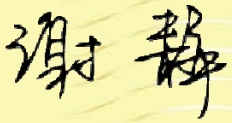
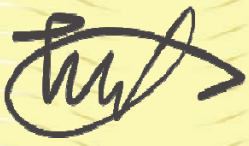
IEEE1547 TYPE TEST VERIFICATION REPORT

Type Tested reference number		GW12KLV-DT, GW15KLV-DT	
System supplier name		Jiangsu GoodWe Power Supply Technology Co.,Ltd.	
Address		NO.189 Kun Lun Shan Road, Suzhou New District, Jiangsu,china	
Tel	+86 512 6239 7998	**Fax**	+86 512 6239 7972
E:mail	service@goodwe.com.cn	**Web site**	http://www.goodwe.com.cn
Maximum export capacity, use separate sheet if more than one connection option.	GW12KLV-DT	**11.3**	**kW for 208V three phase**
		12	**kW for 220V three phase**
		13	**kW for 240V three phase**
	GW15KLV-DT	**14.2**	**kW for 208V three phase**
		15	**kW for 220V three phase**
		16	**kW for 240V three phase**

System supplier declaration.

- I certify on behalf of the company named above as a supplier of a Generating Unit, that all products supplied by the company with the above Type Test reference number will be manufactured and tested to ensure that they perform as stated in this document, prior to shipment to site and that no site modifications are required to ensure that the product meets all the requirements of IEEE1547.

Signed		On behalf of	

Over-/under-voltage tests (for 208Vac)

	Over-voltage1		Over-voltage2		Under-voltage1		Under-voltage2	
Parameter	Voltage	Disconnection time	Voltage	Disconnection time	Voltage	Disconnection time	Voltage	Disconnection time
Protection limit	105.6V	2s	60V	0.16s	132V	1s	144V	0.16s
Actual setting	105.6V	1.83s	60V	0.117s	132V	0.916s	144V	0.117s
Trip value(test result)	105.3V	1.838s	60.2V	0.122s	131.9V	0.92s	143.8V	0.118s

Reconnection Test (for 208Vac)

Conditions	105V	107V	126V	128V
Reconnection	☐Yes/ ☒No	☒Yes/ ☐No	☒Yes/ ☐No	☐Yes/ ☒No
Time [s]	N/A	325s	325s	N/A

Over-/under-voltage tests (for 220Vac)

	Over-voltage1		Over-voltage2		Under-voltage1		Under-voltage2	
Parameter	Voltage	Disconnection time	Voltage	Disconnection time	Voltage	Disconnection time	Voltage	Disconnection time
Protection limit	111.8V	2s	63.5V	0.16s	139.7V	1s	152.4V	0.16s
Actual setting	111.8V	1.83s	63.5V	0.117s	139.7V	0.916s	152.4V	0.117s
Trip value(test result)	111.5V	1.838s	63.8V	0.14s	139.9V	0.918s	152.5V	0.136s

Reconnection Test (for 220Vac)				
Conditions	111V	113V	133V	135V
Reconnection	☐Yes/ ☒No	☒Yes/ ☐No	☒Yes/ ☐No	☐Yes/ ☒No
Time [s]	N/A	326s	328s	N/A

Over-/under-voltage tests (for 240Vac)								
	Over-voltage1		Over-voltage2		Under-voltage1		Under-voltage2	
Parameter	Voltage	Disconnection time	Voltage	Disconnection time	Voltage	Disconnection time	Voltage	Disconnection time
Protection limit	122V	2s	69.3V	0.16s	152.5V	1s	166.2V	0.16s
Actual setting	122V	1.83s	69.3V	0.117s	152.5V	0.916s	166.2V	0.117s
Trip value(test result)	122.1V	1.84s	69.38V	0.13s	152.3V	0.92s	166V	0.12s

Reconnection Test (for 240Vac)				
Conditions	121.5V	123.5V	145.5V	147.5V
Reconnection	☐Yes/ ☒No	☒Yes/ ☐No	☒Yes/ ☐No	☐Yes/ ☒No
Time [s]	N/A	325s	326s	N/A

Over-/under-frequency tests				
	Over- frequency		Under- frequency	
Parameter	Frequency	Disconnection time	Frequency	Disconnection time
Protection limit	60.5Hz	0.16s	59.3Hz	0.16s
Actual setting	60.5 Hz	0.16s	59.3 Hz	0.16s

Trip value(test result)	60.5Hz	0.125s	59.3Hz	0.14s

Reconnection Test (for frequency)				
Conditions	59.25	59.35	60.45	60.55
Reconnection	☐Yes/ ☒No	☒Yes/ ☐No	☒Yes/ ☐No	☐Yes/ ☒No
Time [s]	N/A	326s	328s	N/A

Synchronization			
Grid Voltage	Before inverter on Grid	After inverter on Grid	Fluctuation Limit (5%)
Recorded value	120.16V	120.11V	0.04%

Island Test.(limit 2s)										
Value	100% P			66% P			33% P			Unit
V	120			120			120			V
P	15000			9900			4950			W
f	60			60			60			Hz
Qf	1			1			1			---
R	3.926	3.526	2.726	5.286	5.186	4.786	5.56	5.45	5.45	Ω
L	9.296	8.896	9.496	8.1	8.1	8.1	7.16	7.15	7.1	mH
C	2.88	2.88	3.08	3.98	3.98	3.98	5.32	5.1	5.1	uF
L+5%	23.6			67.6			50.8			ms
L+4%	29.6			56.4			55.2			ms
L+3%	44			64.4			62.8			ms
L+2%	48.4			63.6			68.4			ms

L+1%	34.4	73.6	86	ms
L	60.4	103.2	66.8	ms
L-1%	58.8	94.8	78.4	ms
L-2%	55.6	80	72.4	ms
L-3%	72.4	79.2	106.8	ms
L-4%	101.2	74.4	86.4	ms
L-5%	62.8	77.6	76.4	ms

DC injection test.									
Test power level	10%			55%			100%		
Recorded value in Amps	-0.130	0.135	0.129	0.073	0.073	-0.062	0.029	-0.059	0.05
as % of rated AC current	0.31%	0.32%	0.31 %	0.18 %	0.17%	0.15%	0.07 %	0.14%	0.12 %
Limit	0.5%			0.5%			0.5%		

Harmonic test							
Harmonic	45-55% of rated output			100% of rated output			Limit
Order	L1	L2	L3	L1	L2	L3	phase
2	0.499	0.277	0.542	0.305	0.391	0.408	1
3	0.174	0.186	0.113	0.229	0.207	0.160	4
4	0.264	0.259	0.302	0.187	0.207	0.203	1
5	0.474	0.538	0.448	0.351	0.286	0.274	4
6	0.078	0.079	0.051	0.110	0.109	0.077	1
7	0.622	0.608	0.586	0.335	0.331	0.311	4
8	0.031	0.040	0.041	0.073	0.061	0.054	1
9	0.036	0.051	0.031	0.071	0.066	0.053	4

10	0.071	0.049	0.071	0.058	0.072	0.061	1
11	0.458	0.446	0.479	0.193	0.193	0.218	2
12	0.046	0.042	0.029	0.058	0.054	0.041	0.5
13	0.366	0.355	0.399	0.156	0.168	0.182	2
14	0.083	0.093	0.039	0.074	0.076	0.045	0.5
15	0.036	0.040	0.023	0.042	0.046	0.035	2
16	0.054	0.070	0.037	0.055	0.045	0.036	0.5
17	0.354	0.354	0.336	0.223	0.217	0.206	1.5
18	0.025	0.056	0.050	0.050	0.035	0.038	0.375
19	0.331	0.347	0.363	0.167	0.159	0.162	1.5
20	0.056	0.080	0.035	0.052	0.044	0.028	0.375
21	0.025	0.029	0.029	0.026	0.029	0.026	1.5
22	0.059	0.057	0.031	0.043	0.044	0.027	0.375
23	0.376	0.365	0.376	0.156	0.157	0.159	0.6
24	0.023	0.028	0.031	0.028	0.031	0.033	0.15
25	0.240	0.229	0.266	0.119	0.125	0.133	0.6
26	0.076	0.084	0.068	0.047	0.052	0.043	0.15
27	0.027	0.044	0.025	0.033	0.027	0.024	0.6
28	0.052	0.066	0.043	0.042	0.036	0.031	0.15
29	0.173	0.176	0.151	0.177	0.177	0.161	0.6
30	0.020	0.025	0.024	0.028	0.027	0.028	0.15
31	0.122	0.124	0.139	0.103	0.096	0.104	0.6
32	0.029	0.035	0.025	0.035	0.037	0.039	0.15
33	0.017	0.024	0.016	0.028	0.024	0.021	0.6

34	0.047	0.038	0.038	0.024	0.023	0.021	0.15
35	0.246	0.241	0.227	0.103	0.109	0.099	0.3
36	0.017	0.018	0.020	0.019	0.020	0.019	0.075
THD	1.407	1.355	1.407	0.926	0.934	0.895	5

Additional comments
GW12KLV-DT is similar to GW15KLV-DT in circuit and construction except for output rating of current and power. The test result can refer to GW15KLV-DT .