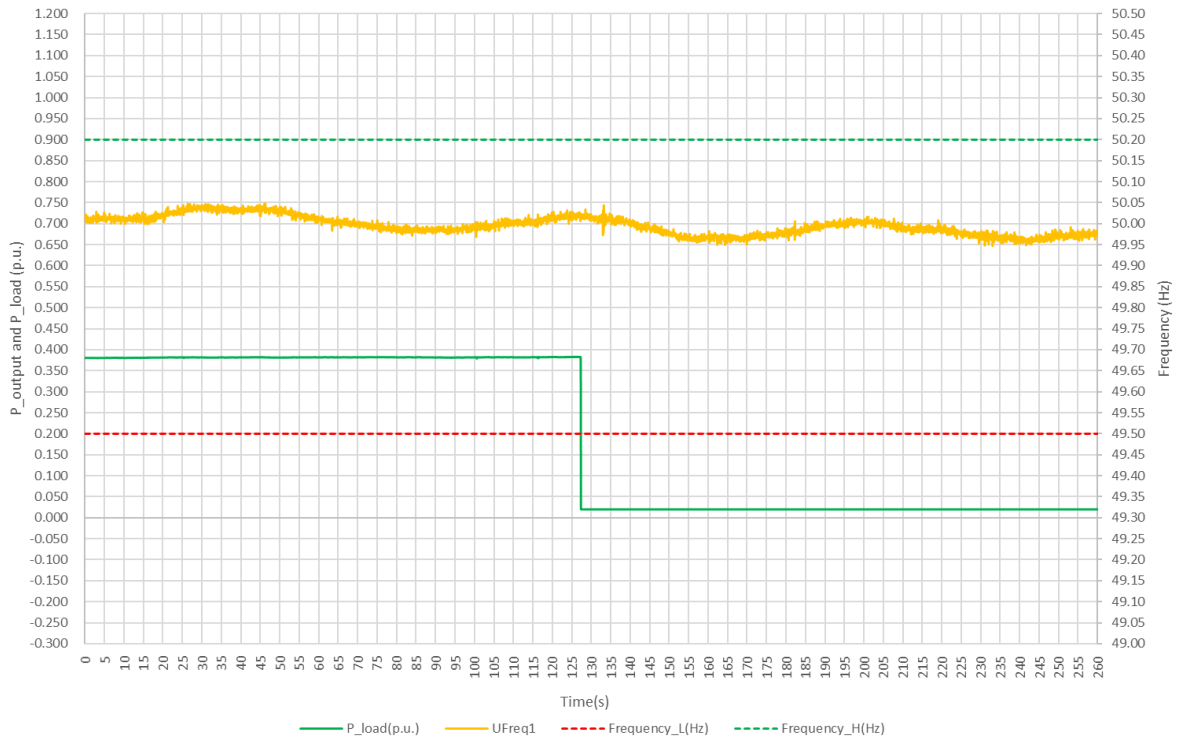
Over view



Zoom in

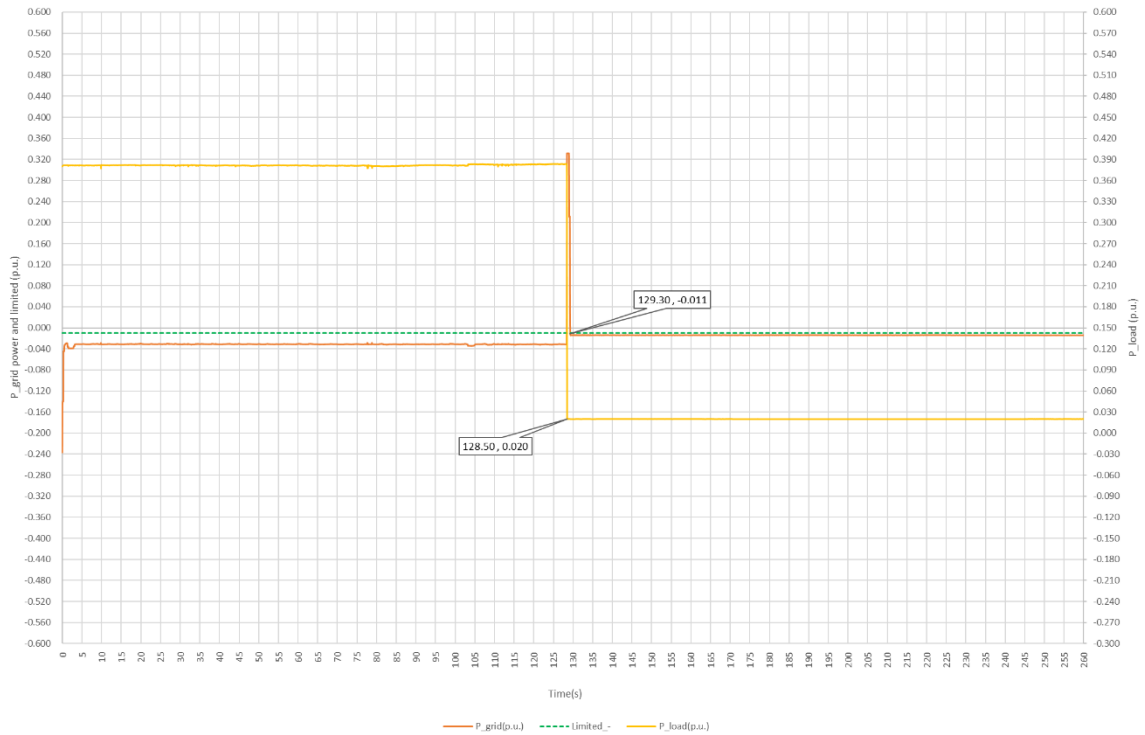


Power-Frequency

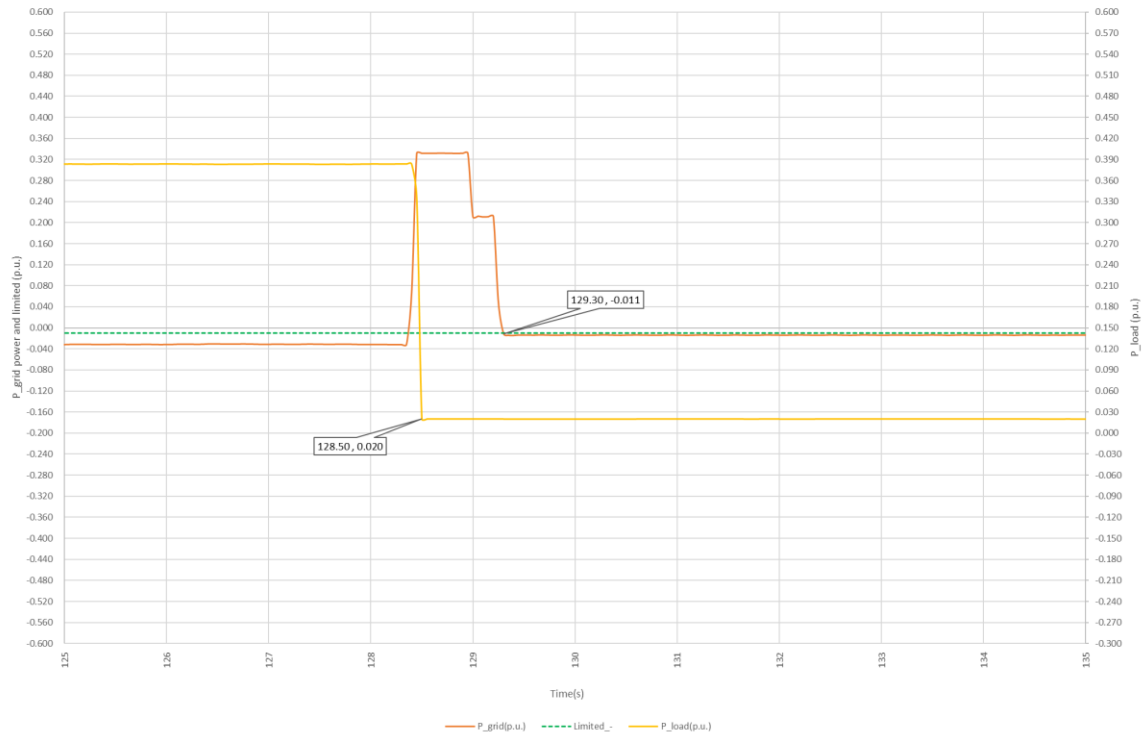


Test 6.3

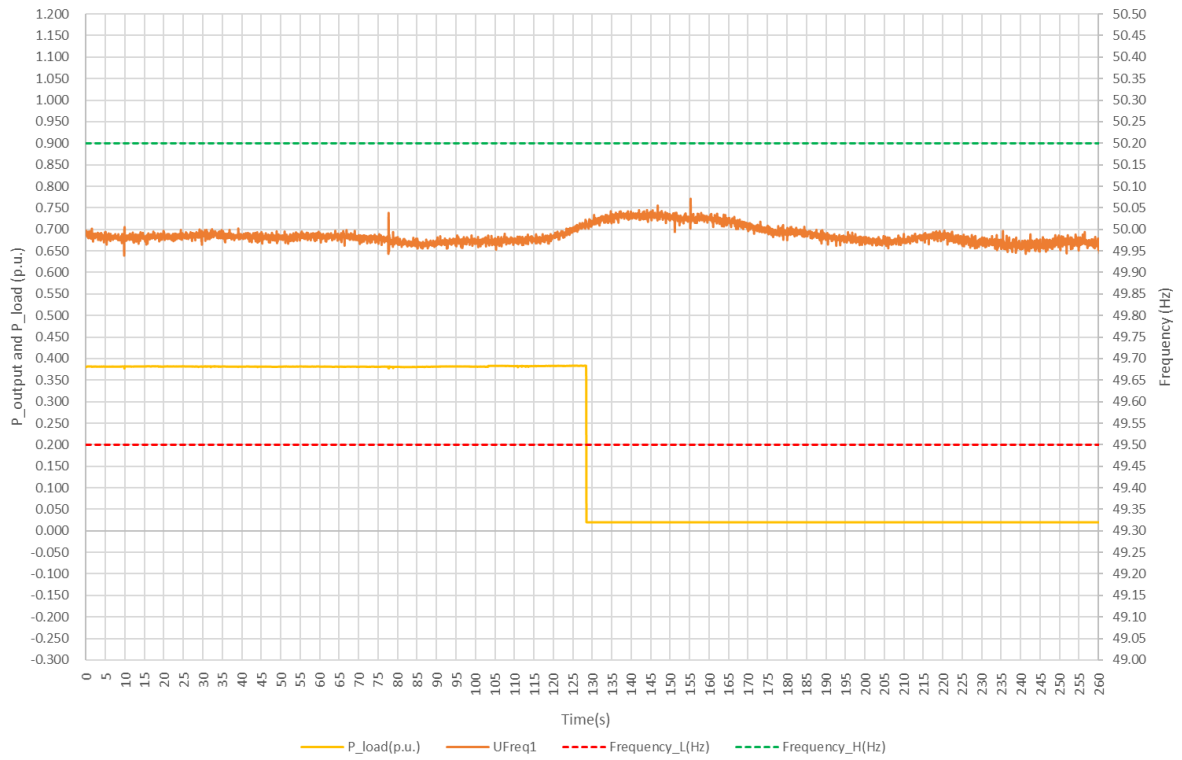
Over view



Zoom in



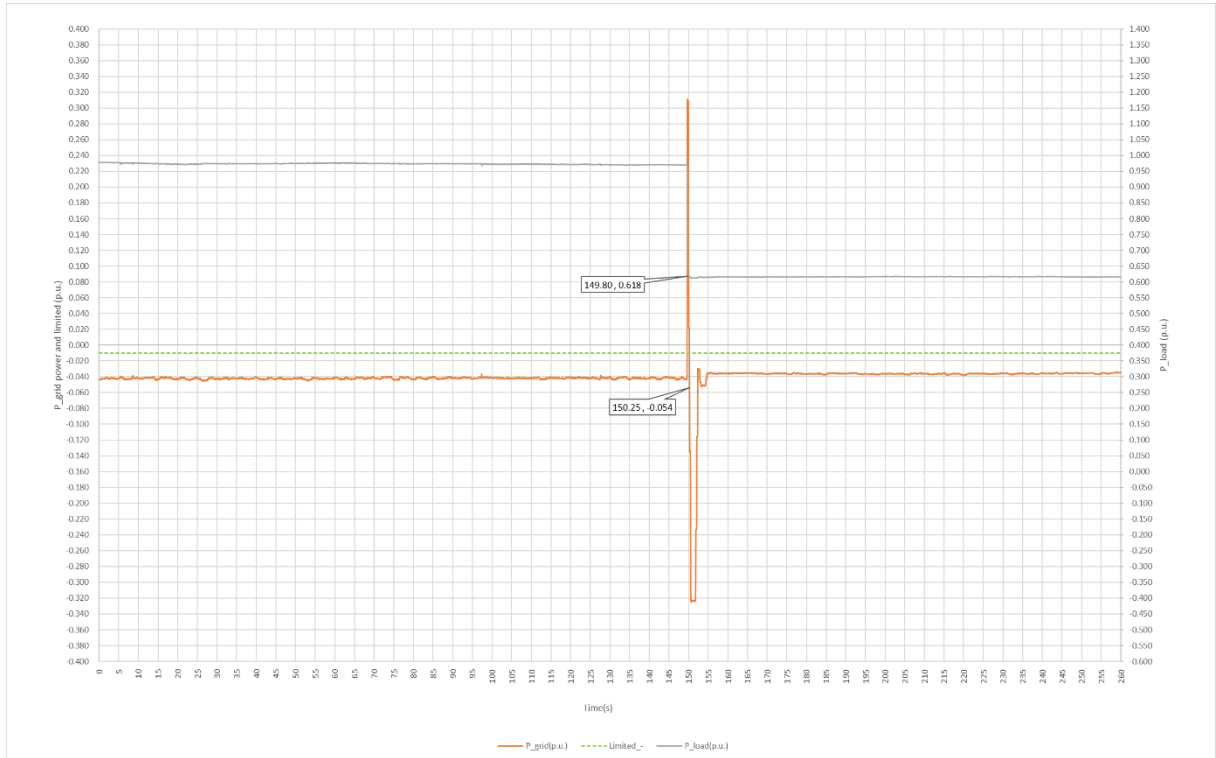
Power-Frequency



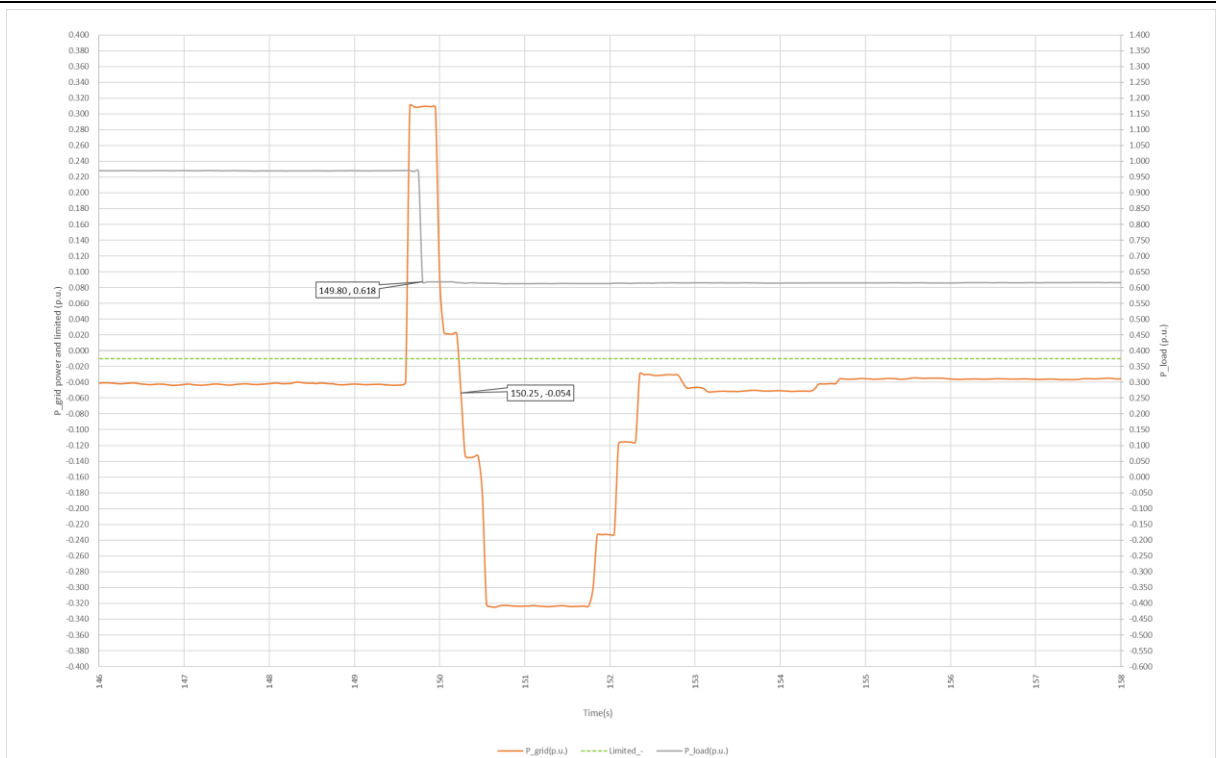
Type 2: With energy meter ACR10R-D24TE4								
Test No	Initial load (% P _n)		Final load (% P _n)		Adjust time (s)	Time limit (s)	Frequency (Hz)	Frequency Limited (Hz)
	Desired	Measured	Desired	Measured				
1.1	90-100	97.3	60-70	61.6	0.45	2	Max. 50.05 Min. 49.95	49.5-50.2
1.2	90-100	97.9	60-70	61.8	0.60		Max. 50.06 Min. 49.94	
1.3	90-100	97.8	60-70	61.5	0.55		Max. 50.07 Min. 49.93	
2.1	90-100	98.2	30-40	36.2	0.75		Max. 50.04 Min. 49.93	
2.2	90-100	98.3	30-40	35.8	0.75		Max. 50.05 Min. 49.91	
2.3	90-100	98.4	30-40	35.9	0.60		Max. 50.06 Min. 49.93	
3.1	90-100	97.7	0	2.2	0.90		Max. 50.06 Min. 49.93	
3.2	90-100	97.7	0	2.2	0.80		Max. 50.05 Min. 49.96	
3.3	90-100	98.0	0	2.2	0.60		Max. 50.05 Min. 49.92	
4.1	60-70	66.9	30-40	38.3	0.50		Max. 50.05 Min. 49.93	
4.2	60-70	66.9	30-40	38.6	0.65		Max. 50.05 Min. 49.93	
4.3	60-70	67.0	30-40	38.3	0.65		Max. 50.06 Min. 49.93	
5.1	60-70	66.5	0	2.0	0.80		Max. 50.04 Min. 49.93	
5.2	60-70	66.6	0	2.0	0.70		Max. 50.16 Min. 49.72	
5.3	60-70	66.6	0	2.0	0.55		Max. 50.01 Min. 49.94	
6.1	30-40	38.3	0	2.0	0.60		Max. 50.06 Min. 49.94	
6.2	30-40	38.2	0	2.0	0.80		Max. 50.06 Min. 49.94	
6.3	30-40	38.3	0	2.0	0.85		Max. 50.06 Min. 49.92	
Additional information:								
The power limit injected is -1%P _n .								

Test 1.1

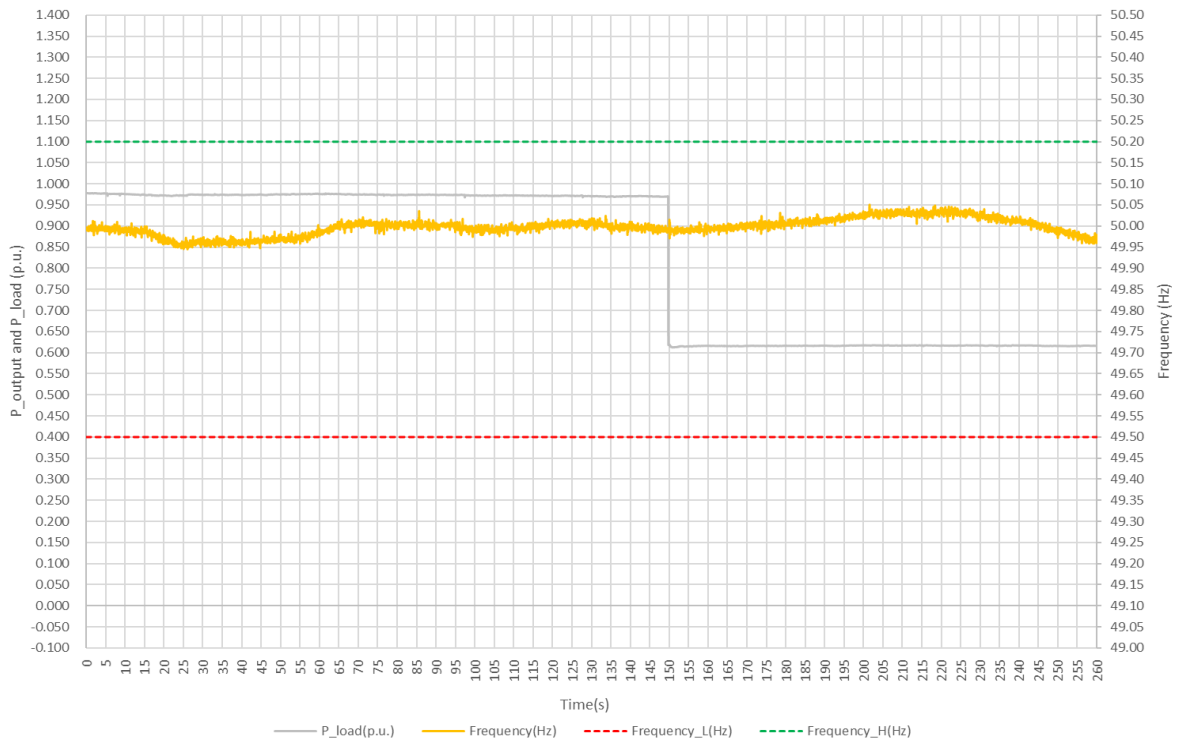
Over view



Zoom in

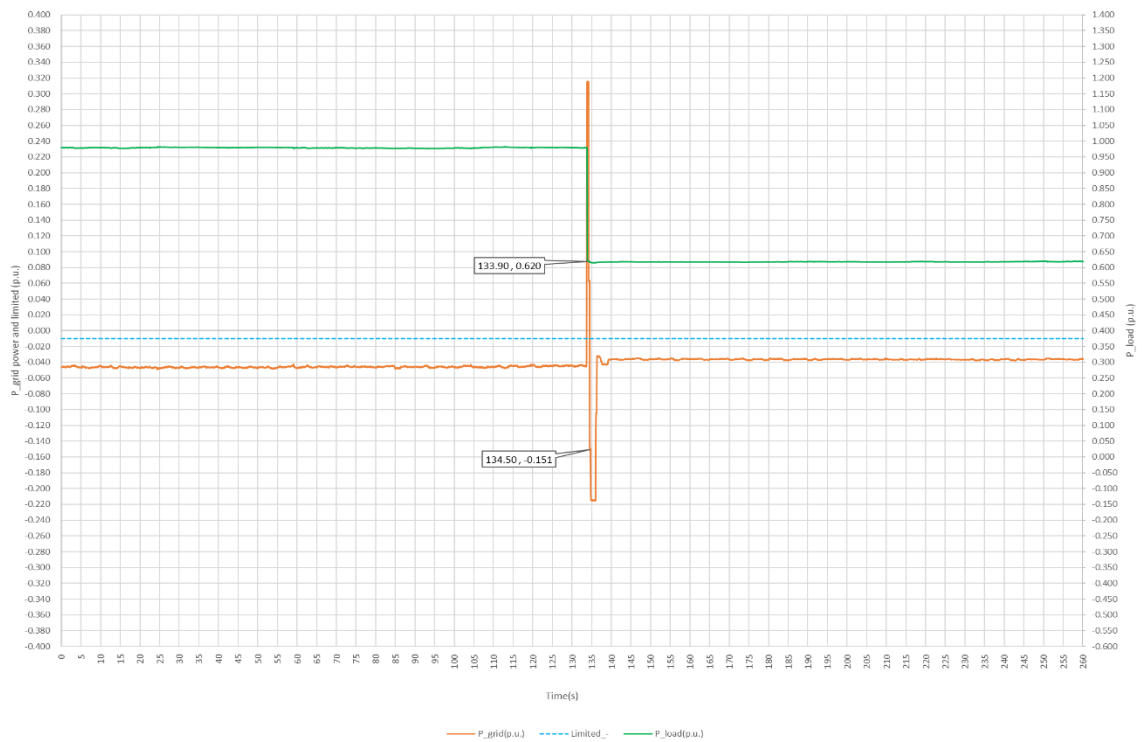


Power-Frequency

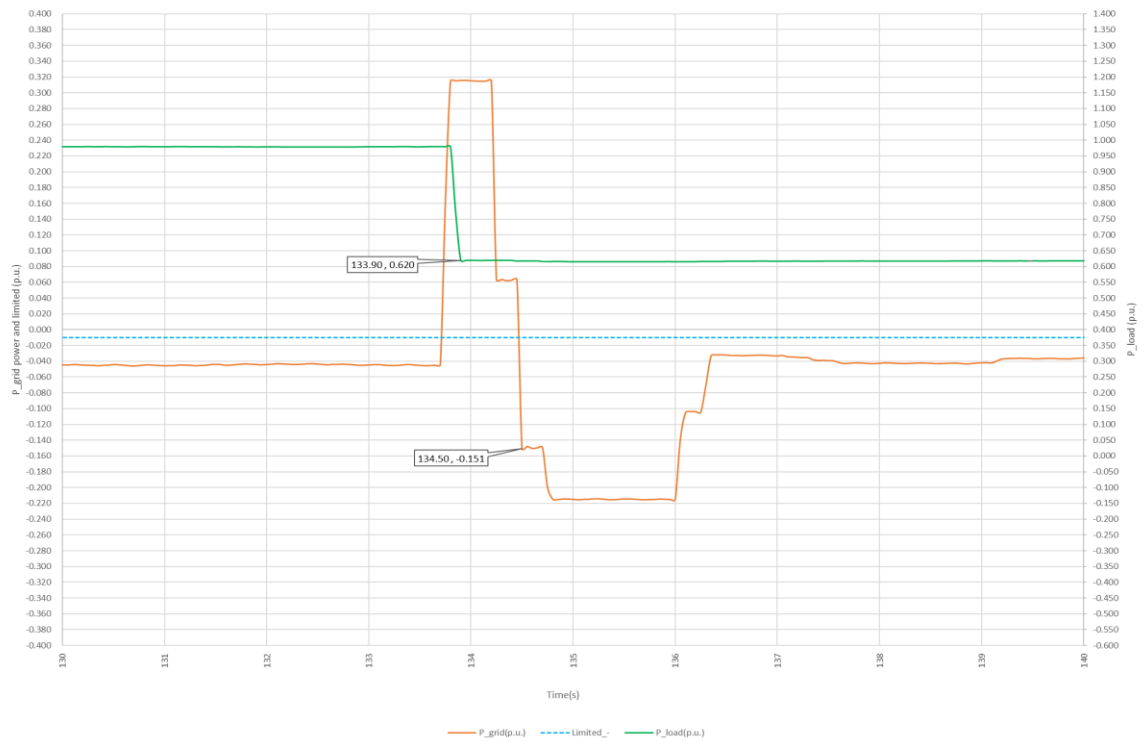


Test 1.2

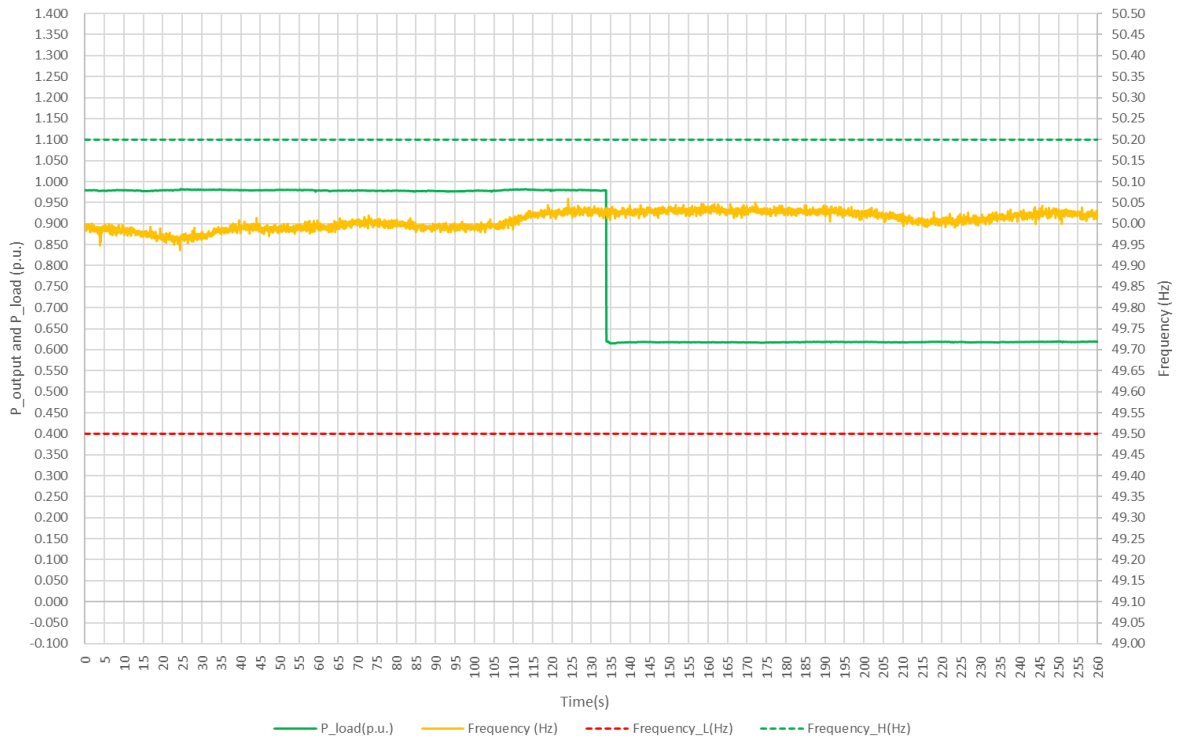
Over view



Zoom in

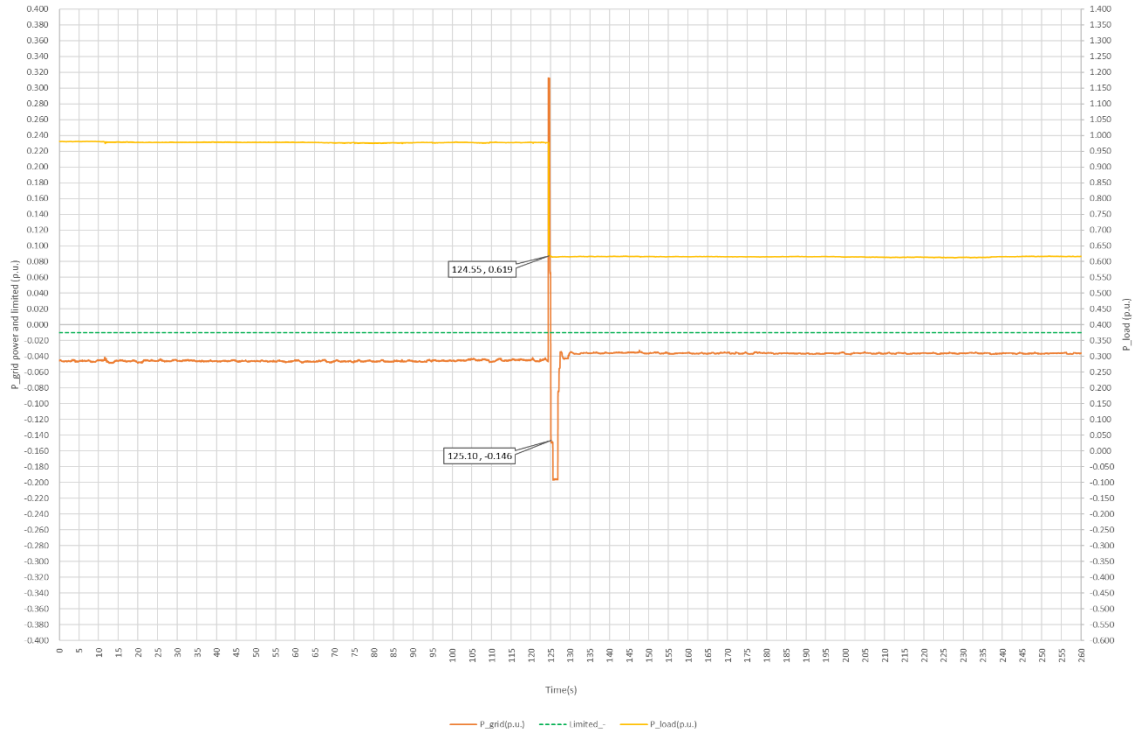


Power-Frequency

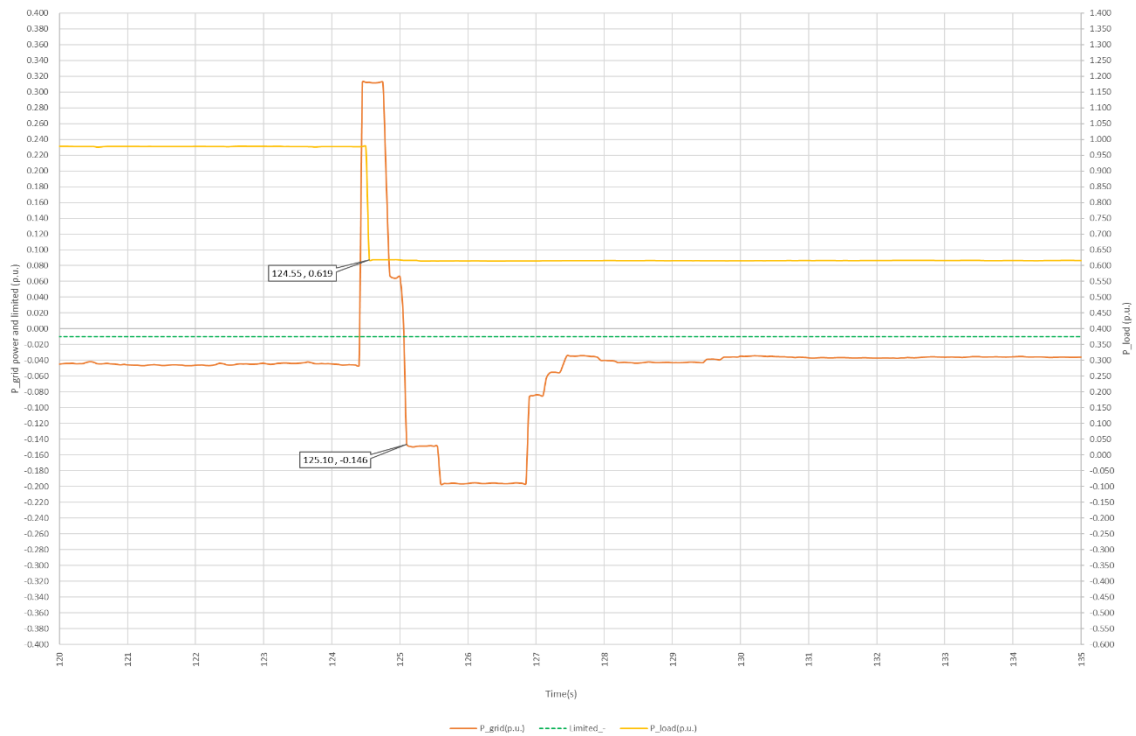


Test 1.3

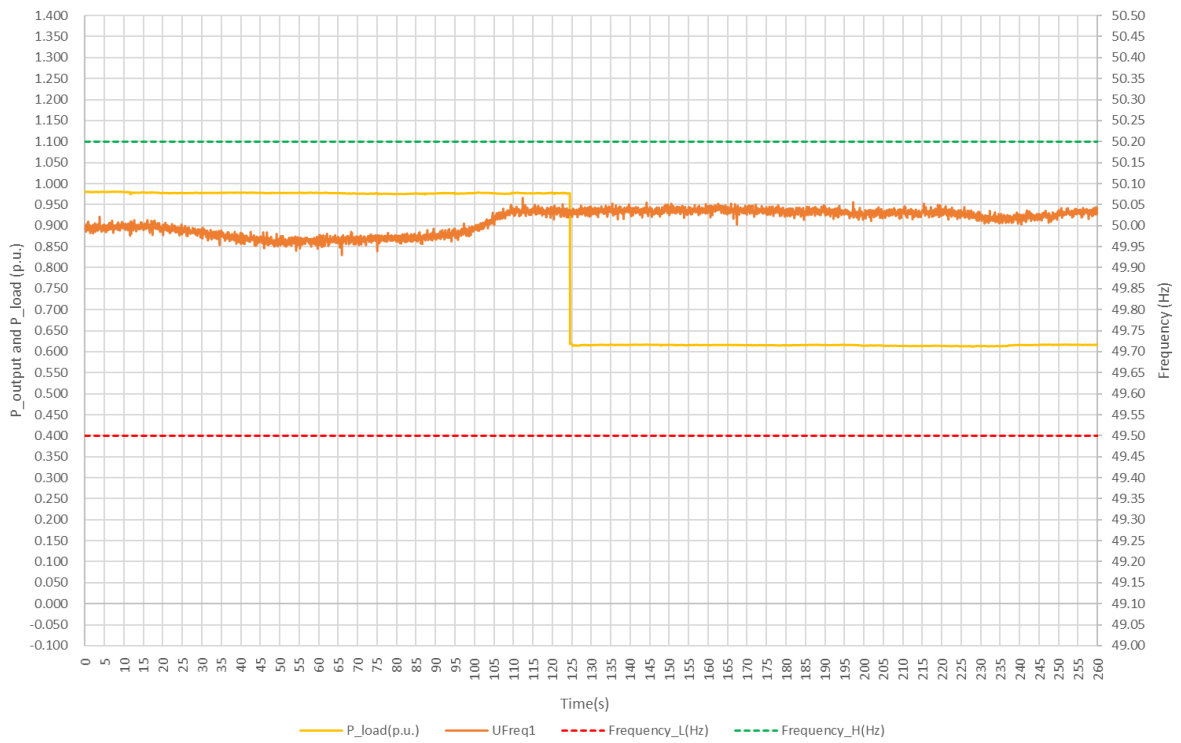
Over view



Zoom in

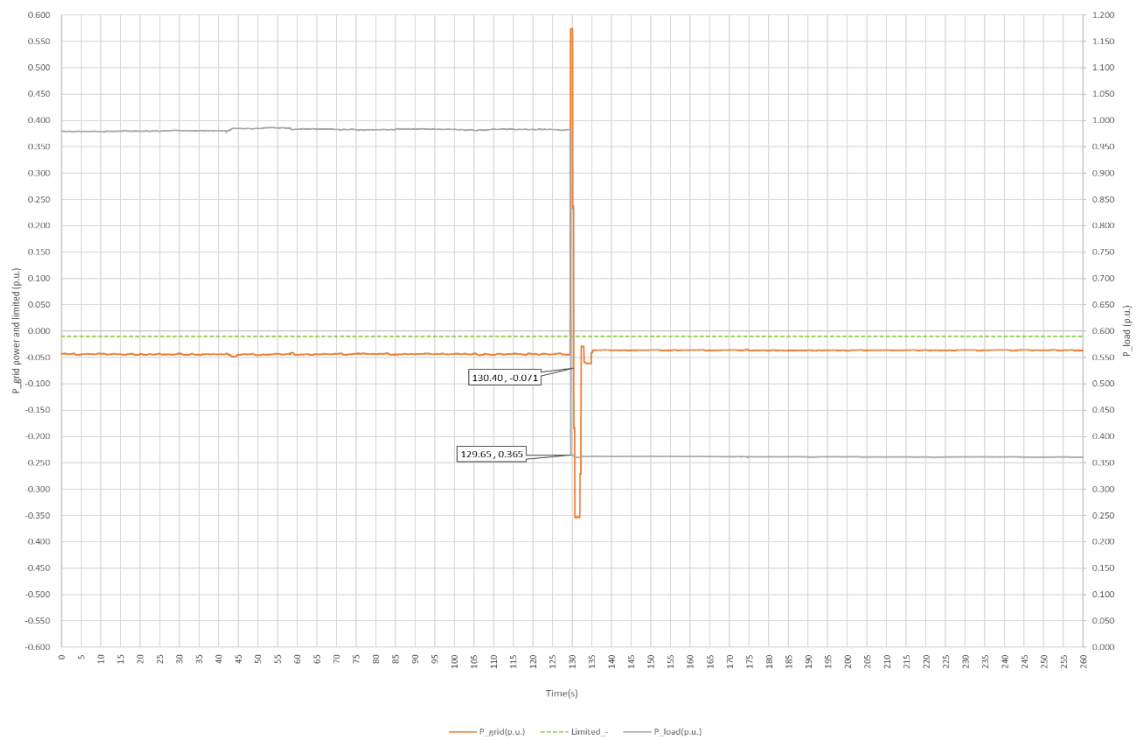


Power-Frequency

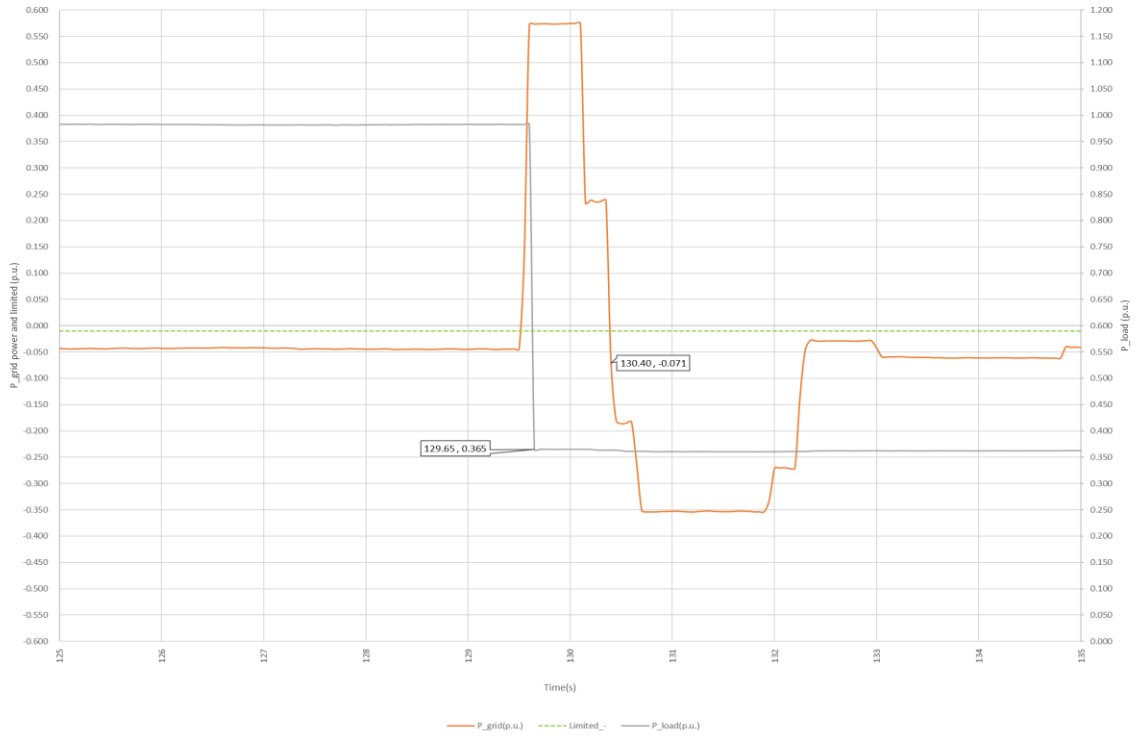


Test 2.1

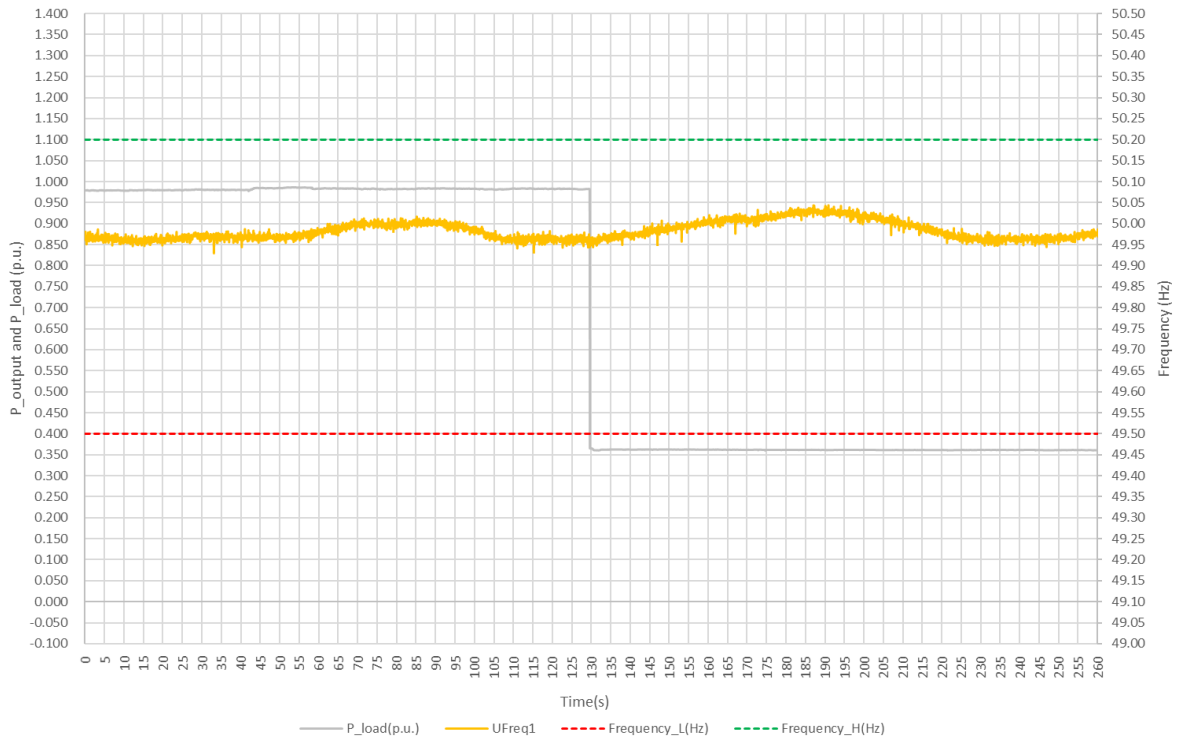
Over view



Zoom in

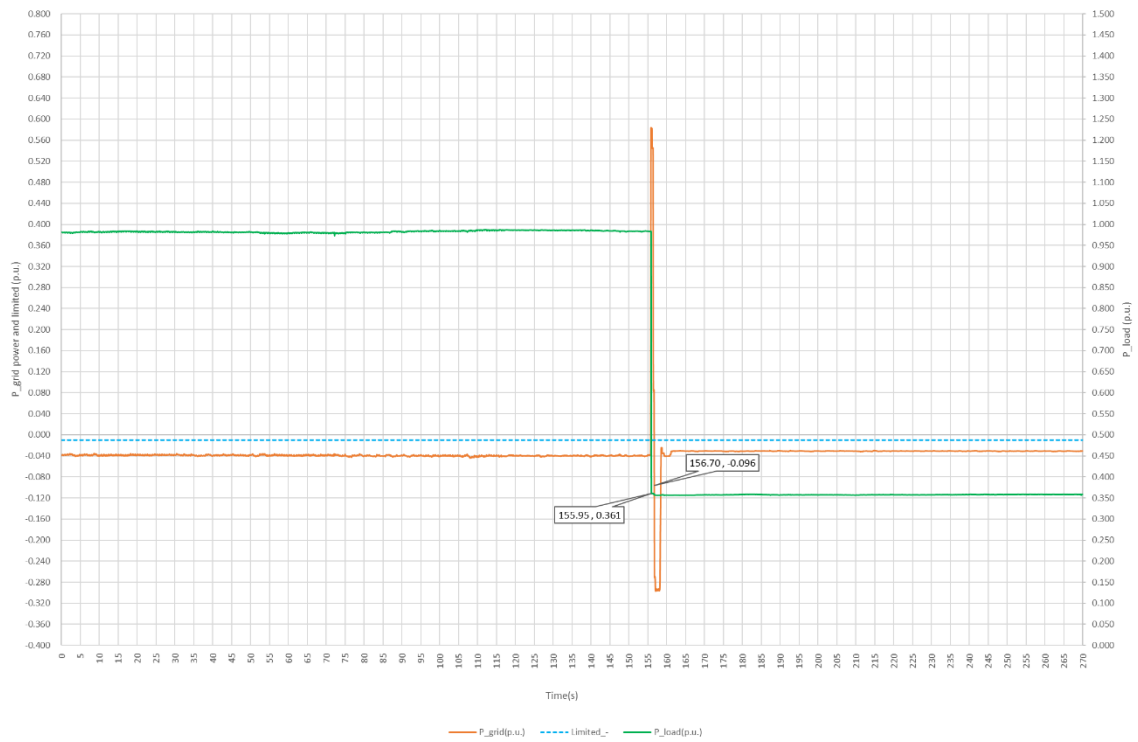


Power-Frequency

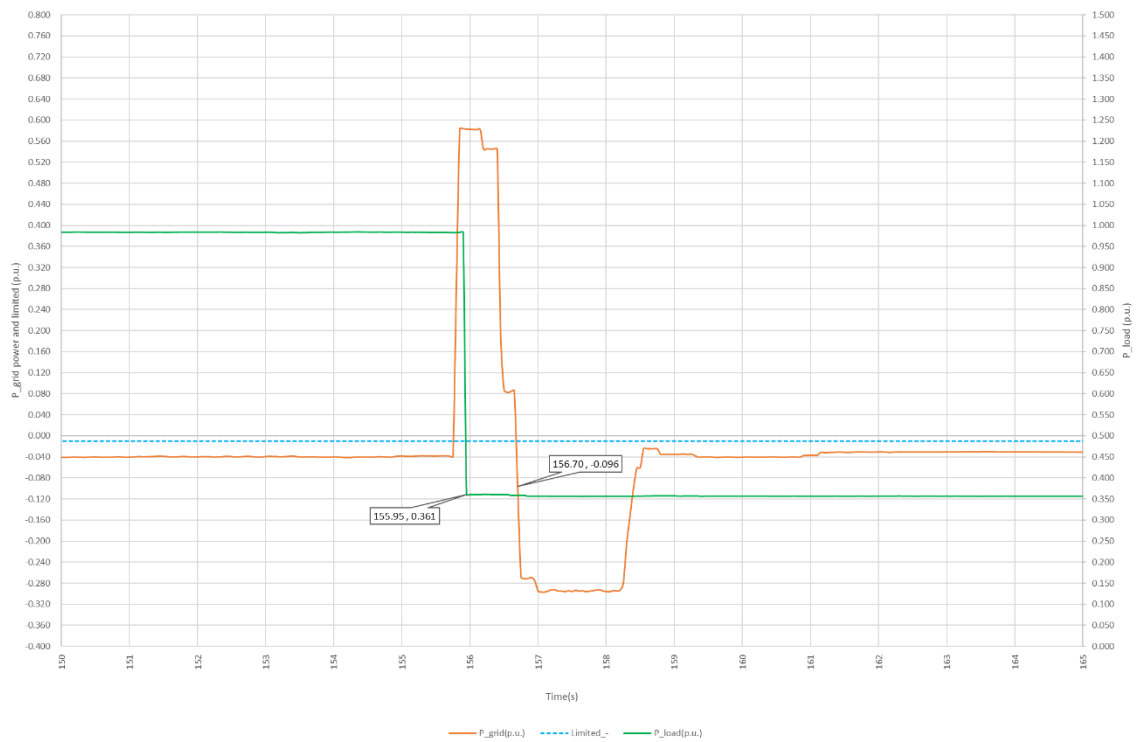


Test 2.2

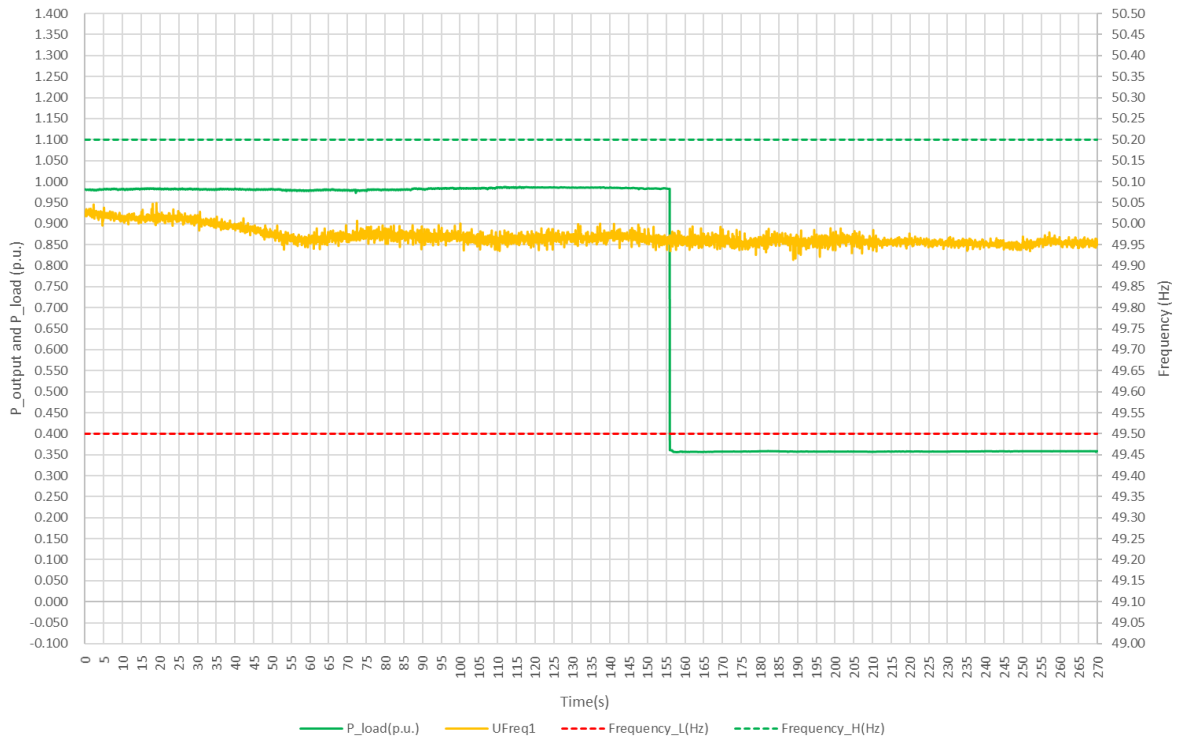
Over view



Zoom In

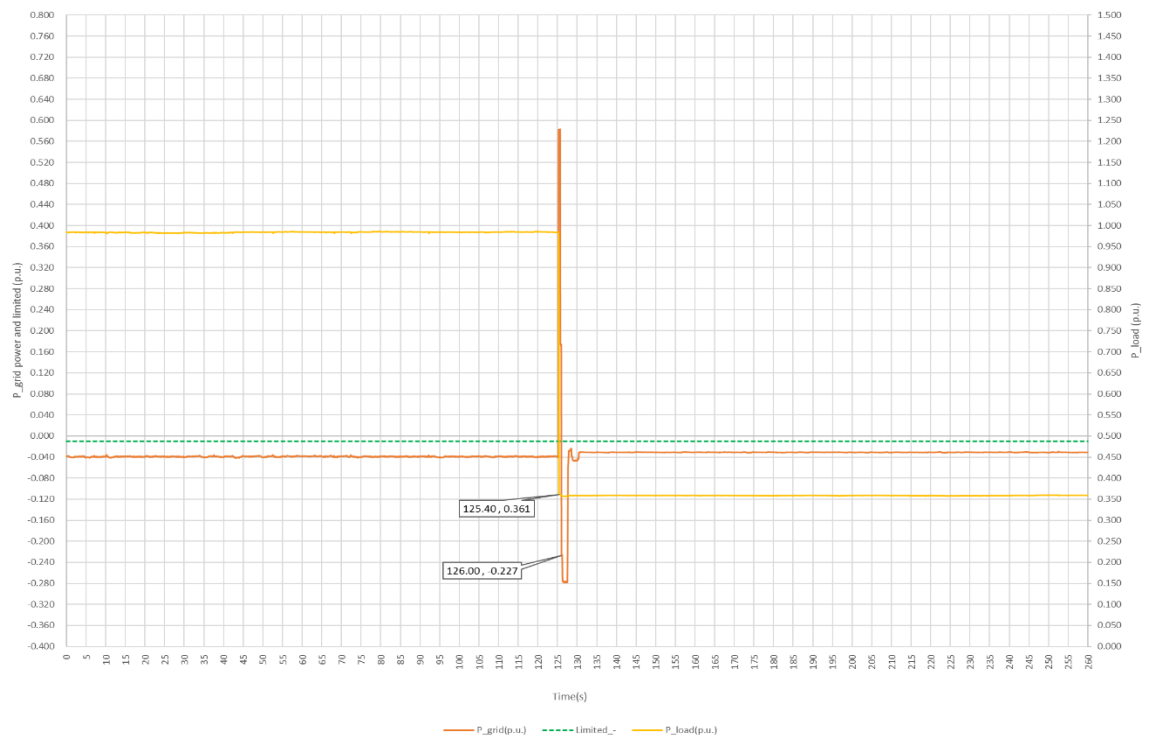


Power-Frequency

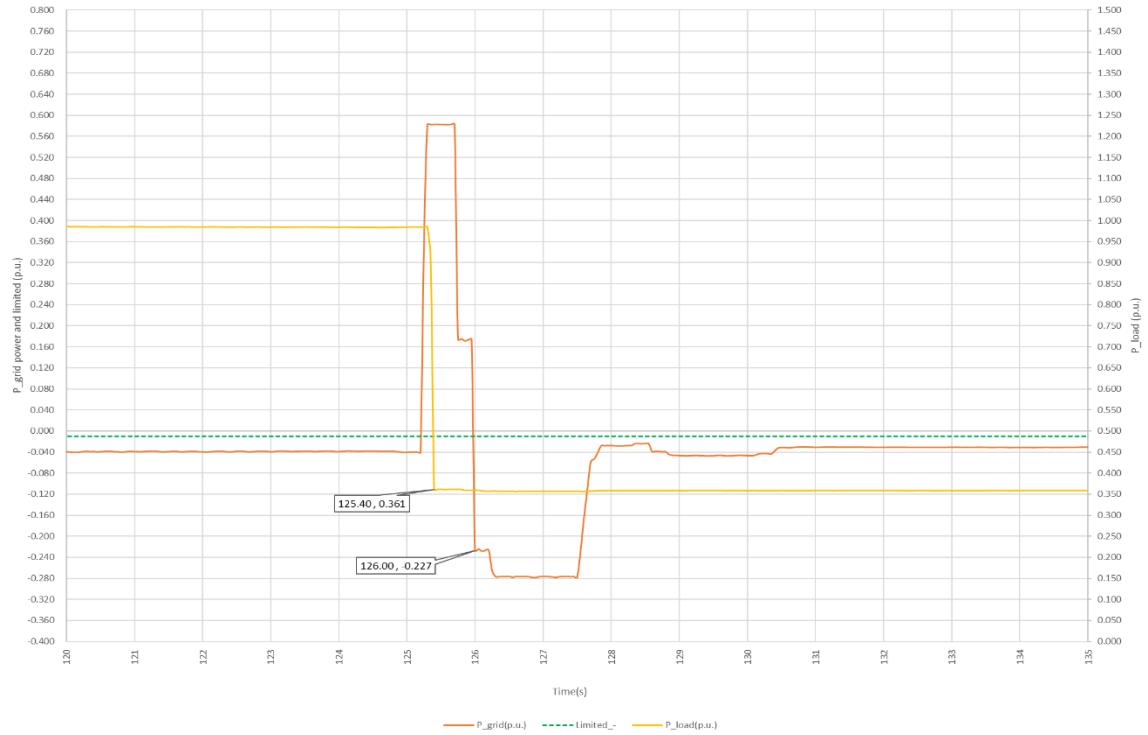


Test 2.3

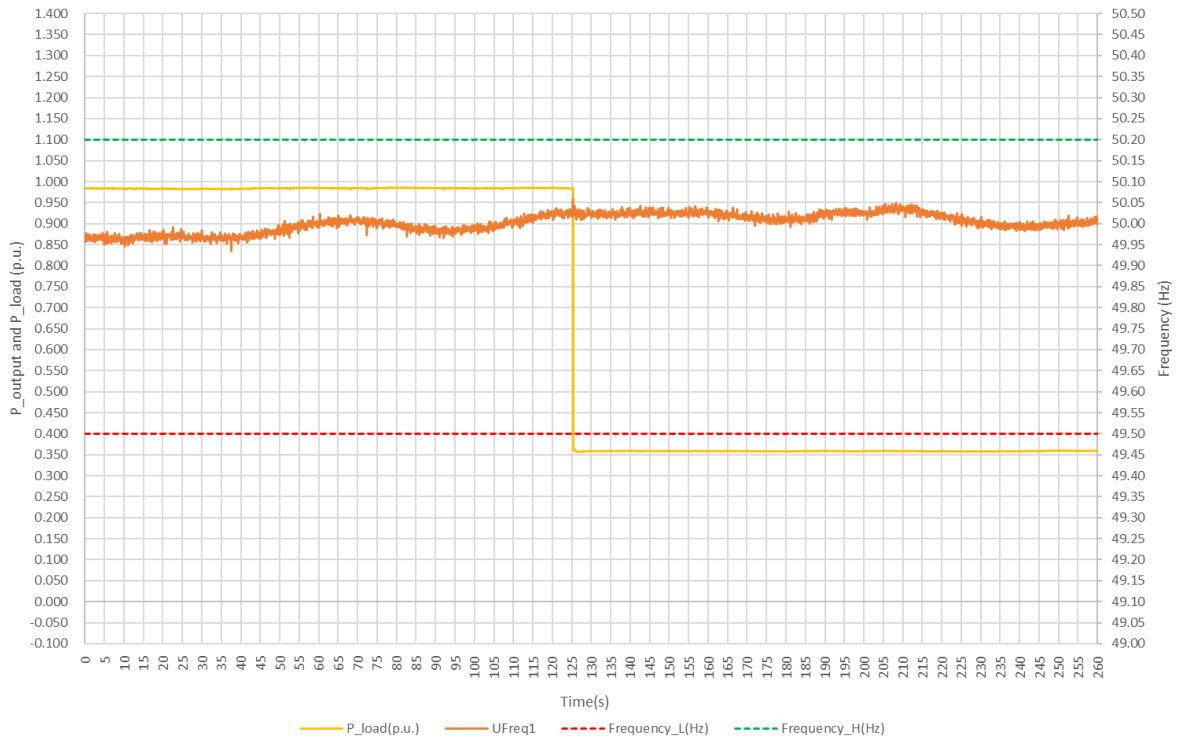
Over view



Zoom in

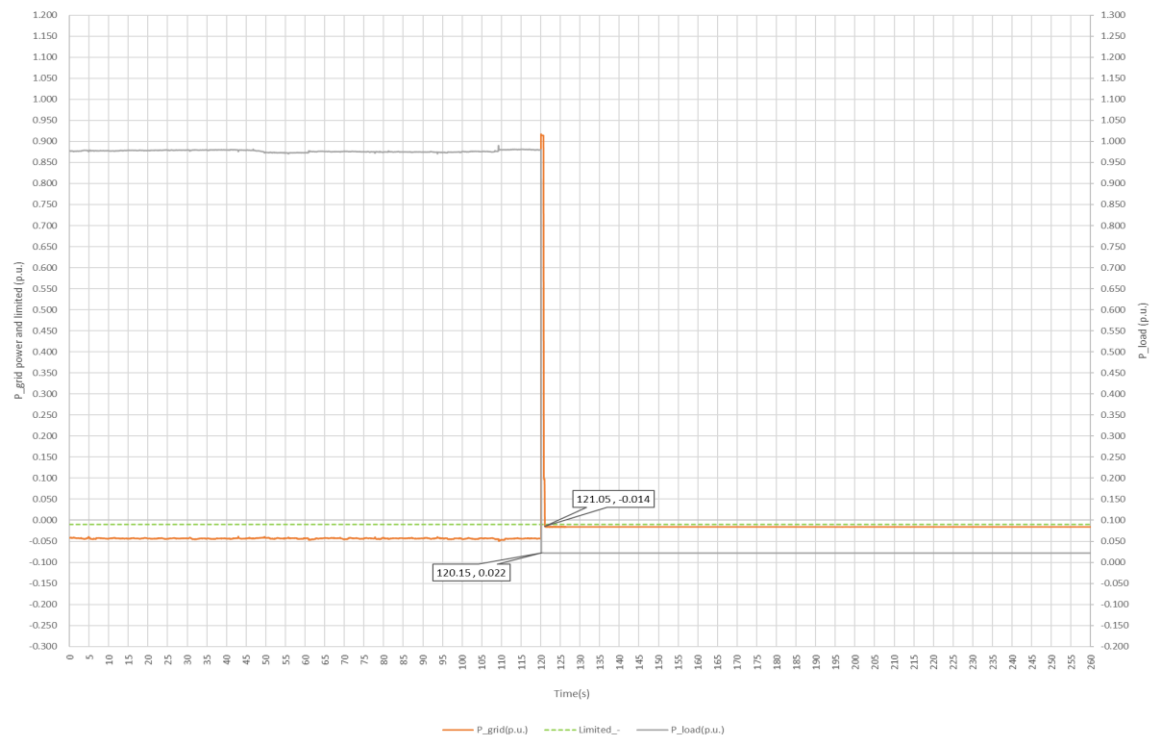


Power-Frequency

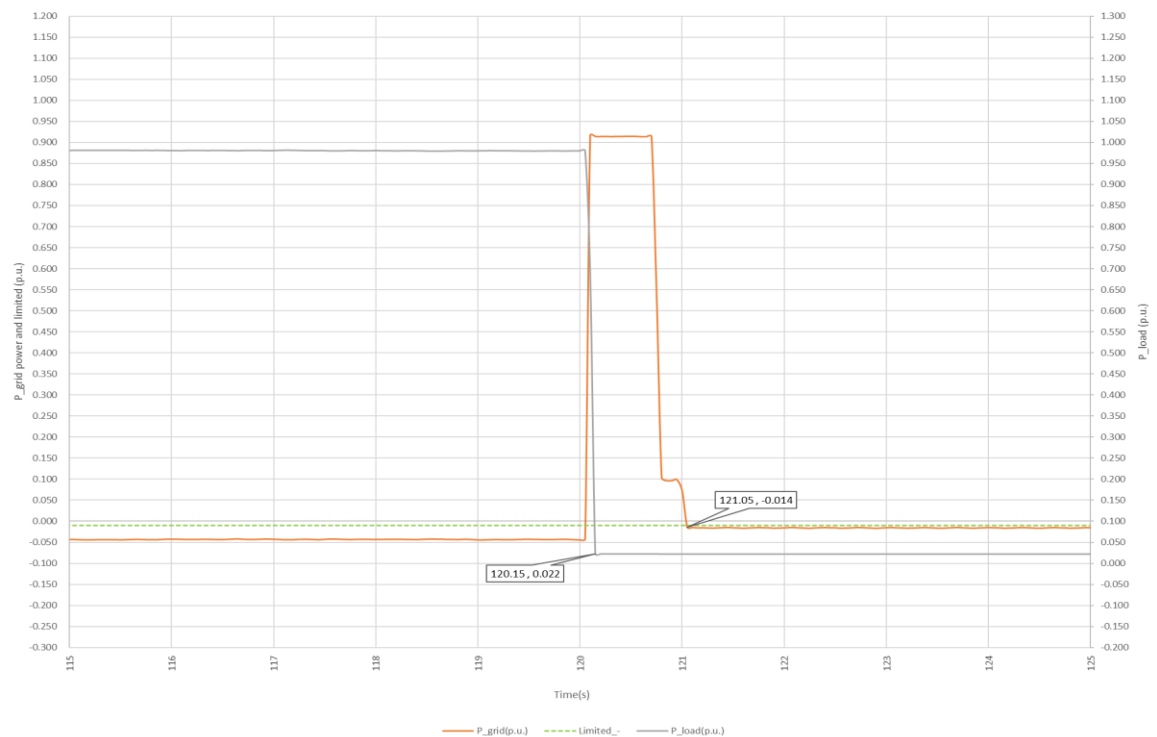


Test 3.1

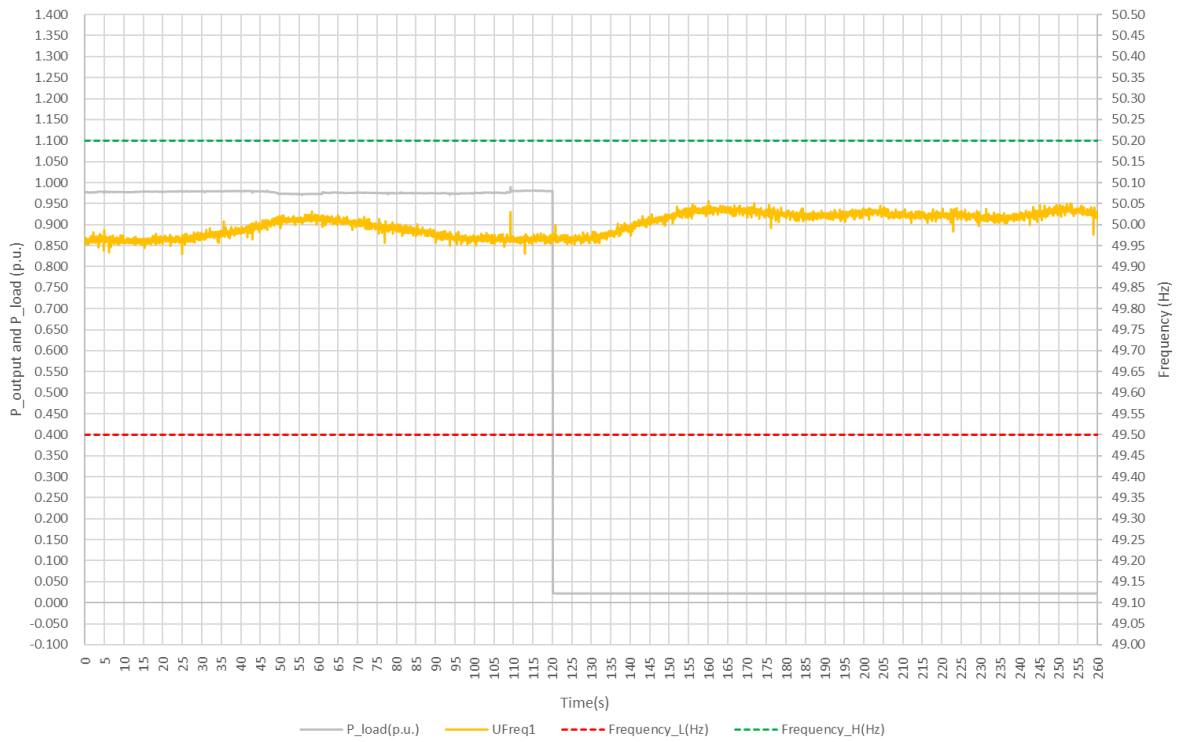
Over view



Zoom in

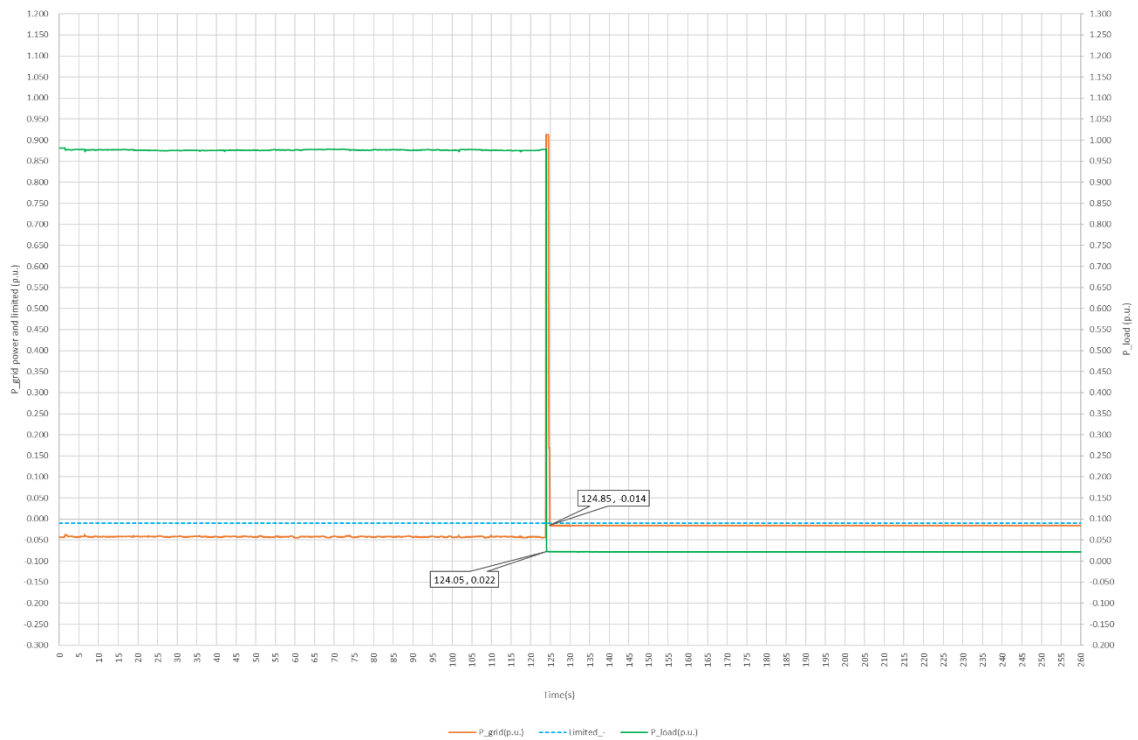


Power-Frequency

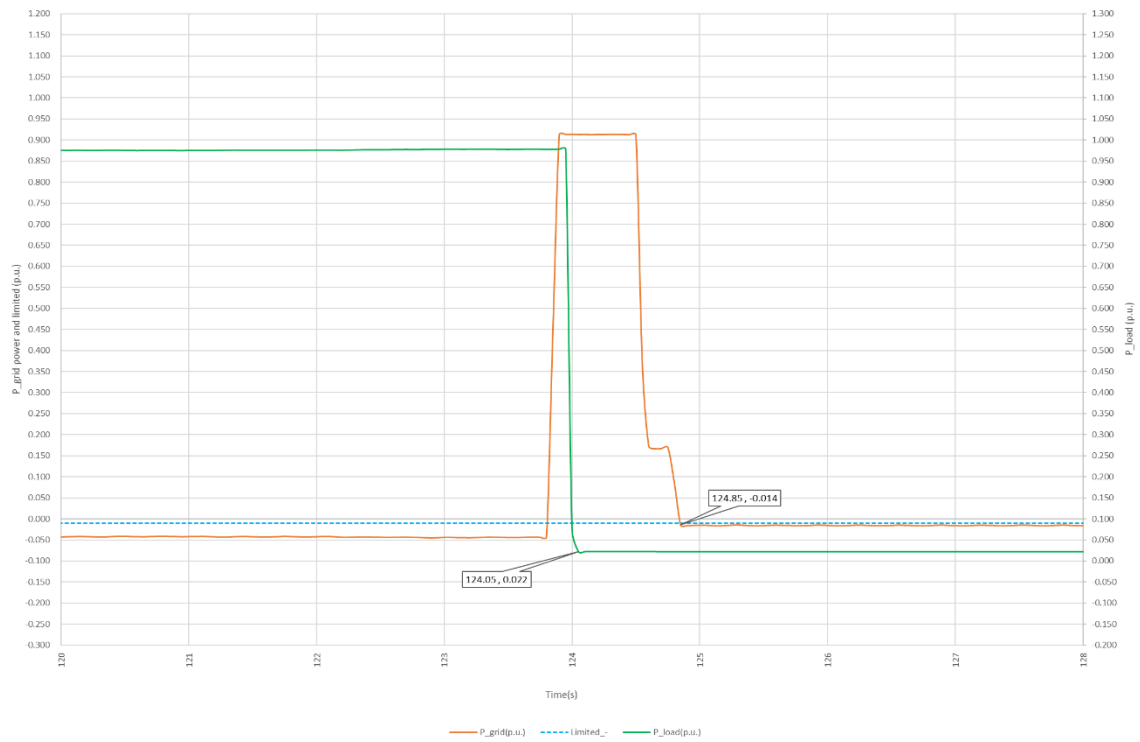


Test 3.2

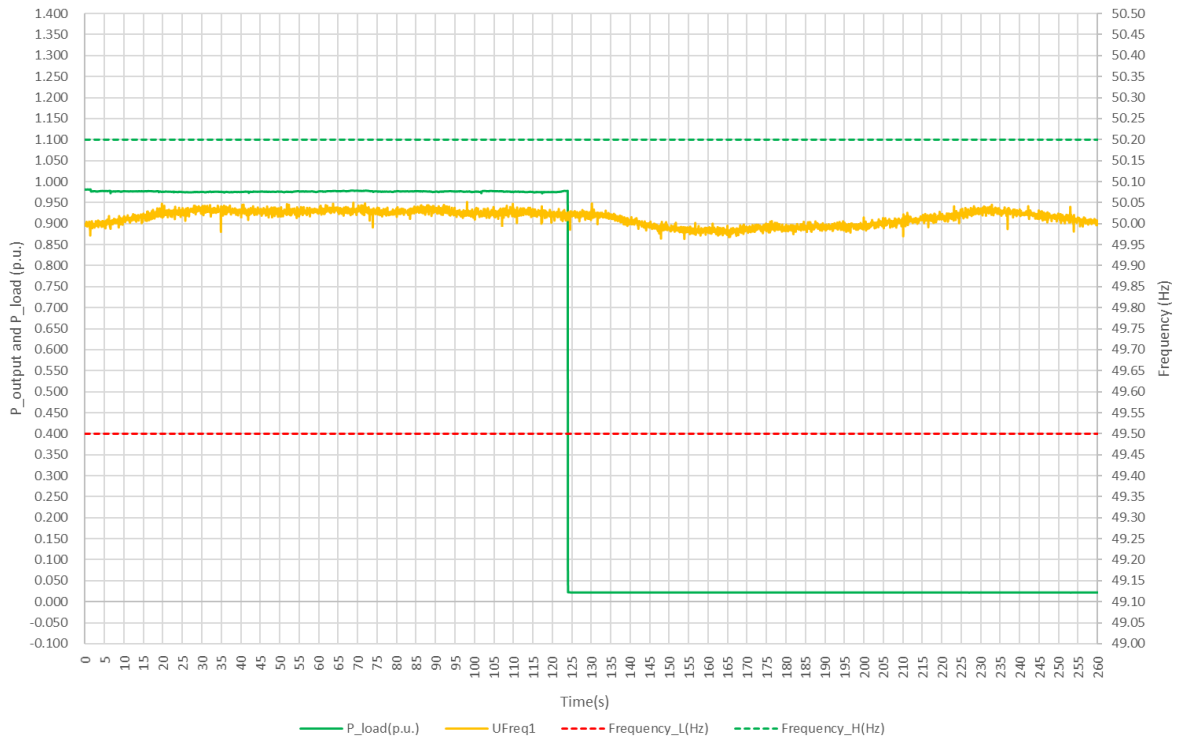
Over view



Zoom in



Power-Frequency

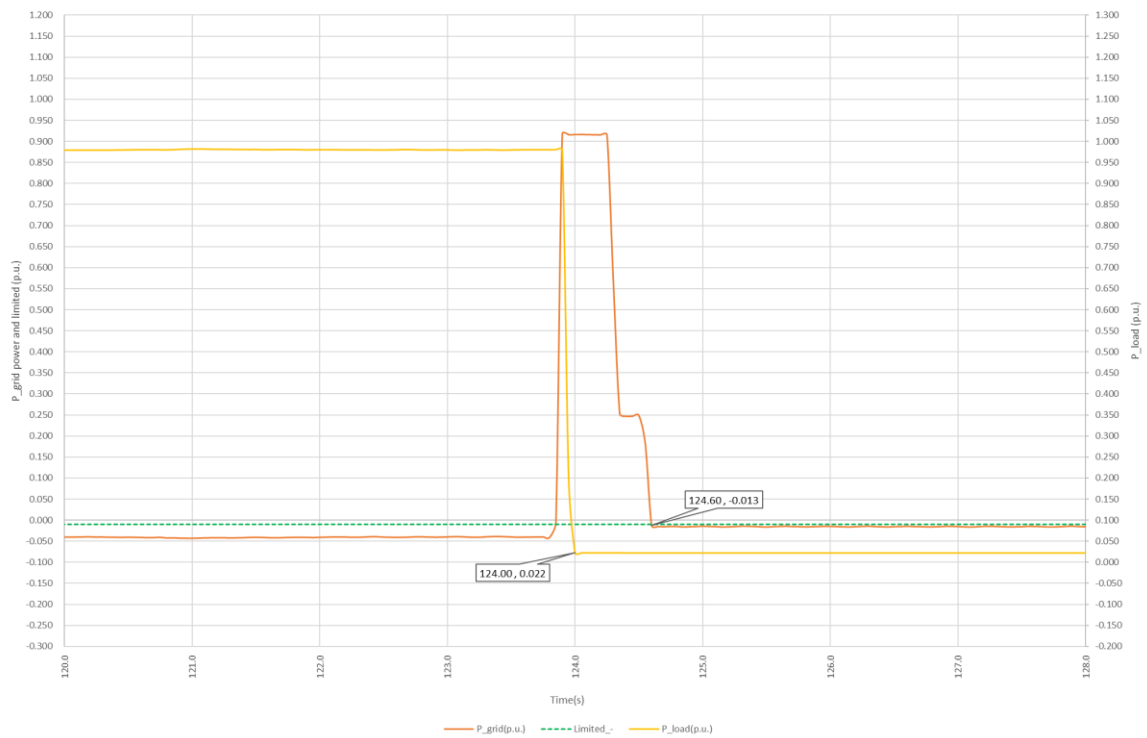


Test 3.3

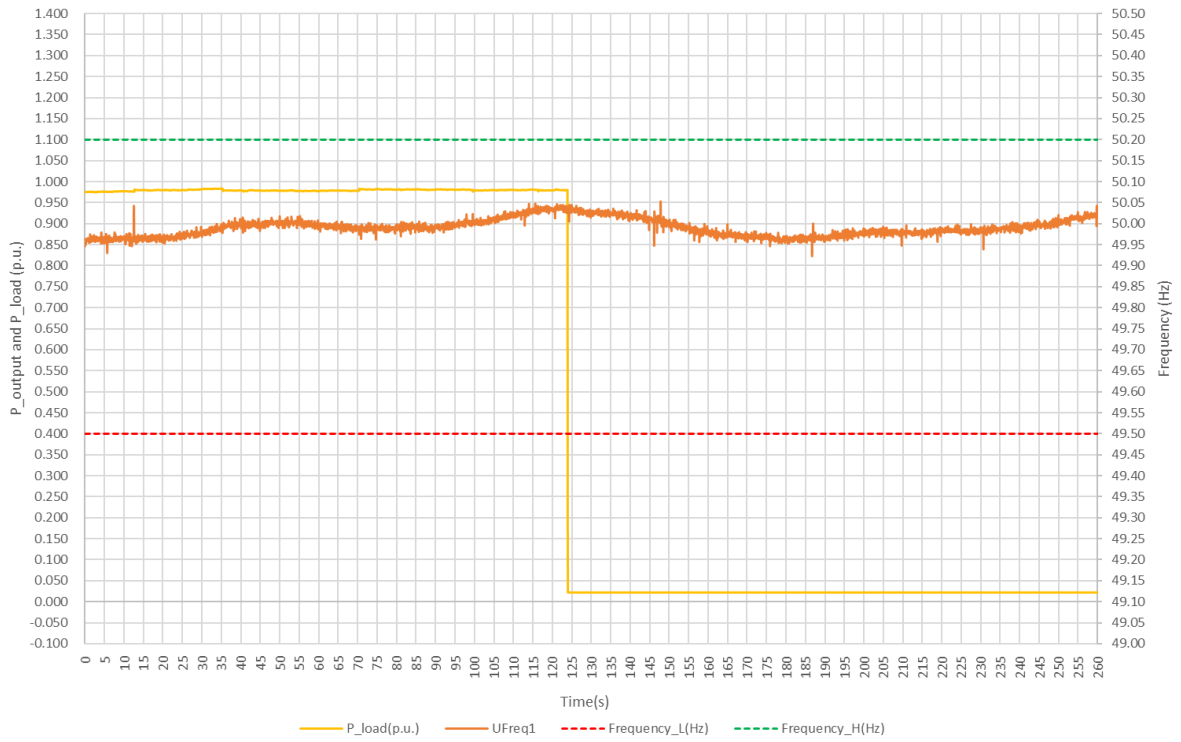
Over view



Zoom in

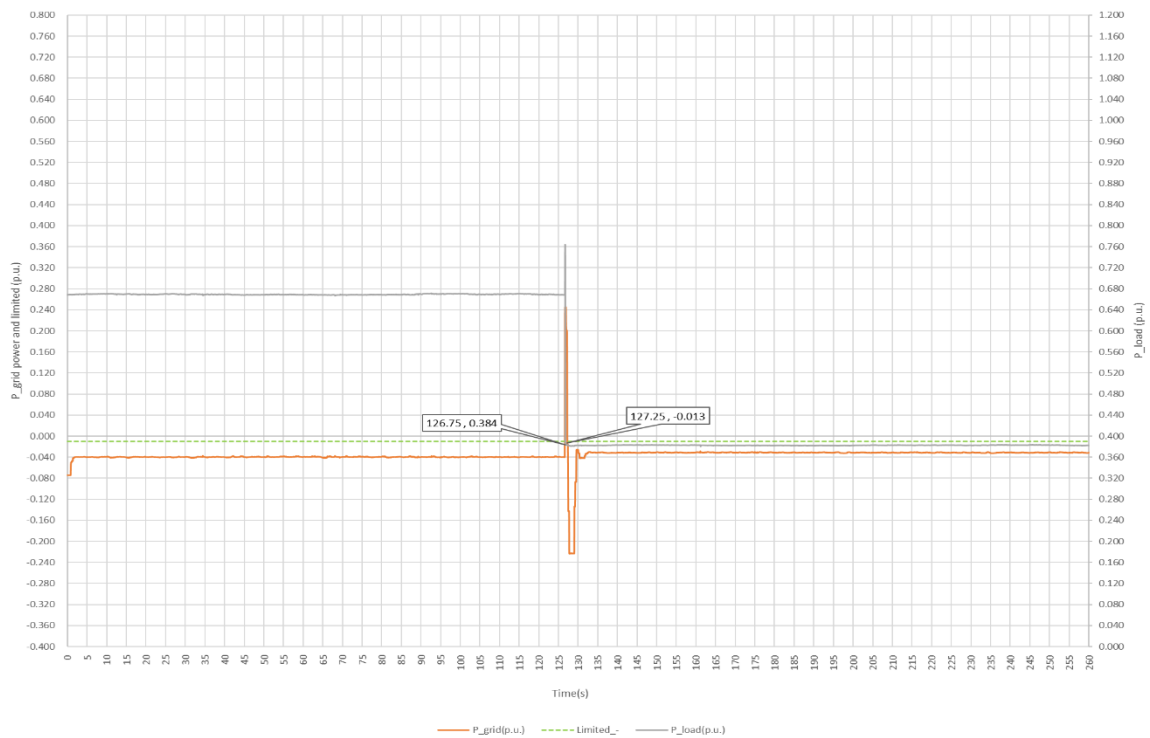


Power-Frequency

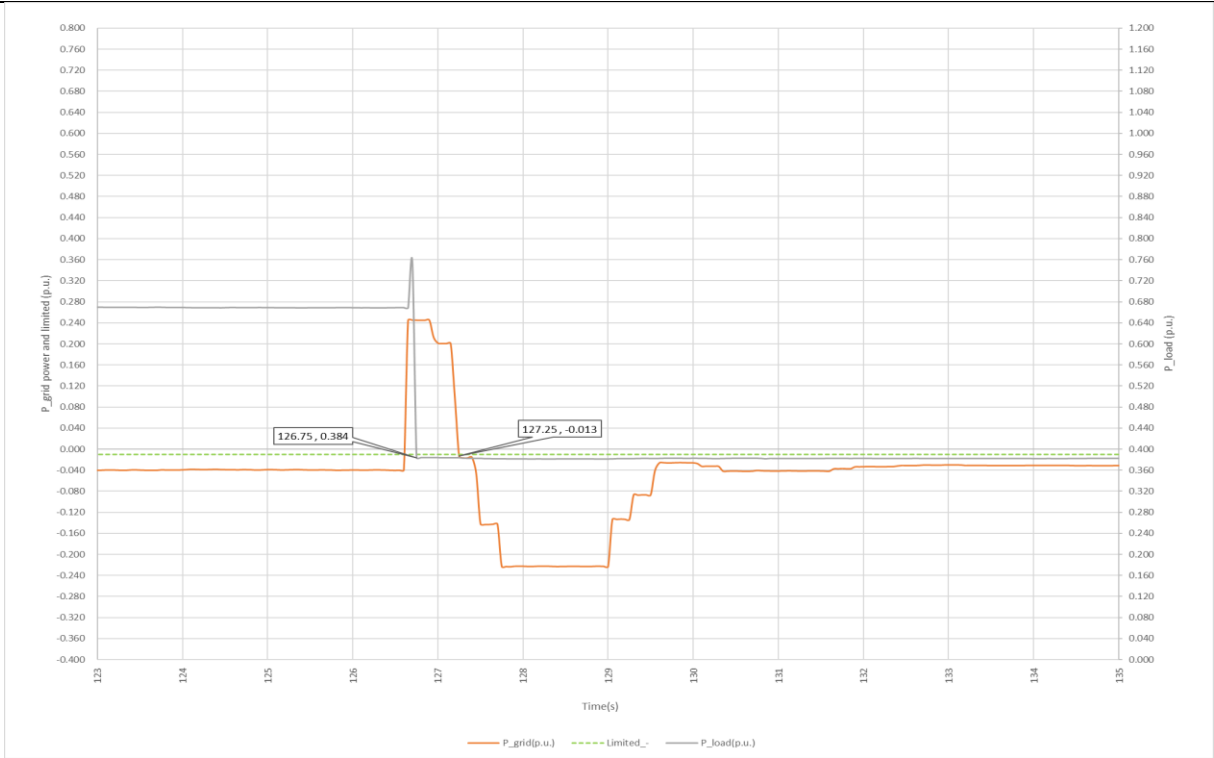


Test 4.1

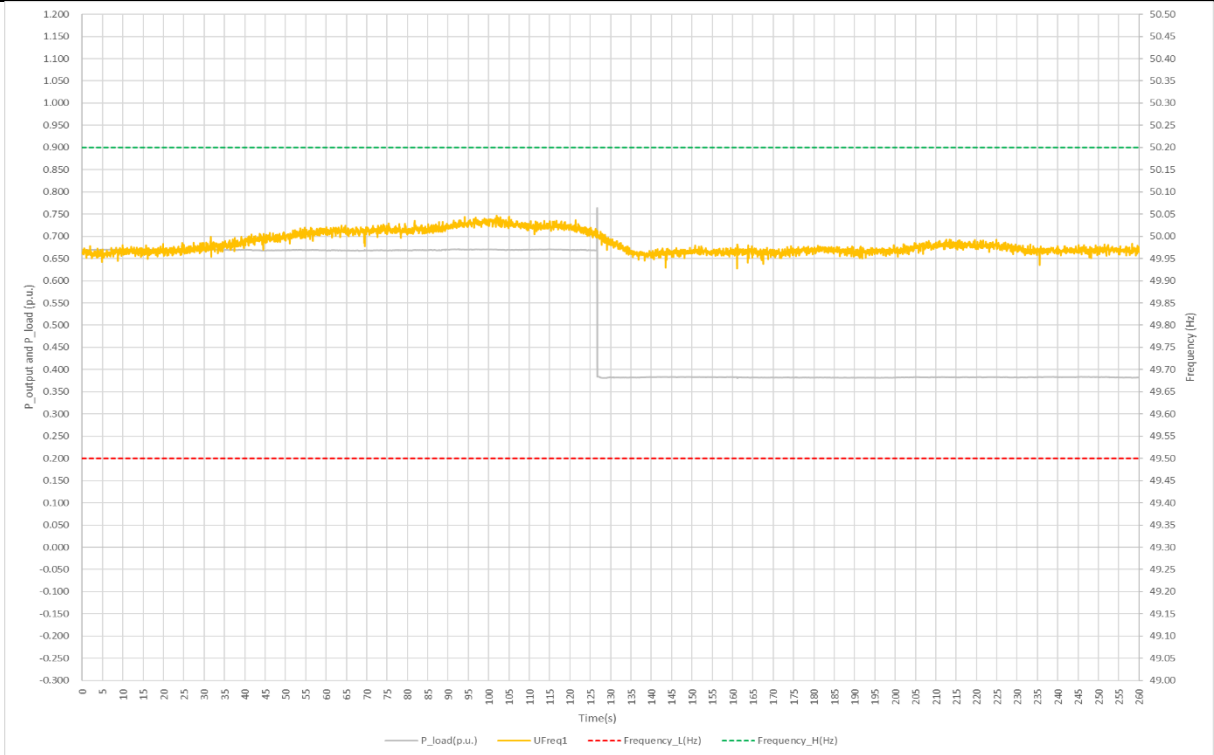
Over view



Zoom in

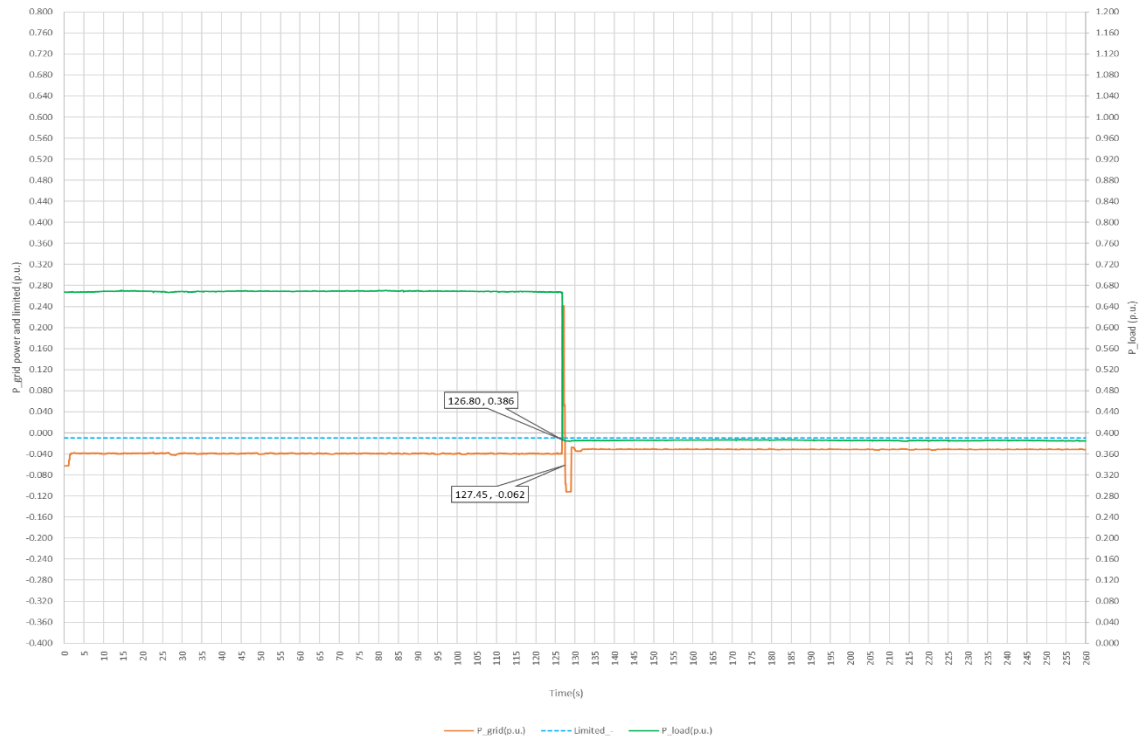


Power-Frequency

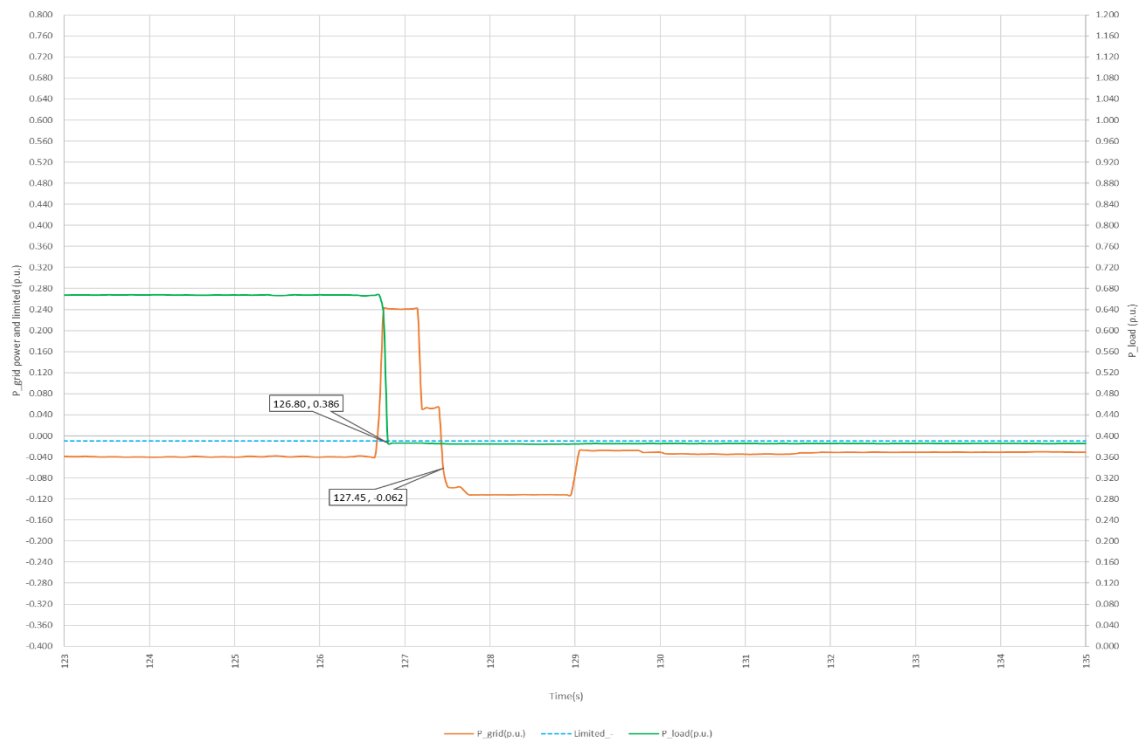


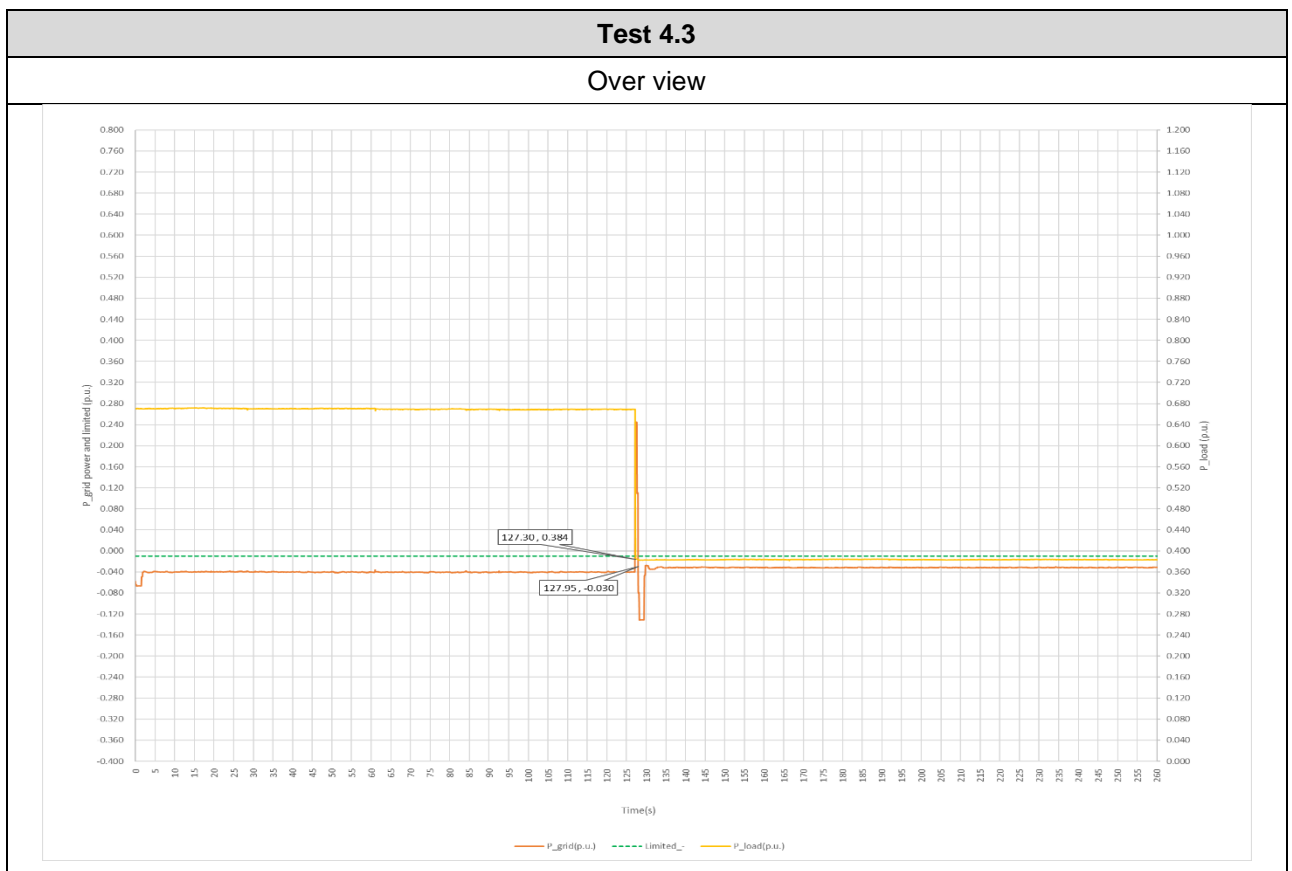
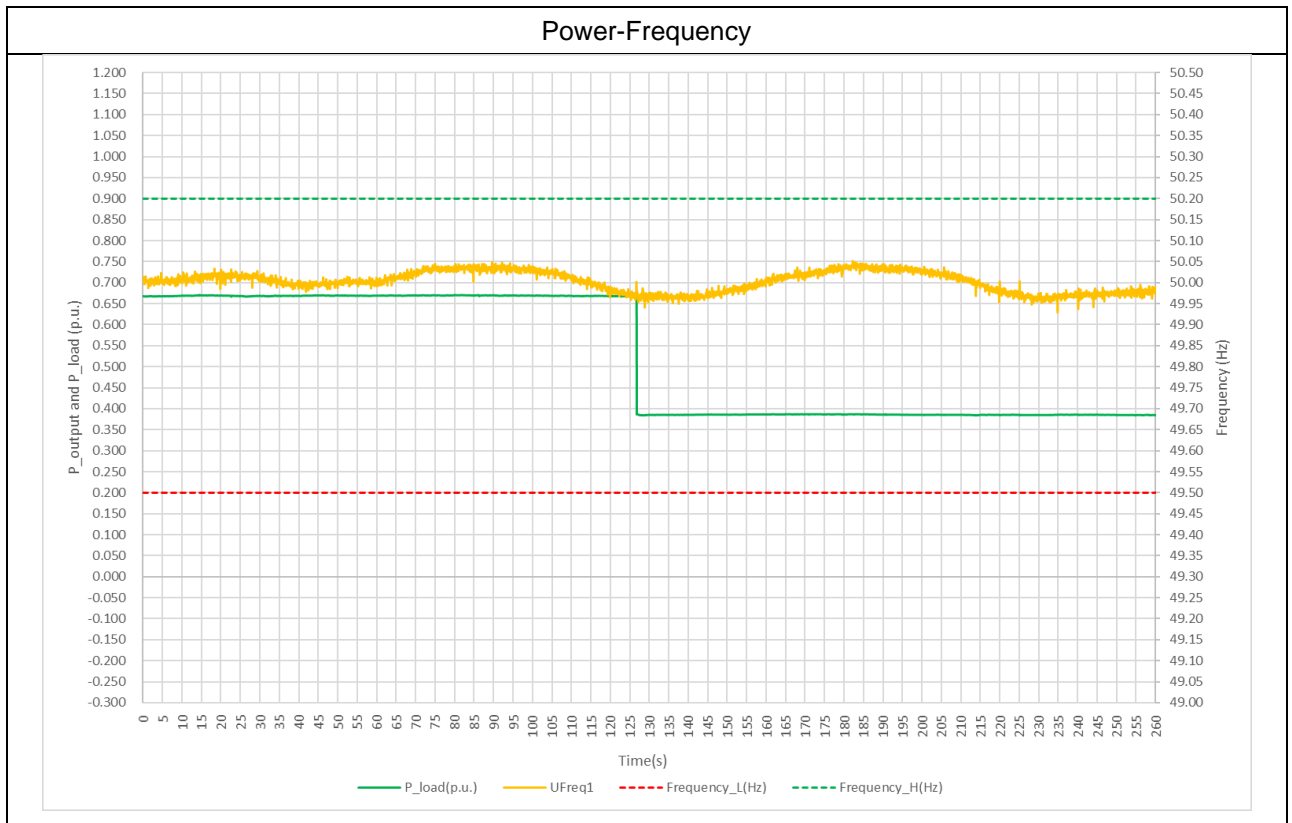
Test 4.2

Over view

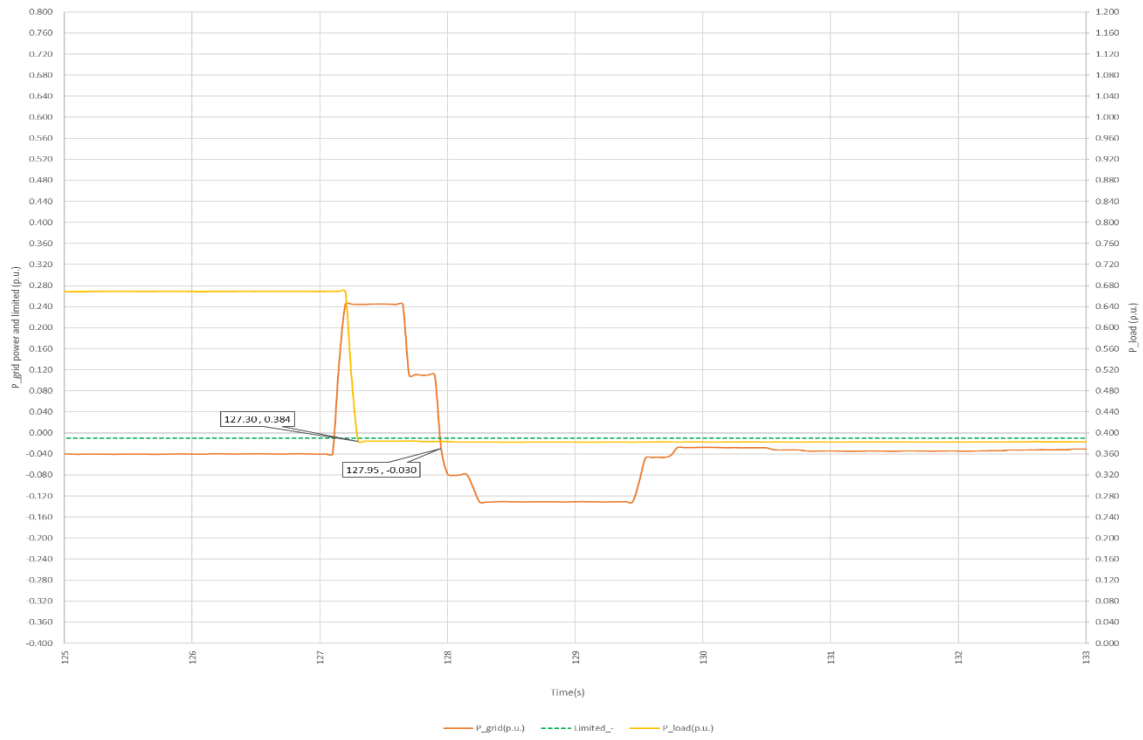


Zoom in

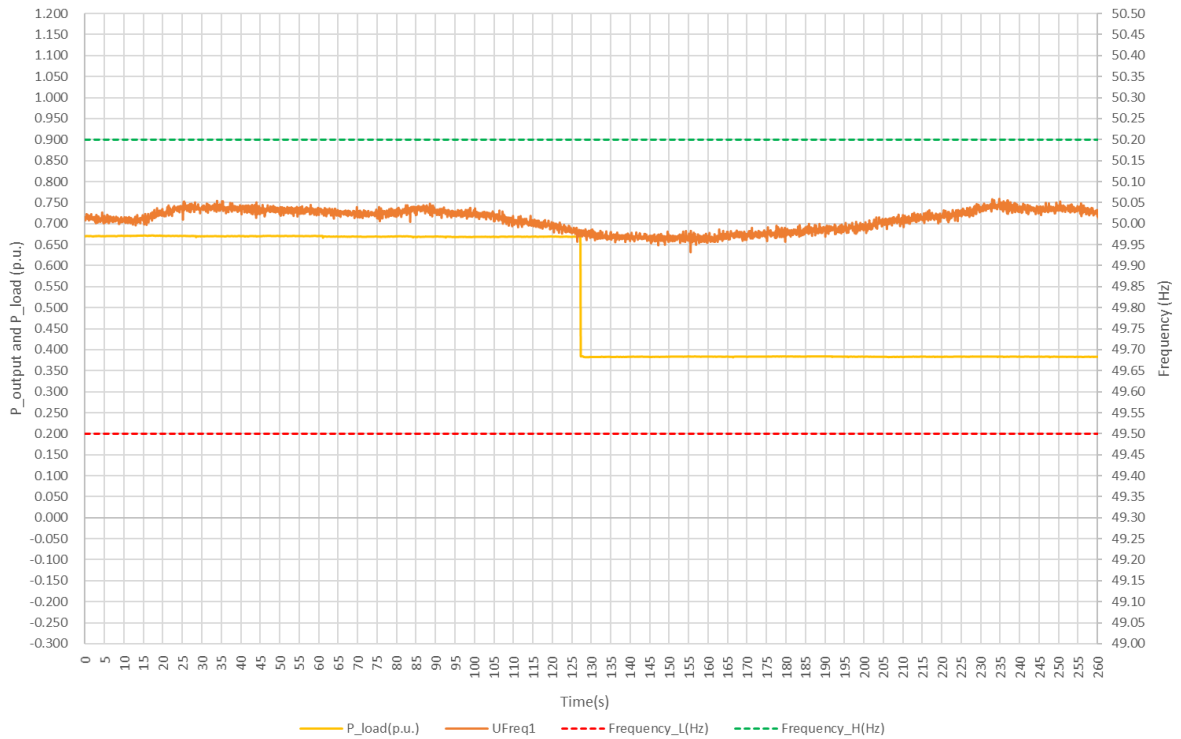




Zoom in

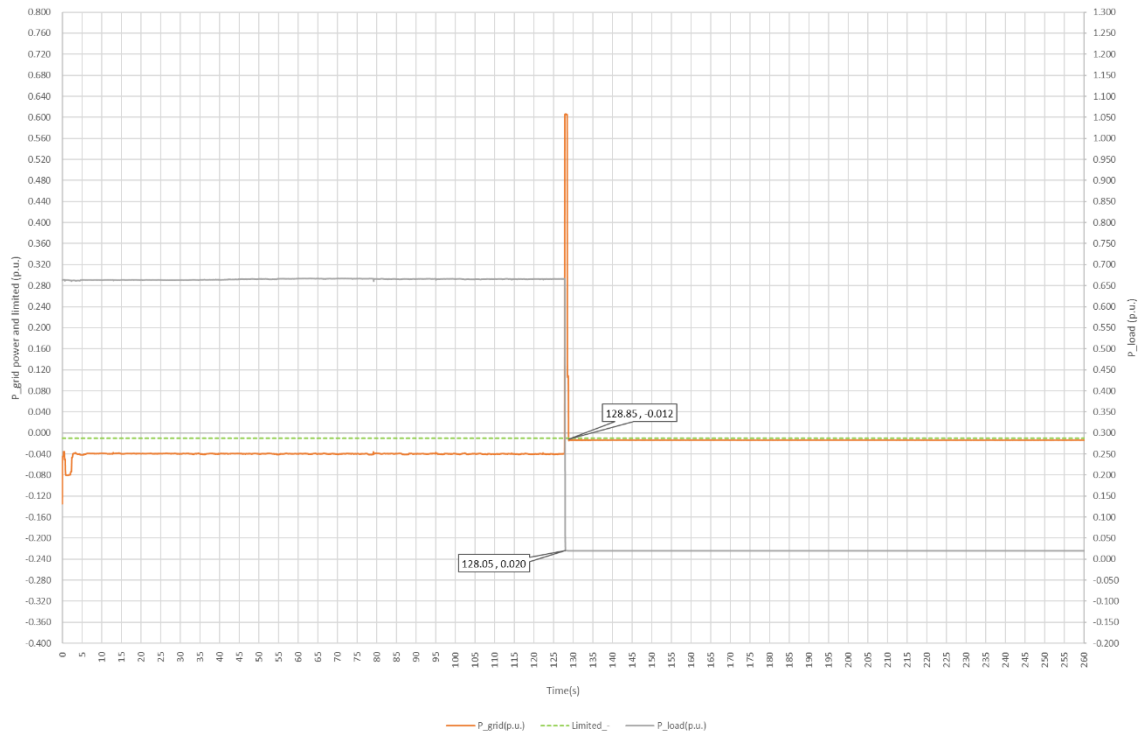


Power-Frequency

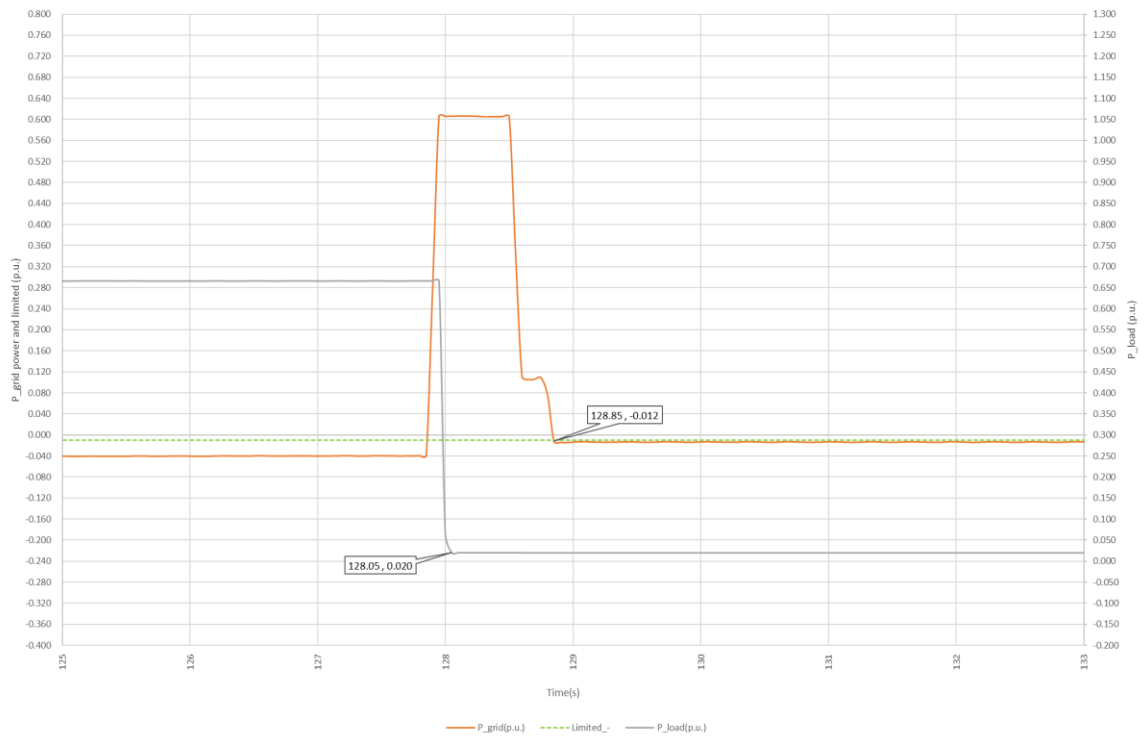


Test 5.1

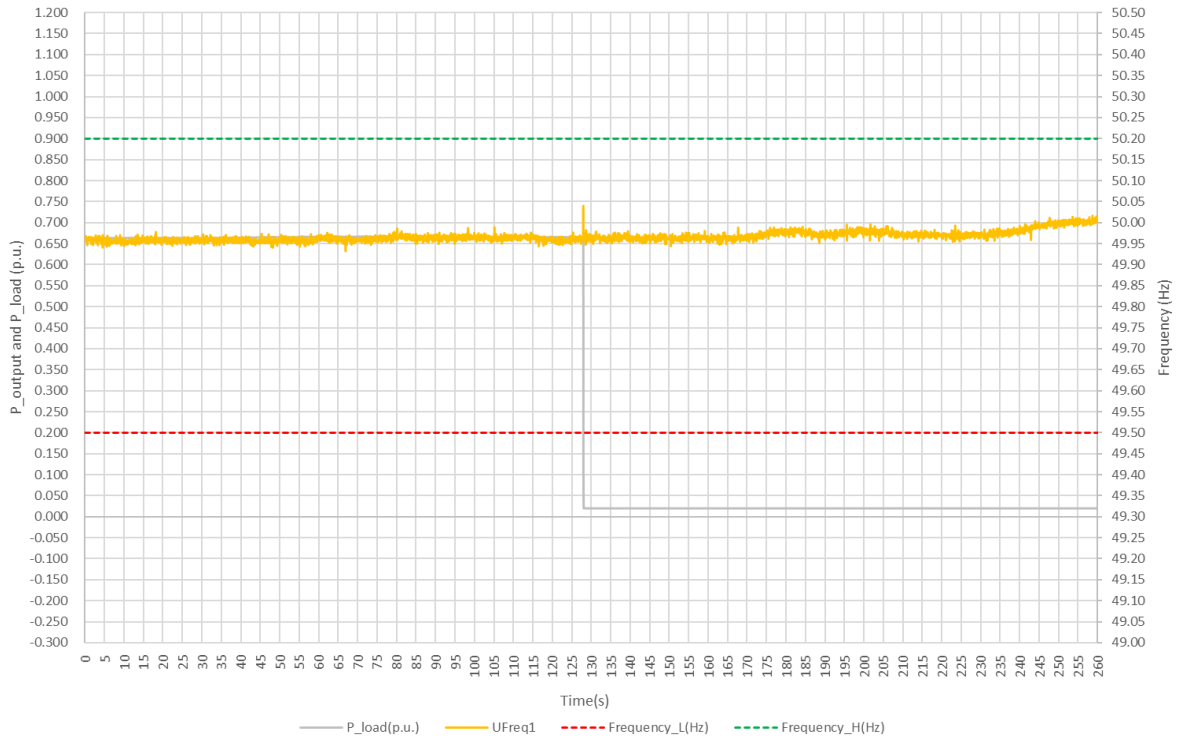
Over view



Zoom in

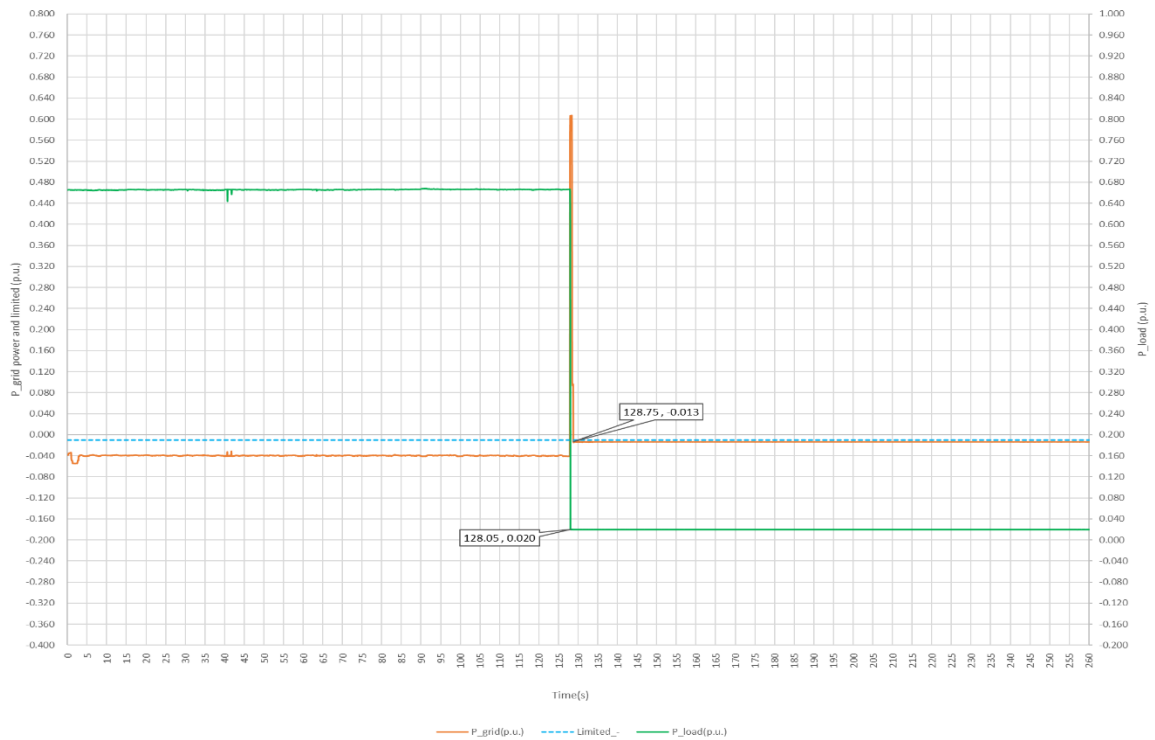


Power-Frequency

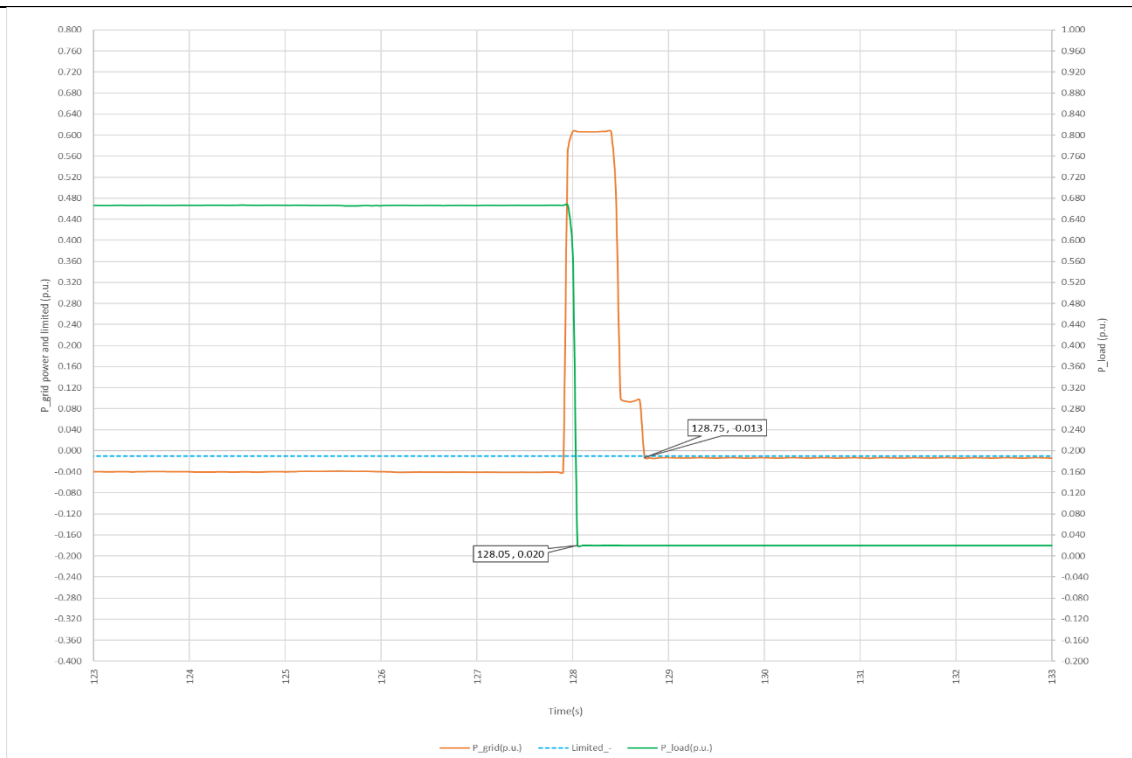


Test 5.2

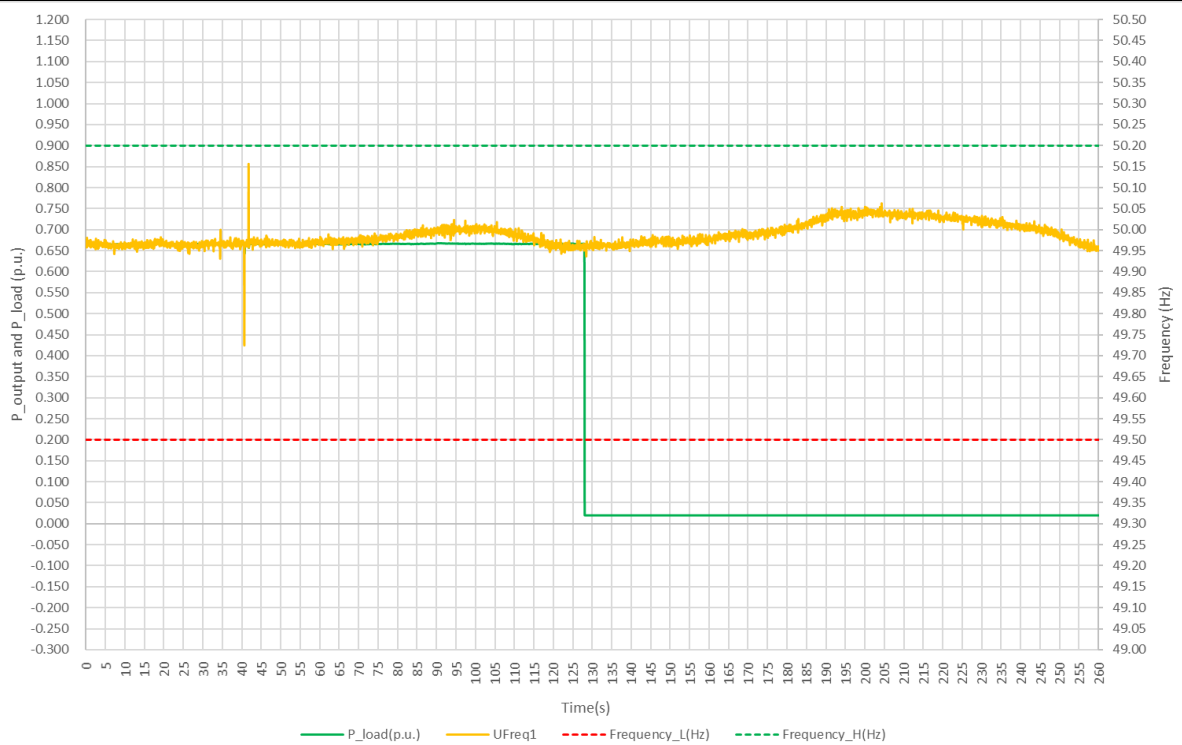
Over view



Zoom in

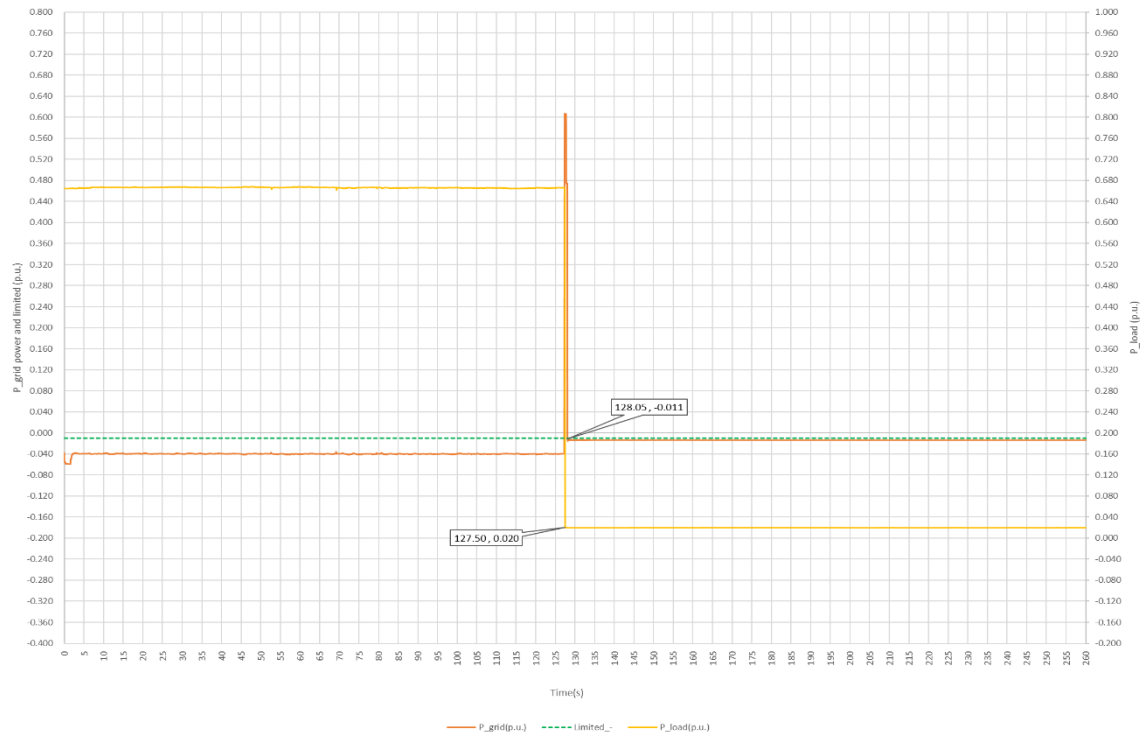


Power-Frequency

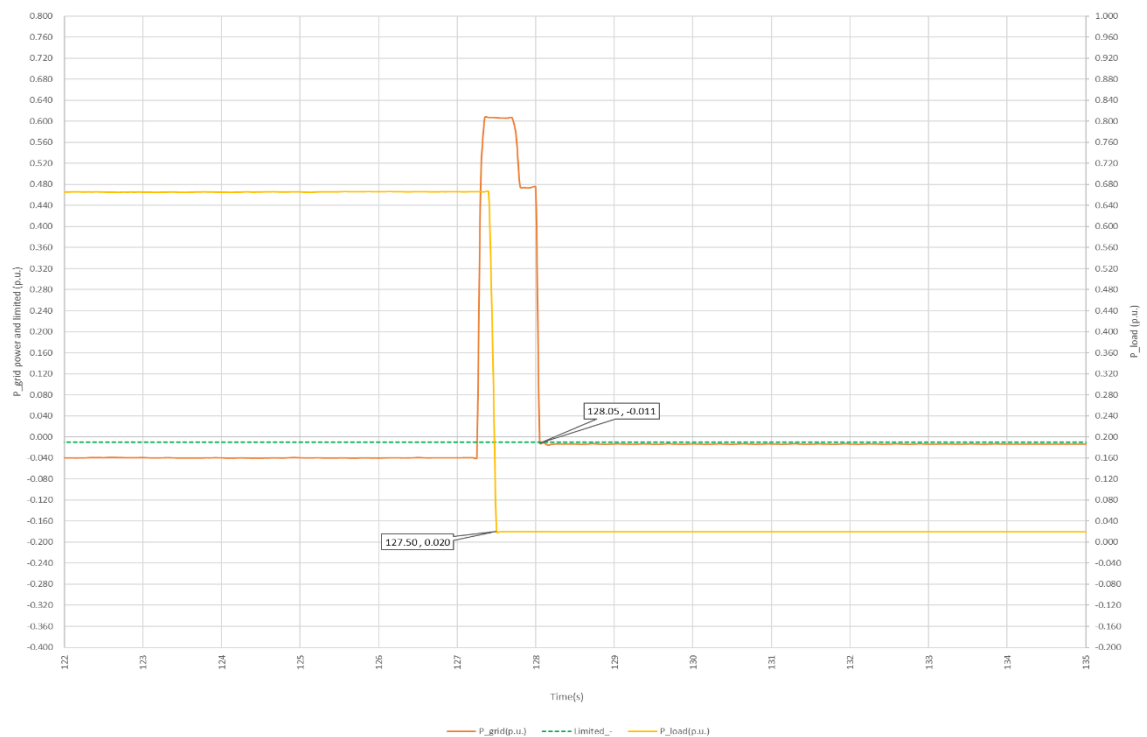


Test 5.3

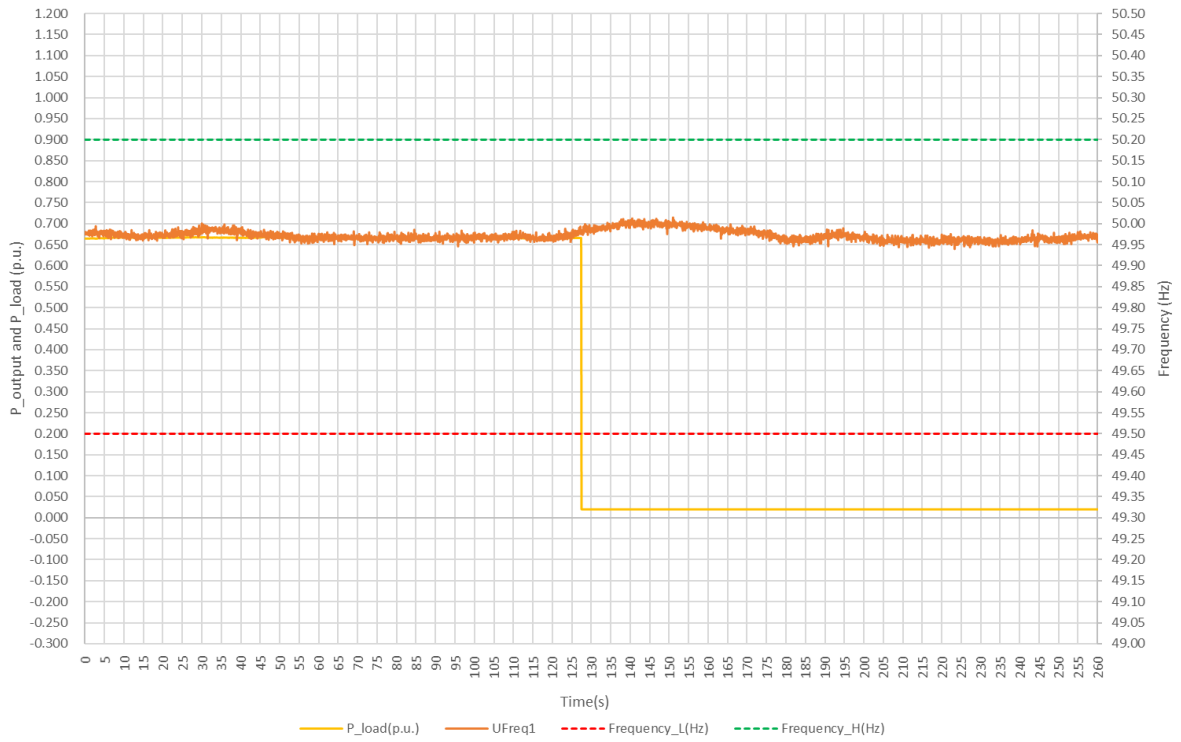
Over view



Zoom in

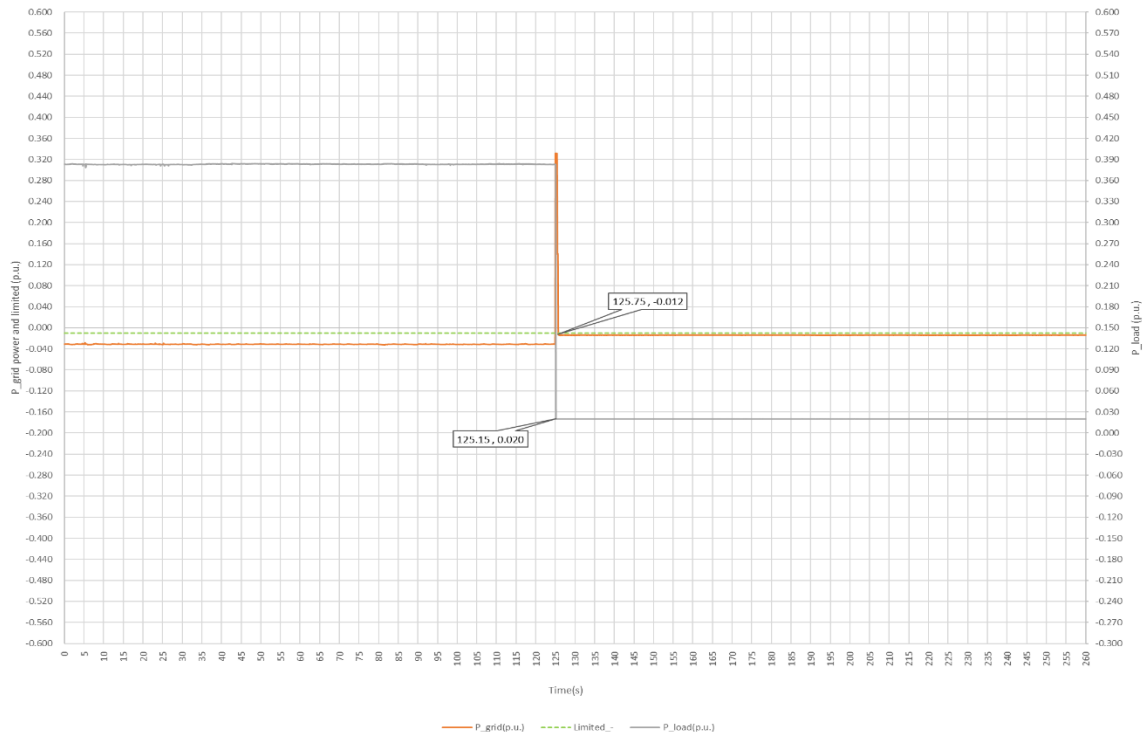


Power-Frequency

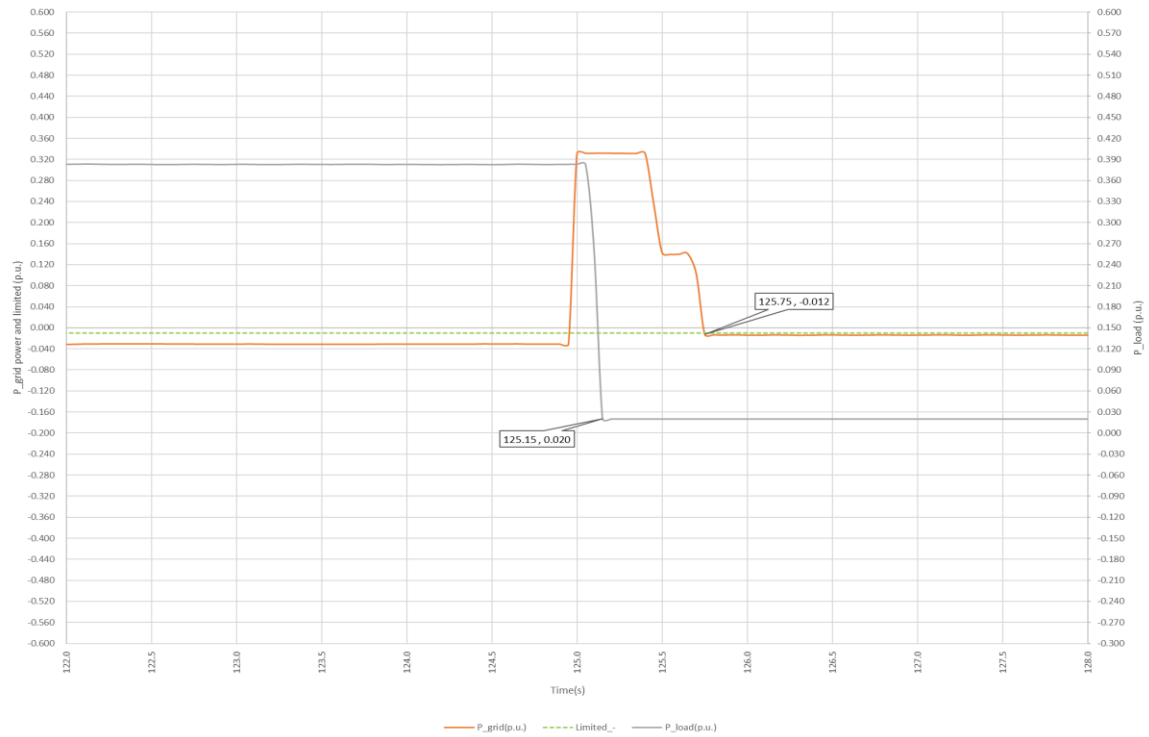


Test 6.1

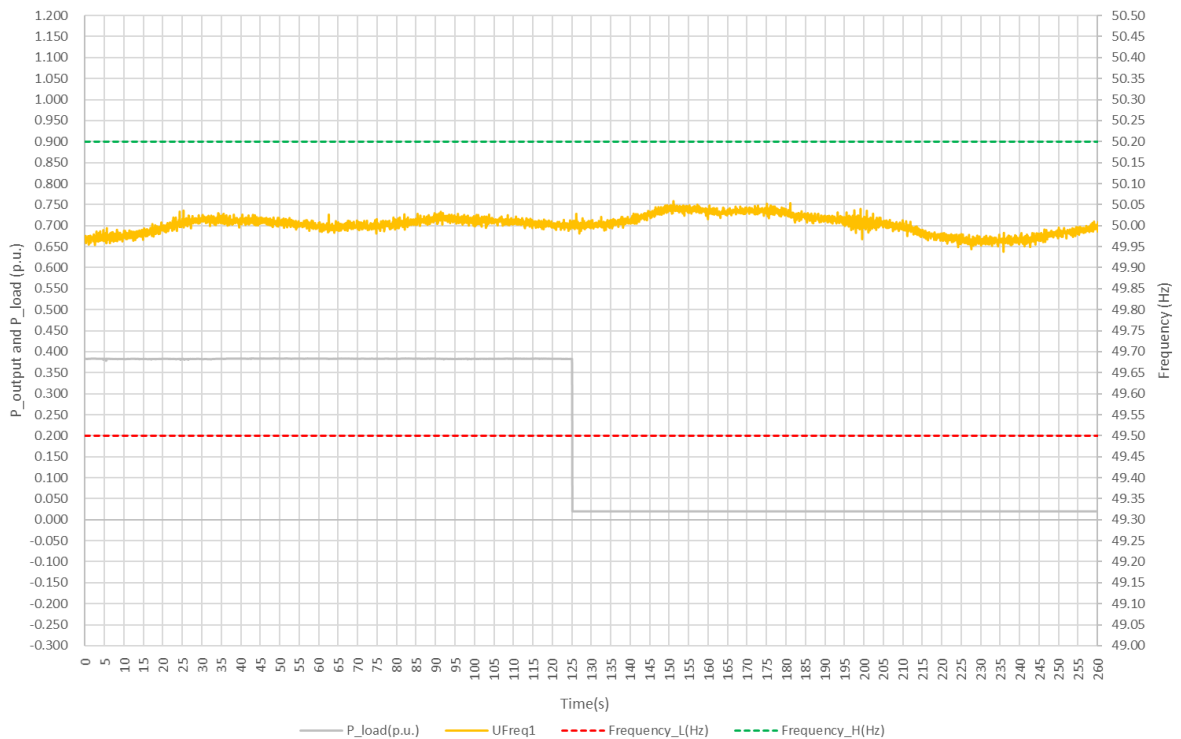
Over view



Zoom in

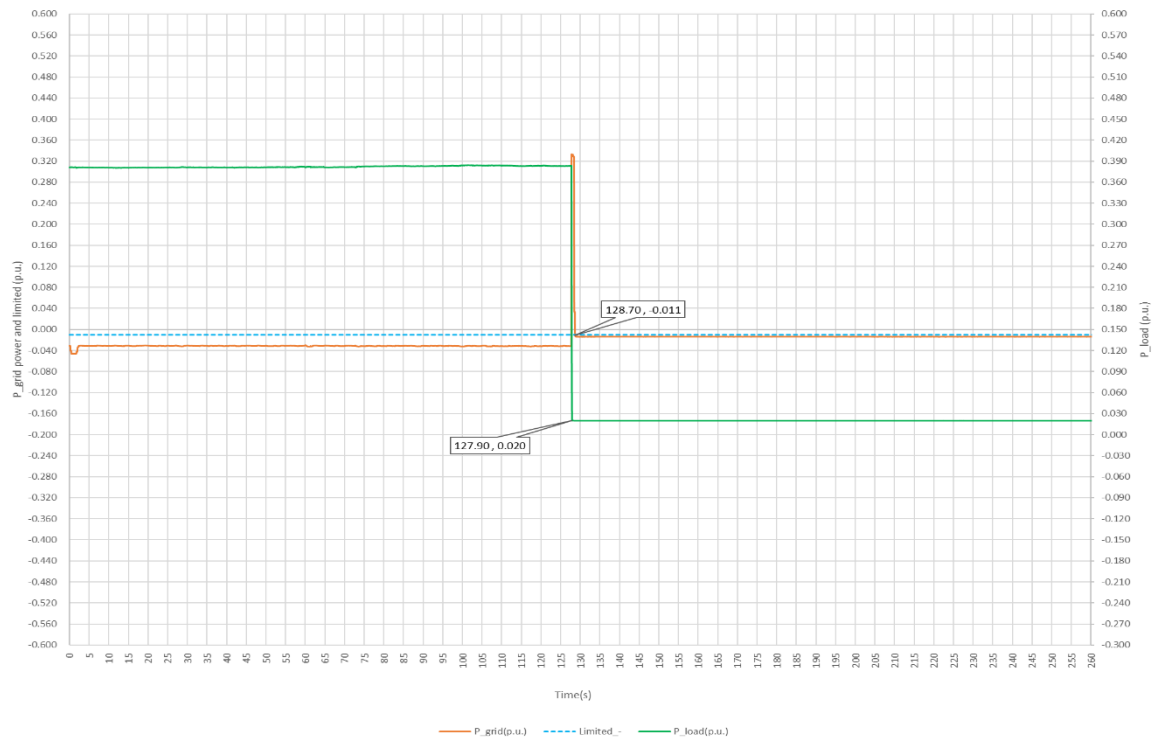


Power-Frequency

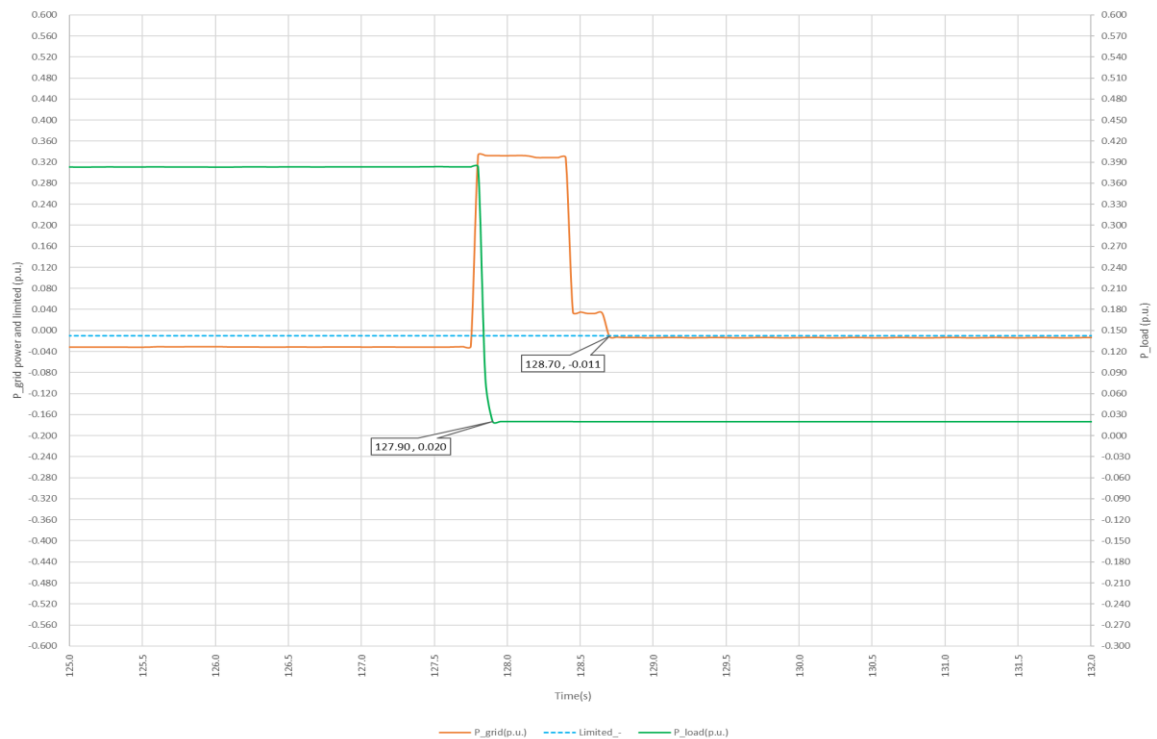


Test 6.2

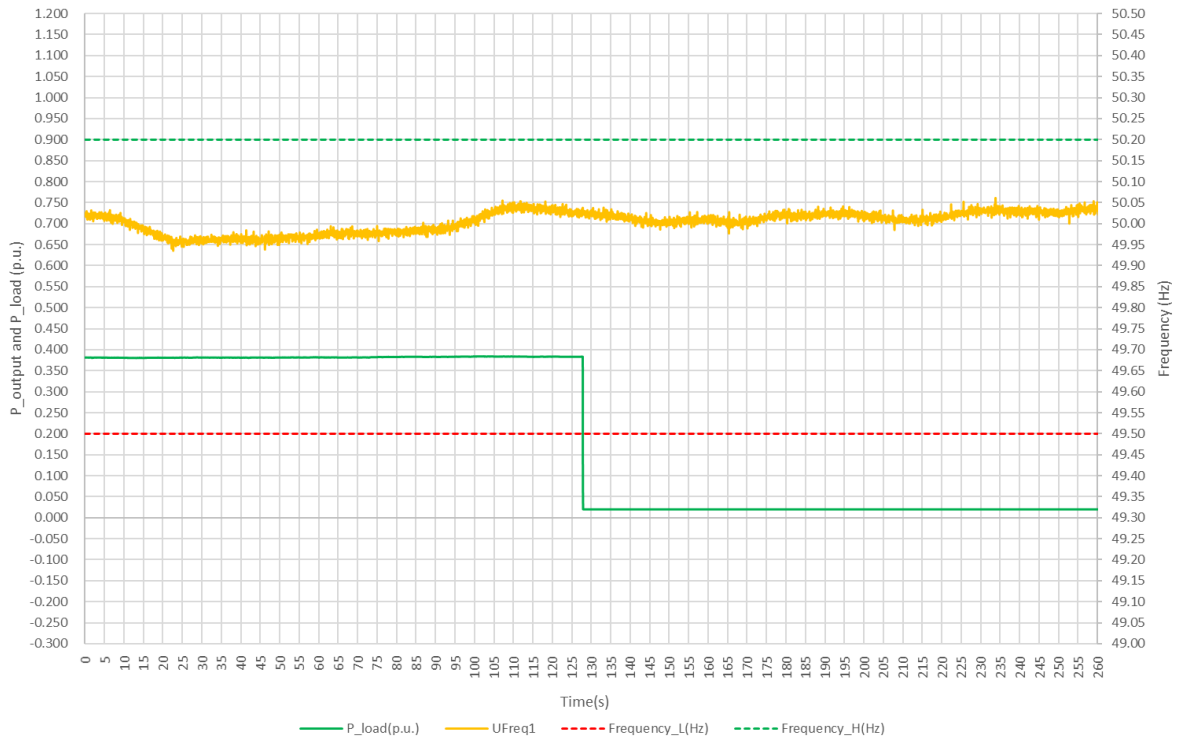
Over view



Zoom in



Power-Frequency

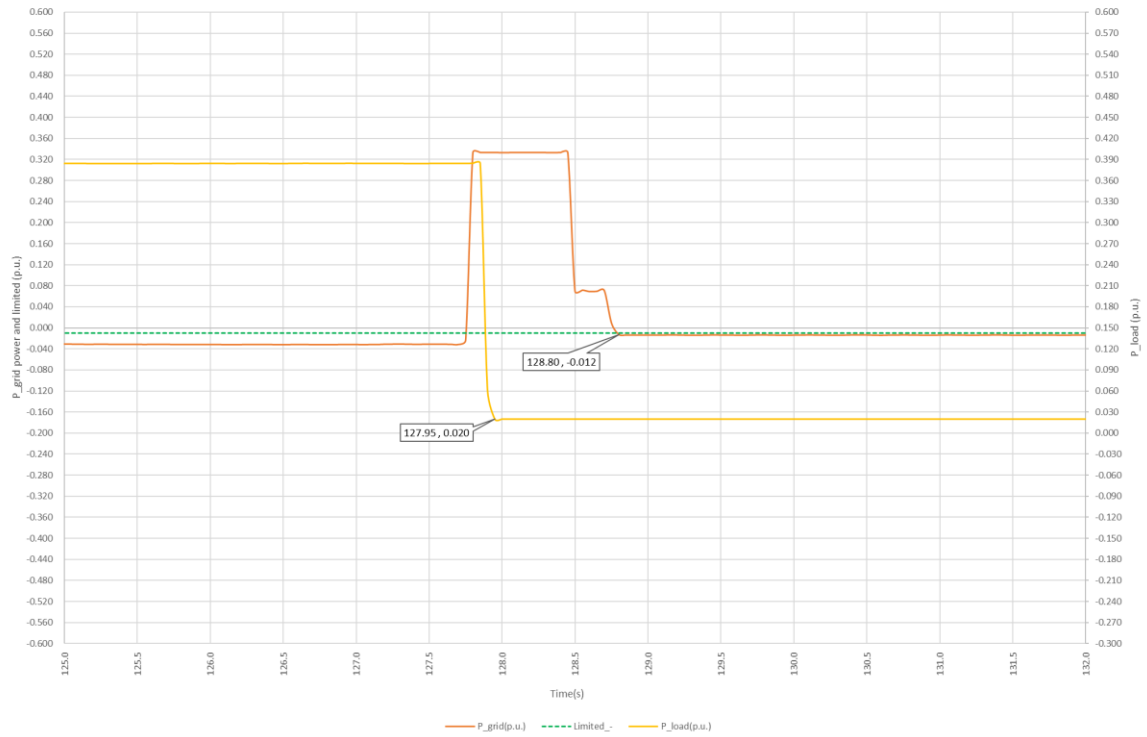


Test 6.3

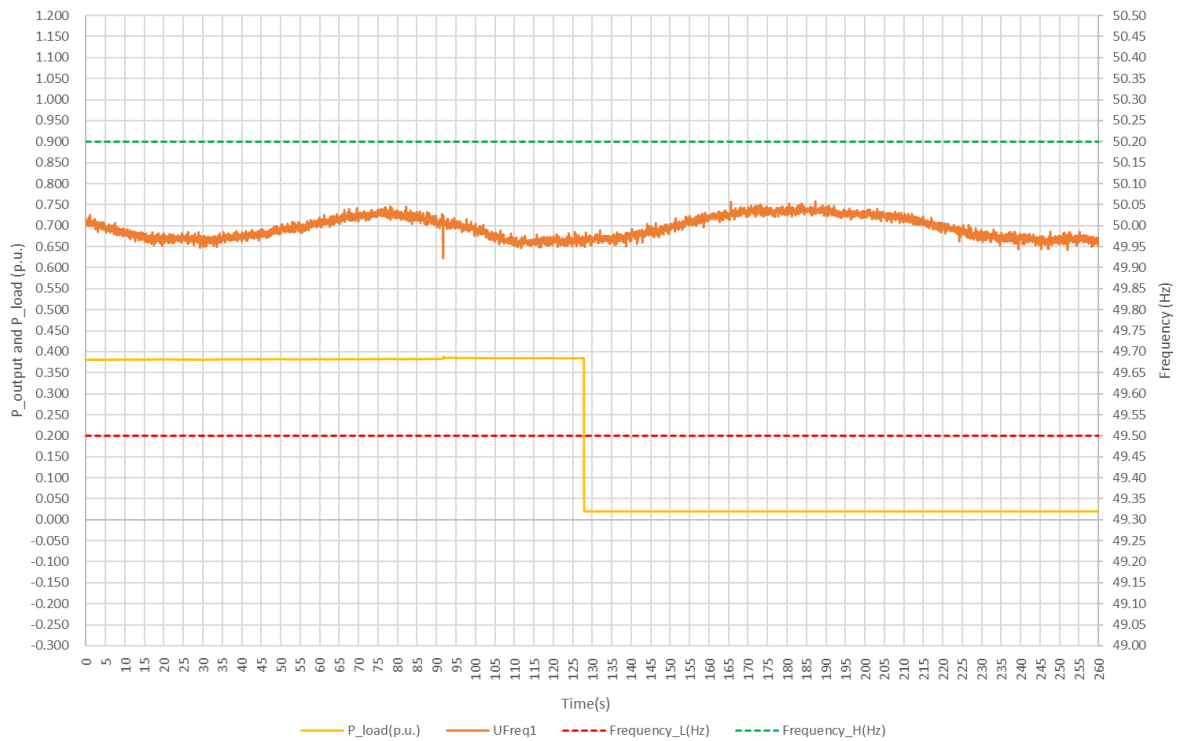
Over view



Zoom in



Power-Frequency



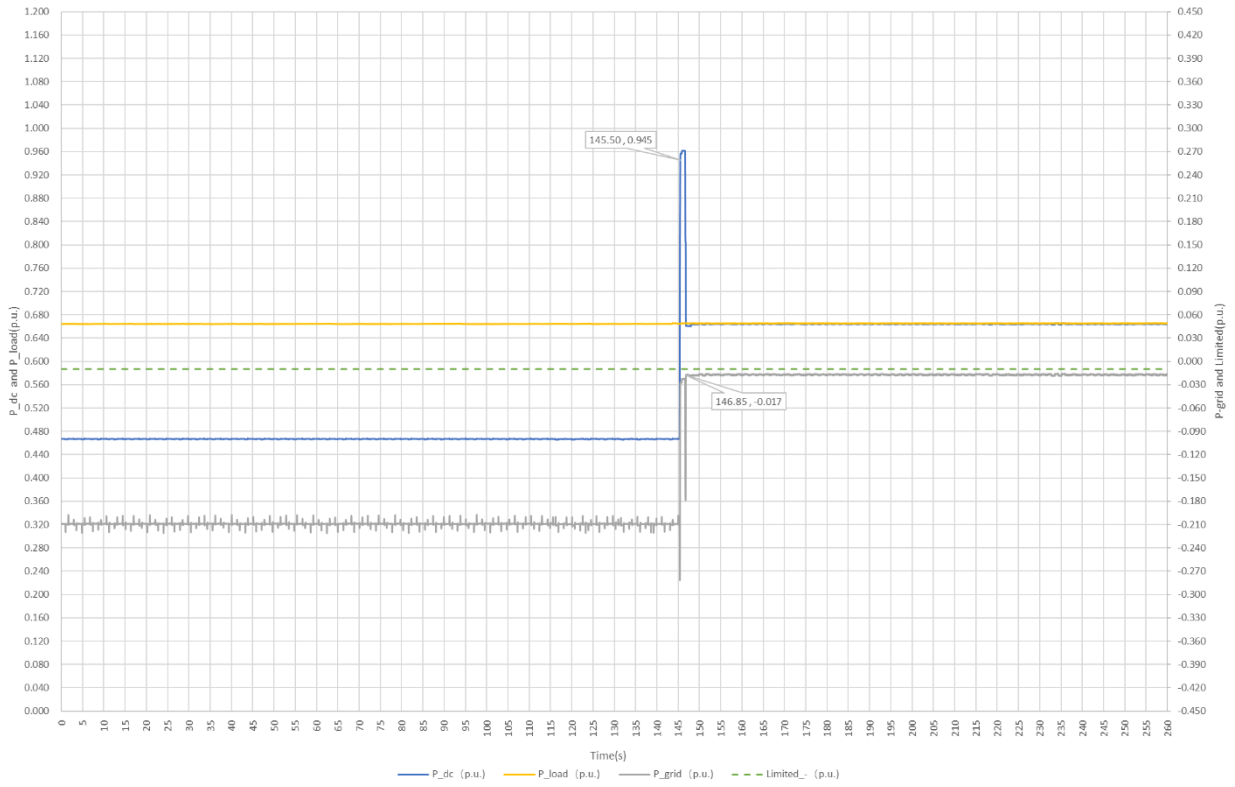
4.3 RESPONSE TO POWER INCREASES IN THE PRIMARY ENERGY SOURCE

The tests have been carried out in accordance with paragraph 5.3 of UNE 217001:2015 IN (section I.3.3 of ITC-BT-40). The results obtained for the two configurations mentioned above are shown below:

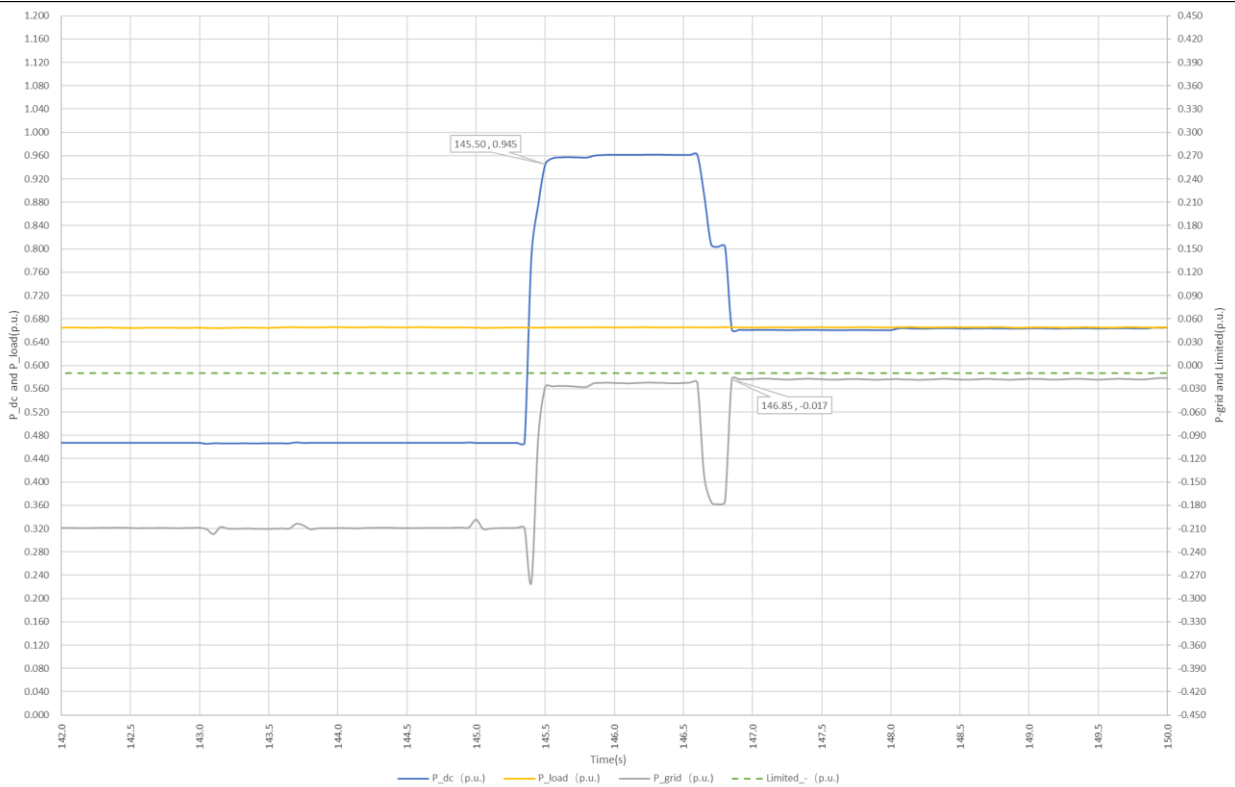
Type 1: With energy meter DTSU666								
Test No	Initial power PV (% Pn)		Load Required (% Pn)		Final power PV (% Pn) (*)		Stabilization time(s)	Time limit(s)
	Desired	Meas.	Desired	Meas.	Desired	Meas.		
1	40-50	46.7	60-70	66.5	>90	95.9	1.35	2
2	40-50	46.7	60-70	66.5	>90	95.5	1.70	
3	40-50	46.7	60-70	66.5	>90	95.4	1.25	
Additional information:								
(*) The input power of the inverter is increased from half to 100% of the power under the specified load conditions (60-70 %). Once 90% of the power is reached, the inverter resets the power to the load requirements, always taking into account the balance as a consumer according to the standard. The data shown are in reference to the rated power of the inverter. The power limit injected is -1%Pn								

Test 1

Over view

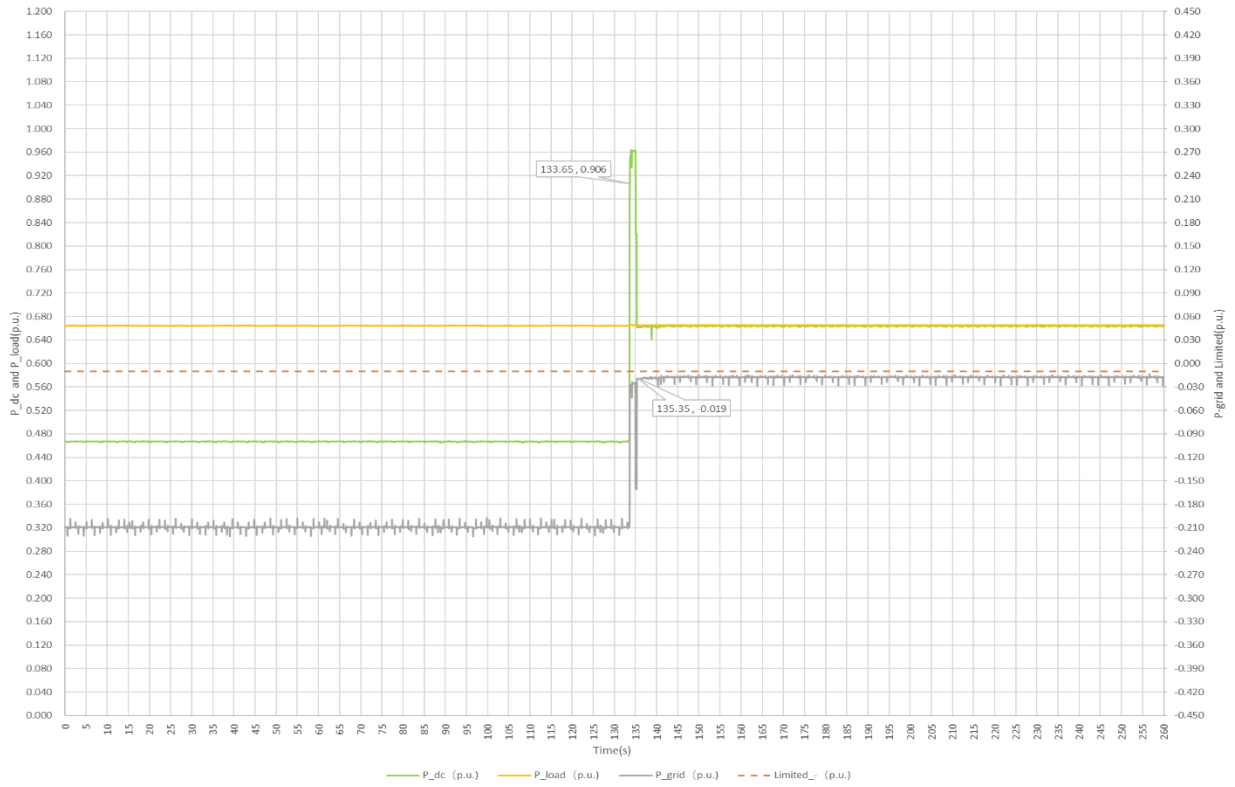


Zoom In

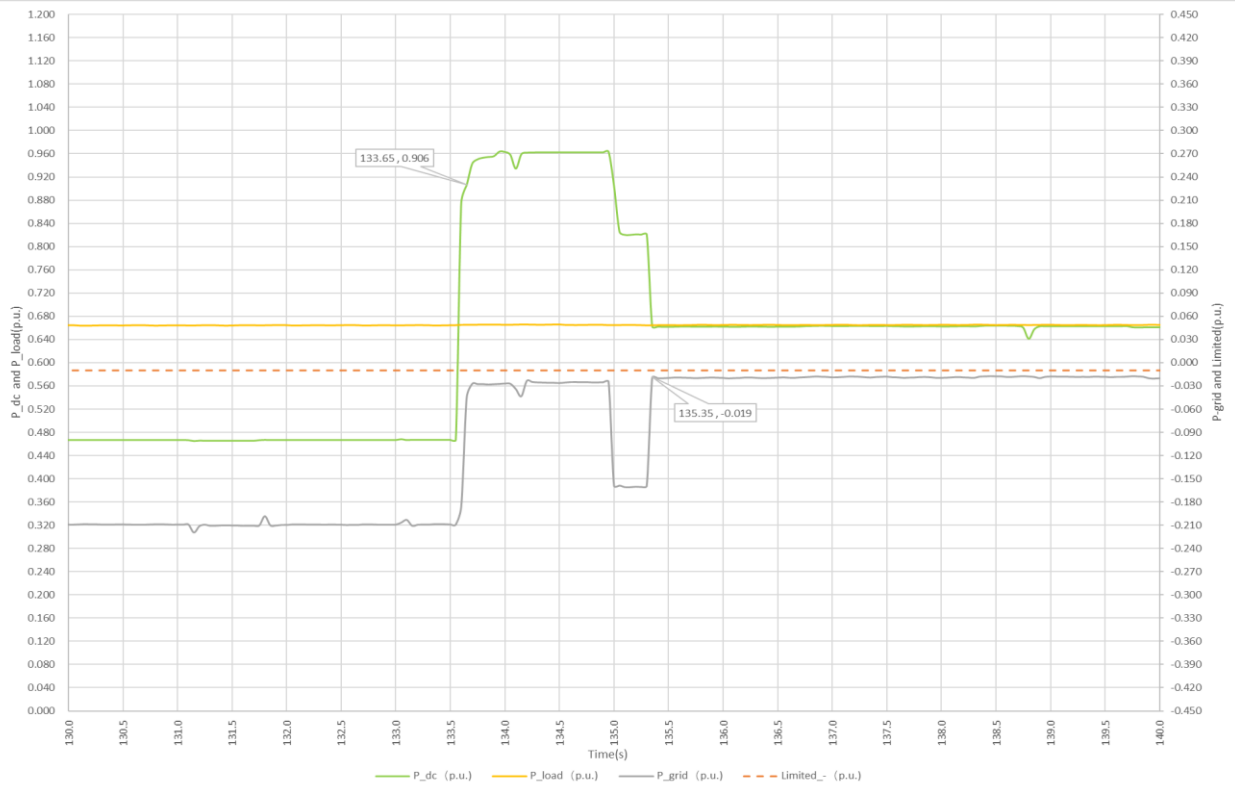


Test 2

Over view

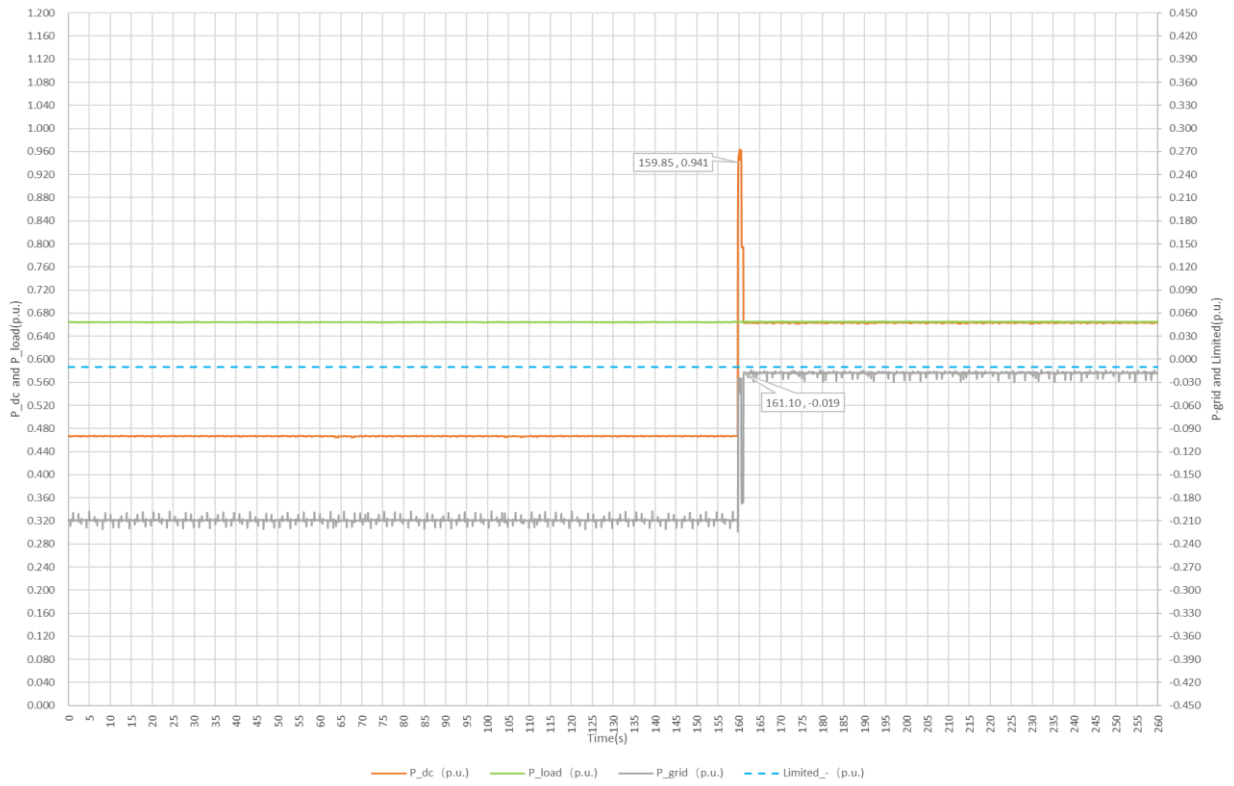


Zoom In

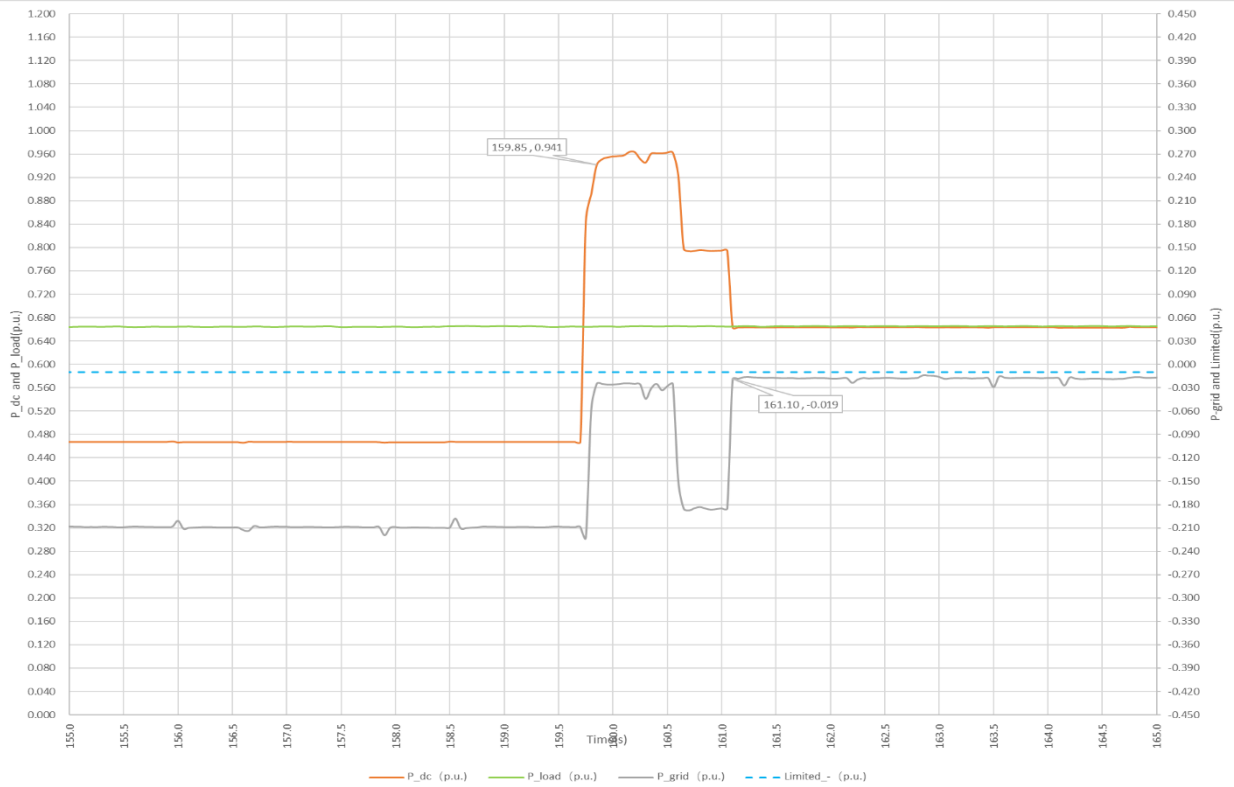


Test 3

Over view



Zoom In



Type 2: With energy meter ACR10R-D24TE4

Test No	Initial power PV (% Pn)		Load Required (% Pn)		Final power PV (% Pn) (*)		Stabilization time(s)	Time limit(s)
	Desired	Meas.	Desired	Meas.	Desired	Meas.		
1	40-50	48.4	60-70	67.4	>90	94.7	0.95	2
2	40-50	48.1	60-70	67.5	>90	96.4	0.85	
3	40-50	48.2	60-70	67.6	>90	95.1	0.90	

Additional information:

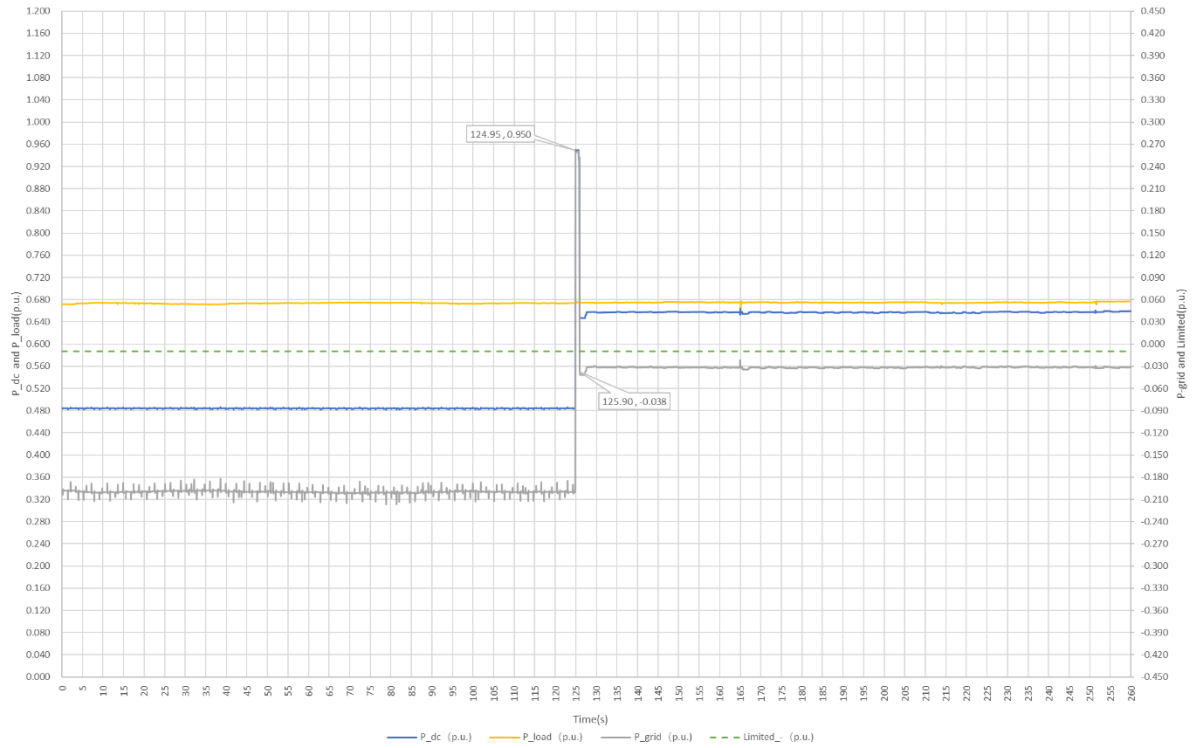
(*) The input power of the inverter is increased from half to 100% of the power under the specified load conditions (60-70 %). Once 90% of the power is reached, the inverter resets the power to the load requirements, always taking into account the balance as a consumer according to the standard.

The data shown are in reference to the rated power of the inverter.

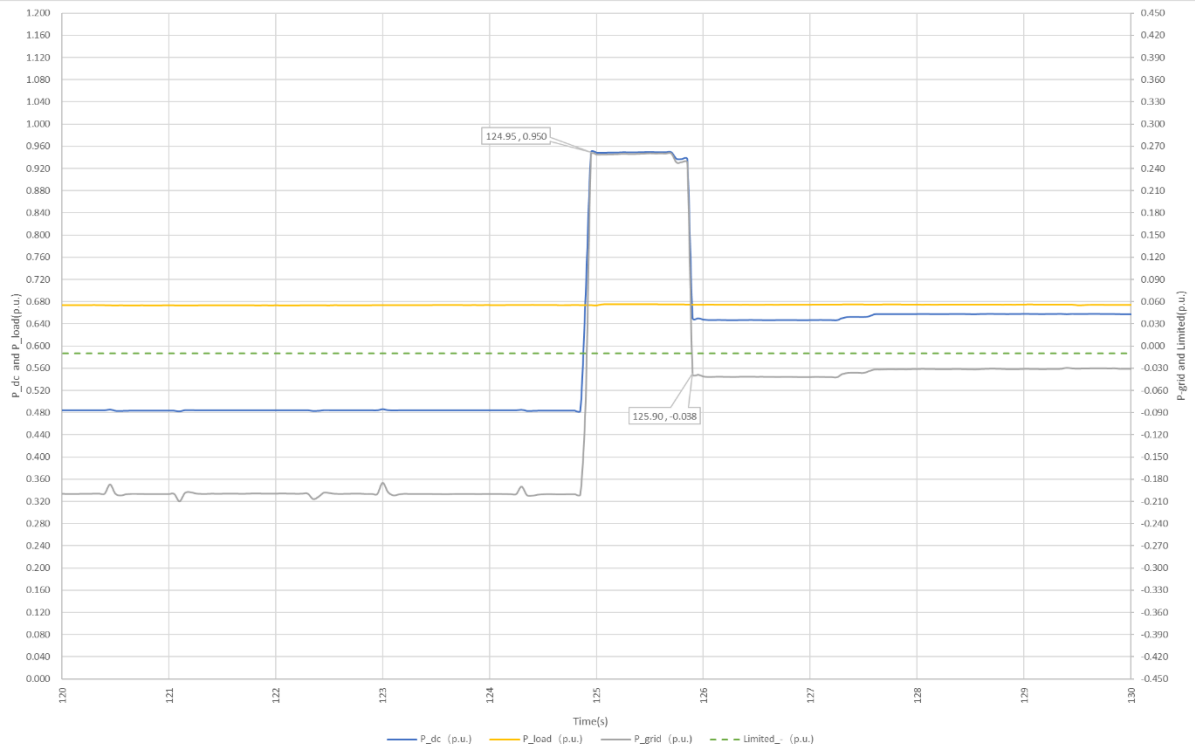
The power limit injected is -1%Pn

Test 1

Over view

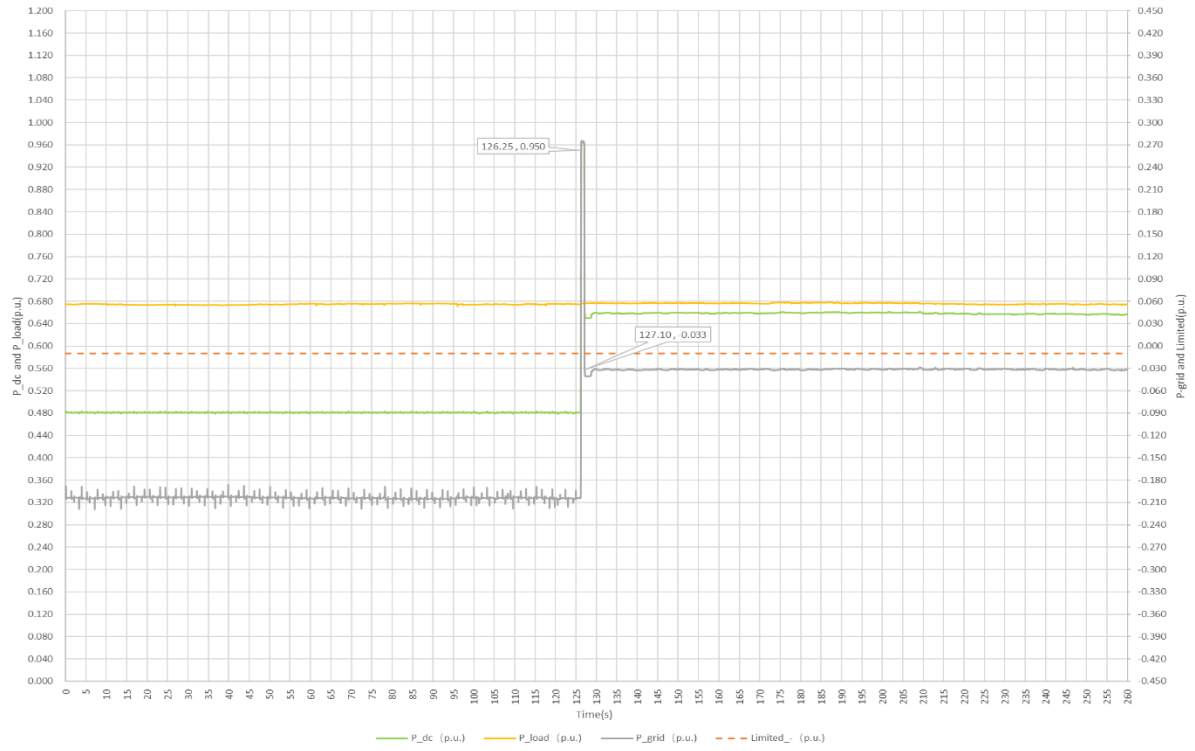


Zoom In

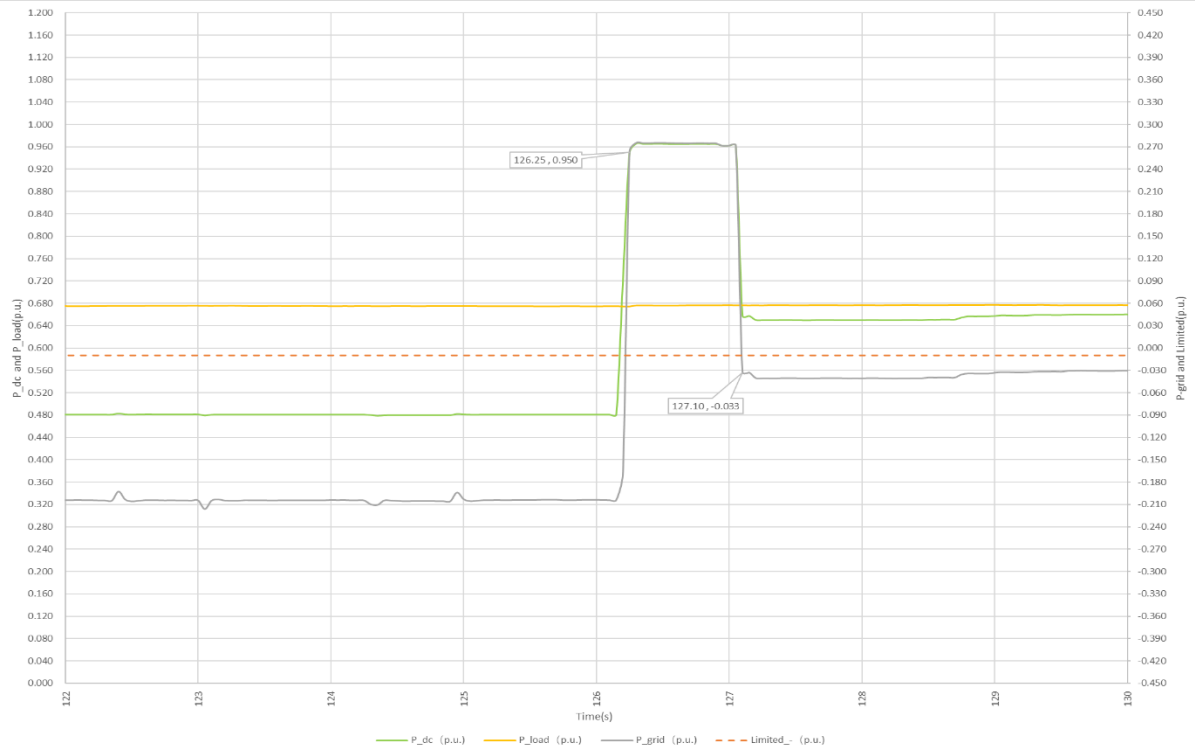


Test 2

Over view

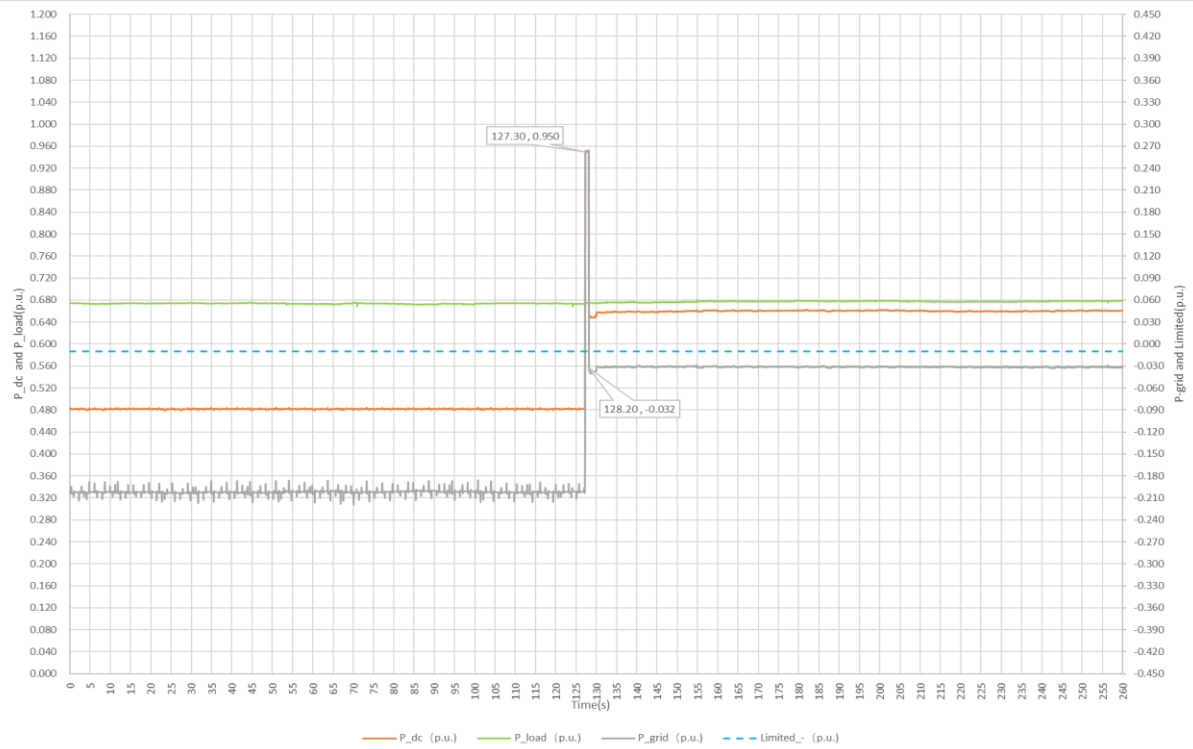


Zoom In

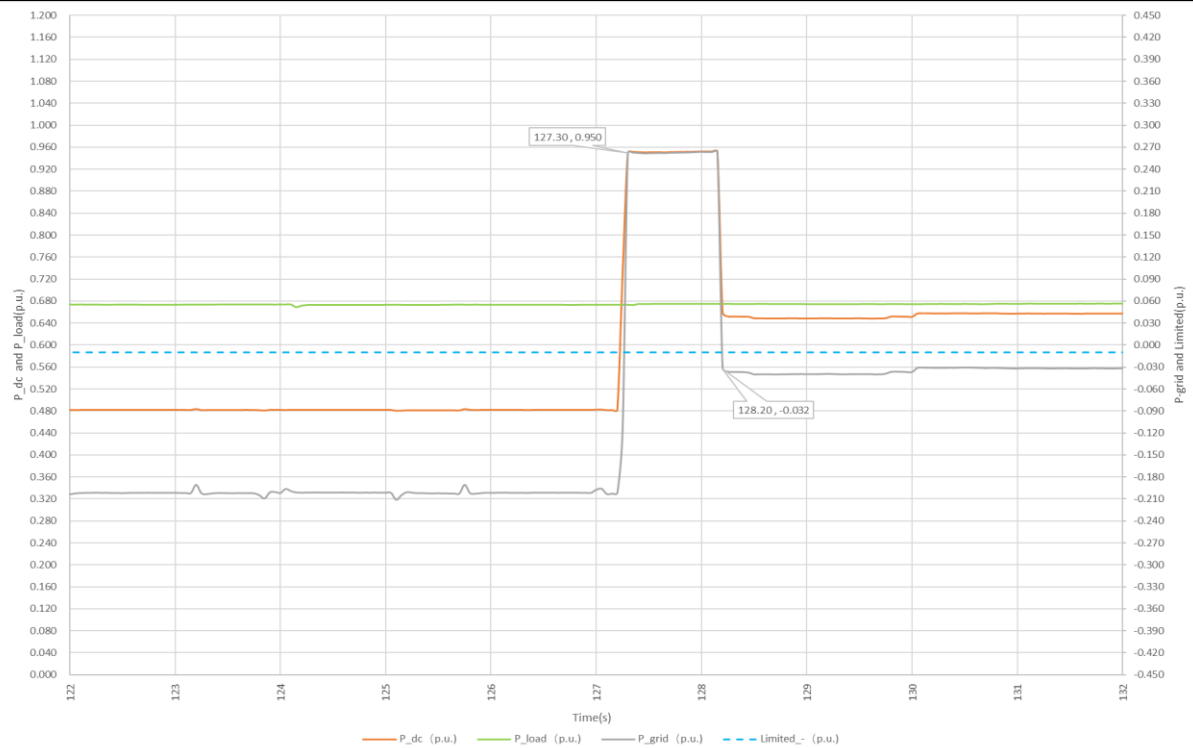


Test 3

Over view



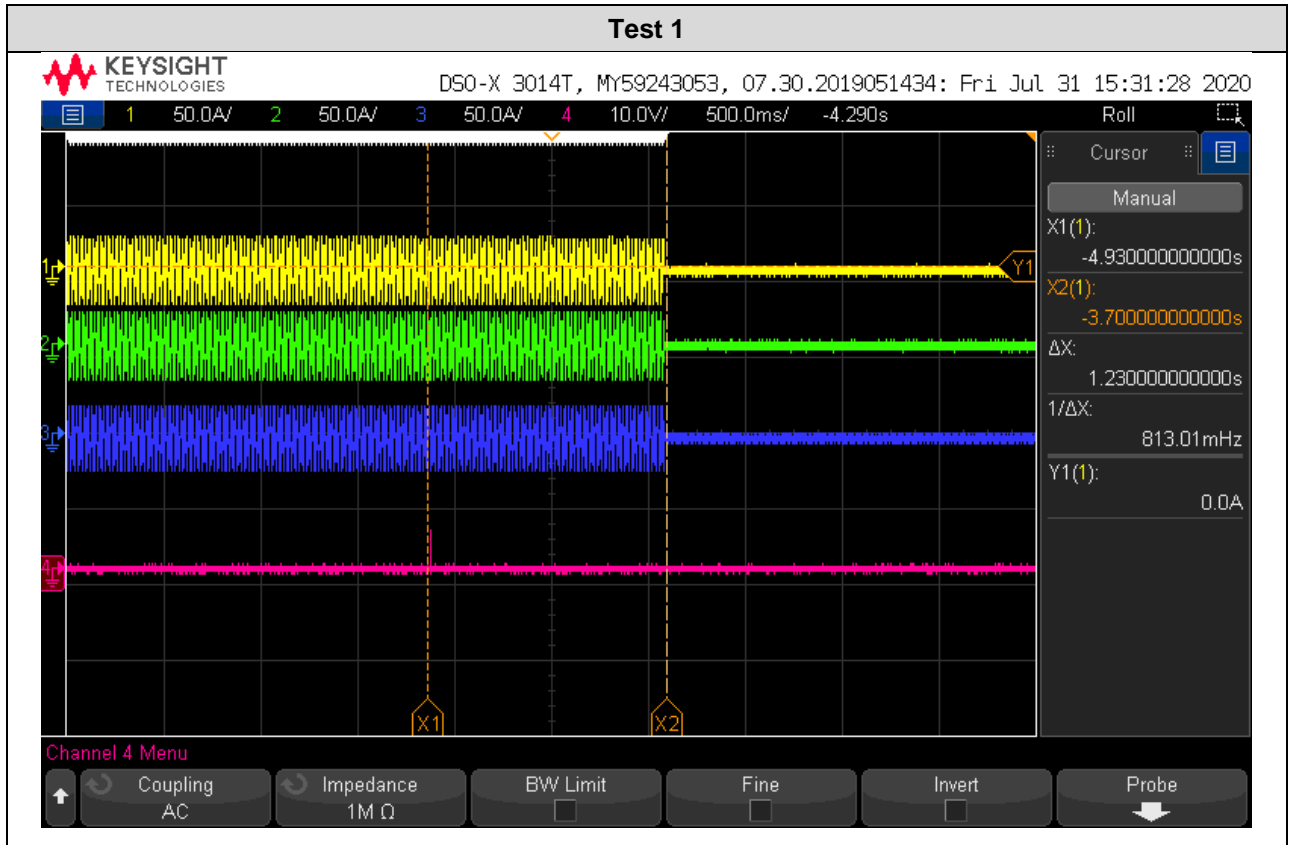
Zoom In



4.4 ACTING IN CASE OF LOSS OF COMMUNICATIONS

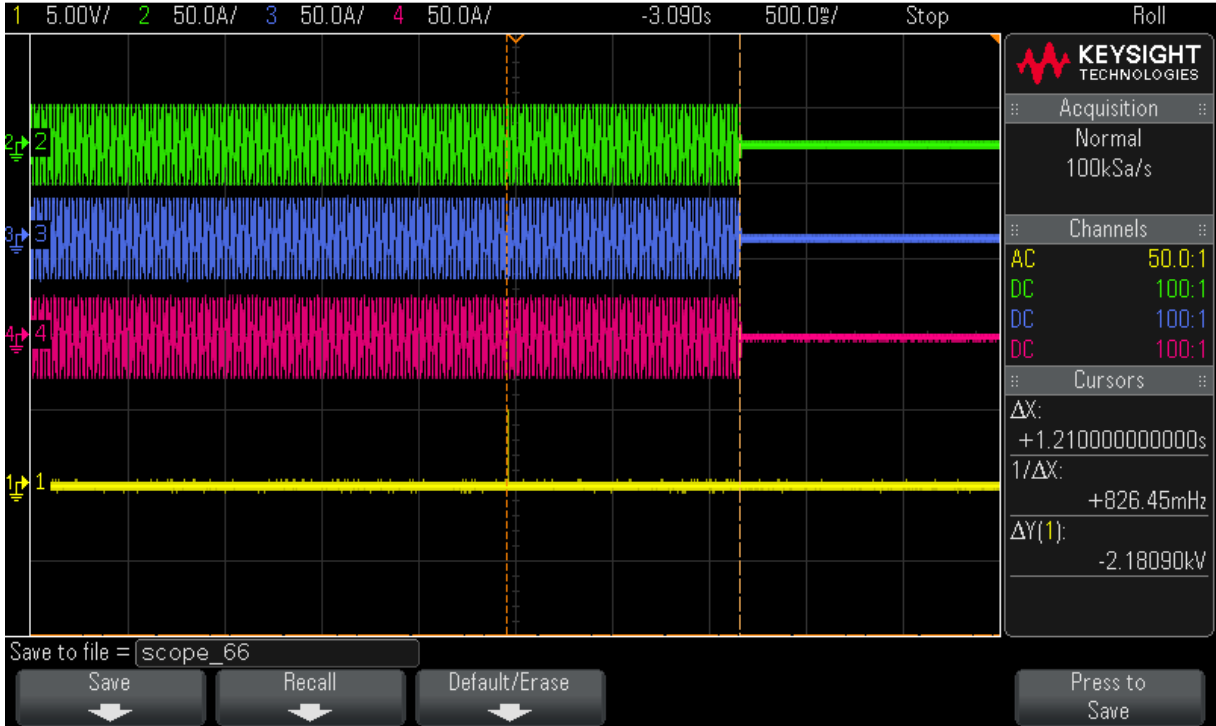
This test have been carried out in accordance with paragraph 5.4 of UNE 217001:2015 IN (section I.3.4 of ITC-BT-40).

Type 1: With energy meter DTSU666							
Test No.	Required Load (% Pn)	Measurement Load (% Pn)	Final Power Required (% Pn)	Final Power Measure (% Pn)	Stabilization time(s)	Time limit(s)	Disconnect Yes or No
1	60-70	66.4	0	0.0	1.23	2.0	Yes
2	60-70	67.5	0	0.0	1.21		Yes
3	60-70	67.7	0	0.0	1.22		Yes



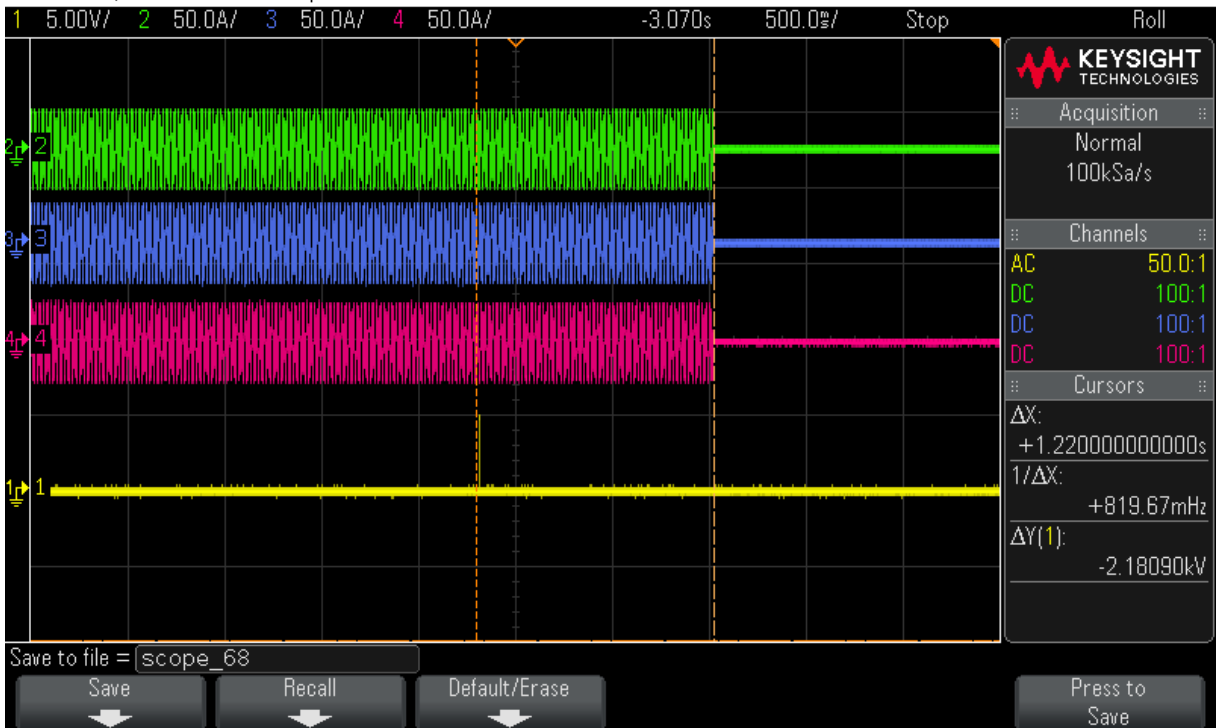
Test 2

DSO-X 3014A, MY58101647: Wed Sep 16 19:48:02 2020



Test 3

DSO-X 3014A, MY58101647: Wed Sep 16 19:55:14 2020



Type 2: With energy meter ACR10R-D24TE4

Test No.	Required Load (% Pn)	Measurement Load (% Pn)	Final Power Required (% Pn)	Final Power Measure (% Pn)	Stabilization time(s)	Time limit(s)	Disconnect Yes or No
1	60-70	67.5	0	0.0	1.21	2.0	Yes
2	60-70	67.7	0	0.0	1.23		Yes
3	60-70	67.9	0	0.0	1.23		Yes

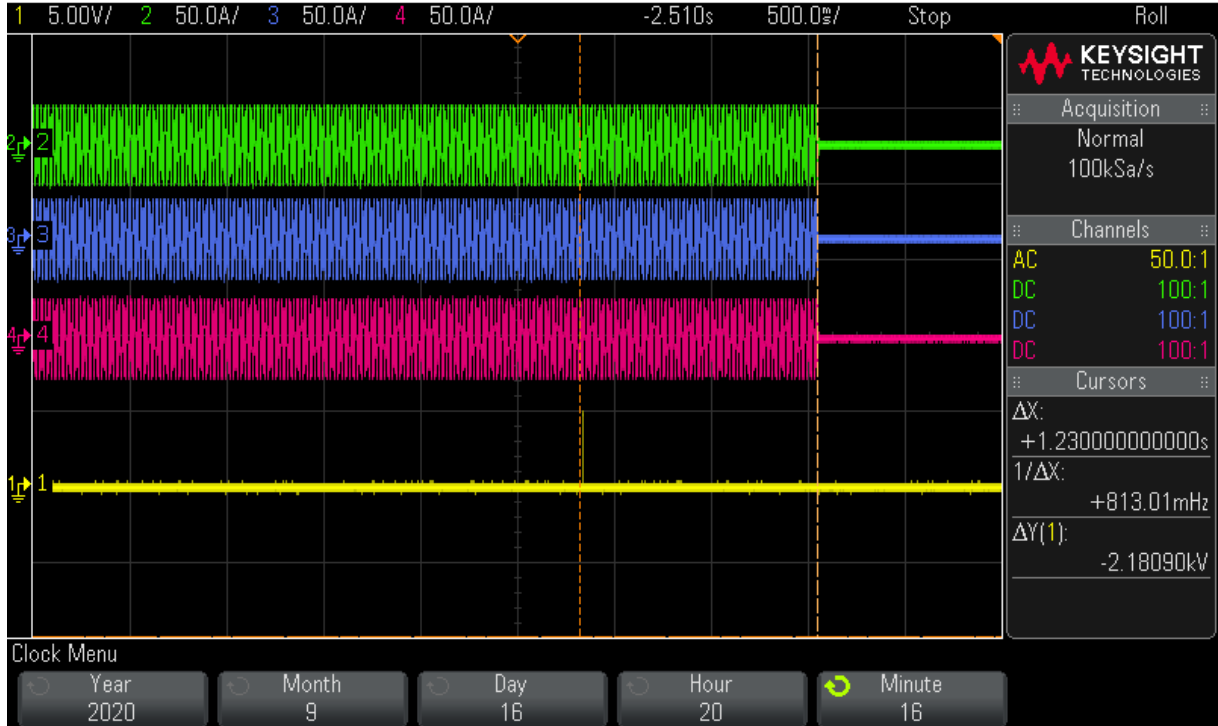
Test 1

DSO-X 3014A, MY58101647: Wed Sep 16 20:10:54 2020



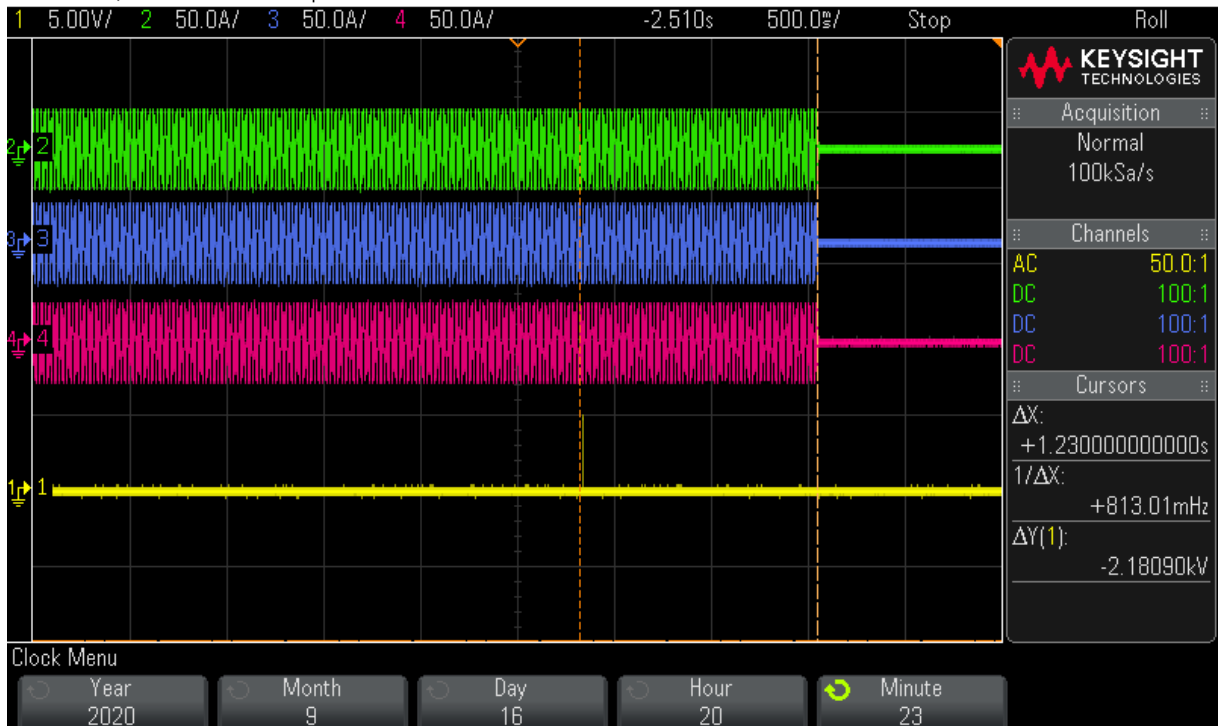
Test 2

DSO-X 3014A, MY58101647: Wed Sep 16 20:16:53 2020



Test 3

DSO-X 3014A, MY58101647: Wed Sep 16 20:23:53 2020



4.5 MAXIMUM NUMBER OF INVERTERS.

The requirement has been carried out in accordance with paragraph 5.5 of UNE 217001:2015 IN (section I.3.4 of DR 244/2019).

From the requirement of manufacturer, every inverter shall connect an energy meter. The inverters not allowed to work in parallel without energy meter.

So, this clause is not applicable.

5 PHOTOS

Models: HYD 10KTL-3PH, HYD 15KTL-3PH, HYD 20KTL-3PH

Front view



Models: HYD 5KTL-3PH, HYD 6KTL-3PH, HYD 8KTL-3PH

Front view



Energy meter DTSU666



Energy meter DTSU666 ratings and Serial number



Energy meter DTSU666 with CT



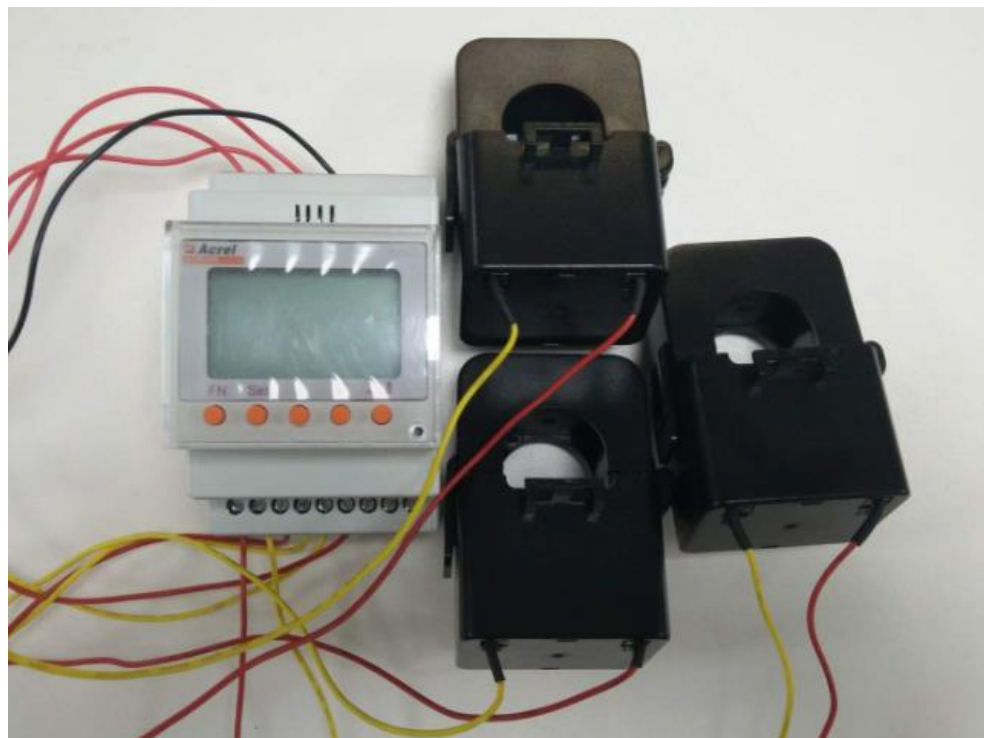
Energy meter ACR10R-D24TE4



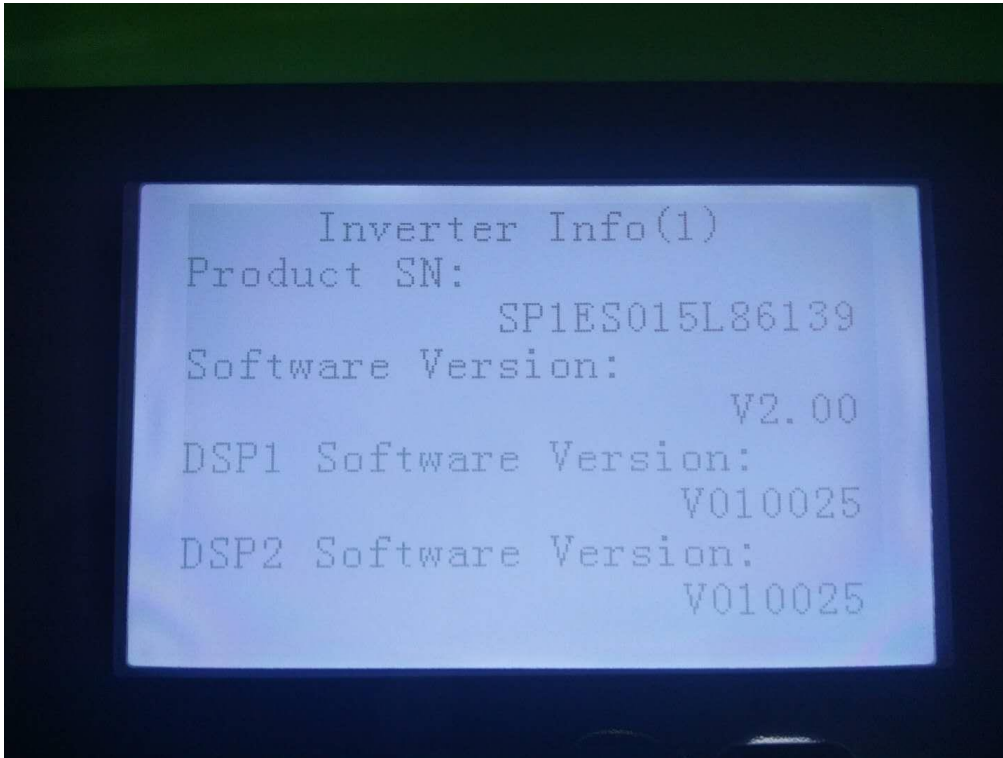
Energy meter ACR10R-D24TE4 ratings and Serial number



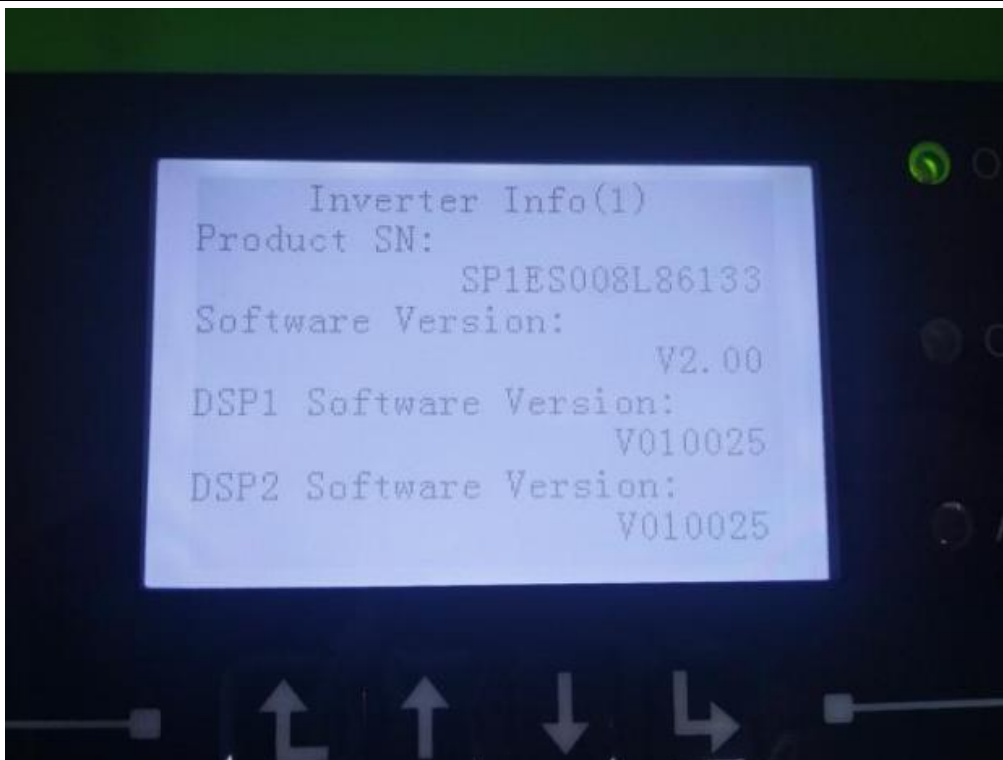
Energy meter ACR10R-D24TE4 with CT



PCS Software version and serial number
Configured for Models: HYD 10KTL-3PH, HYD 15KTL-3PH, HYD 20KTL-3PH



PCS Software version and serial number
Configured for Models: HYD 5KTL-3PH, HYD 6KTL-3PH, HYD 8KTL-3PH



6 ELECTRICAL SCHEME

