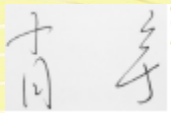


Declaration of EN50438 for Ireland

Micro-generator details

MICRO-GENERATOR Type reference	GW3048-EM	GW3648-EM	GW5048-EM
rated continuous rating	3000W	3680W	5000W
Manufacturer	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		
Technical file reference No.	2017121402		

Test details

Test house detail	Jiangsu GoodWe Power Supply Technology Co.,Ltd.
Telephone number	+86 512 6239 7998
E-mail address	service@goodwe.com
Date of test	2017-12-14
Name of test engineer	Yu Xiao
Signature of test engineer	

Type testing result

Over-/under-frequency tests

	Over-frequency		Under-frequency	
Parameter	Frequency	Disconnection time	Frequency	Disconnection time
Protection limit (FROM Table 4 or Annex A)	50.5Hz	0.5s	48Hz	0.5s
Actual setting (as applied to interface protection)	50.5Hz	0.06s	48Hz	0.06s
Trip value(test result)	50.6Hz	0.443s	48Hz	0.438s

Over-/under-voltage tests (single stage protection)

	Over-voltage		Under-voltage	
Parameter	Voltage	Disconnection time	Voltage	Disconnection time
Protection limit (from Table 4 or Annex A)	253V	0.5s	207V	0.5s
Actual setting (as applied to interface protection)	253V	0.42s	207V	0.42s
Trip value(test result)	254V	0.433s	206V	0.442s

LoM test

	Min.	Medium	Max.
Output power level	33%	66%	100%
Trip setting clearance time	2s	2s	2s
Trip value clearance time	0.116s	0.098s	0.128s

Type testing of a micro-generator

Operating Range

Test sequence	Voltage	Frequency	Output power	Primary power source
Test 1	207V	48Hz	4720W	DC source
Test 2	253V	50.5Hz	4953W	DC source

Active power at under-frequency

Test sequence	Output Power	Frequency	Primary power source
Test a)	4947W	50.00Hz	DC source
Test b)	4952W	49.55Hz	DC source
Test c)	/	/	/

aPower response to over-frequency

Test sequence at power level >80%	Out Power	Frequency	Primary Power source	Power gradient
Step a)	4947W	50Hz	DC source	/
Step b)	4950W	50.2Hz	DC source	/
Step c)	4526W	50.4 Hz	DC source	42.8%PM/Hz
Step d)	4308W	50.5Hz	DC source	44.0%PM/Hz
Step e)	4528W	50.4 Hz	DC source	/
Step f)	4947W	50.2 Hz	DC source	/
Step g)	4949W	50 Hz	DC source	/

Test sequence at power level 40%-60%	Out Power	Frequency	Primary Power source	Power gradient
Step a)	2481W	50Hz	DC source	/
Step b)	2480W	50.2Hz	DC source	/
Step c)	2067W	50.4 Hz	DC source	41.7%PM/Hz
Step d)	1852W	50.5Hz	DC source	43.4%PM/Hz
Step e)	2069W	50.4 Hz	DC source	/
Step f)	2478W	50.2 Hz	DC source	/
Step g)	2481W	50 Hz	DC source	/

Reactive power

Uncontrollable reactive power

	Power factor		
Limit	+0.95-0.95 at three voltage levels and four power levels		
	210 V	230 V	250 V
20% of nominal active power	0.988	0.985	0.978
50% of nominal active power	0.996	0.997	0.997
75% of nominal active power	0.995	0.996	0.997
100% of nominal active power	0.994	0.995	0.996

Controllable reactive power

Test sequence start of generation	Output power (S)	Active power	Power Factor	Set reactive power	Measured reactive power	Tolerance ($\pm 5\%$)
0%	259W	56W	0.212	2400	254W	/
10%	2542W	403W	0.158	2400	2510W	2.2%
20%	2639W	881W	0.334	2400	2487W	1.7%
30%	2844W	1431W	0.503	2400	2456W	1.1%
40%	3083W	1903W	0.617	2400	2427W	0.5%
50%	3404W	2431W	0.714	2400	2382W	-0.3%
60%	3743W	2926W	0.782	2400	2336W	-1.3%
70%	4112W	3427W	0.833	2400	2274W	-2.5%
80%	4508W	3929W	0.871	2400	2217W	-3.7%
90%	4832W	4320W	0.894	2400	2168W	-4.6%
100%	4833W	4321W	0.894	2400	2163W	-4.7%

Connection and starting to generate electrical power

Test sequence after trip	connection	Connection allowed	Primary power source	Power gradient after connection
Step a)	47.95Hz	No	DC source	
Step b)	48.05 Hz	Yes	DC source	10%Pn/min
Step c)	50.55 Hz	No	DC source	
Step d)	50.45Hz	Yes	DC source	10%Pn/min

Step e)	205V	No	DC source	
Step f)	209V	Yes	DC source	10%Pn/min
Step g)	255V	No	DC source	
Step h)	251V	Yes	DC source	10%Pn/min

NOTE 1 It is sufficient to evaluate the power gradient after connection only at one test out of b),d),f),h).

Short-circuit current parameters

Parameter	Symbol	Time after fault	Volts	Amps
Peak short-circuit current	/	20ms	-6.9V	2.7A
Initial value of aperiodic component	/	100ms	-7.2V	-600mA
Initial symmetrical short-circuit current	/	250ms	-6.7V	-600mA
Decaying (aperiodic) component of short-circuit current	/	500ms	-7V	-600mA
Reactance/Resistance ratio of source	/	Time to trip	58ms	

Power quality

Harmonic current emission											
	Maximum permissible harmonic current as per EN 61000-3-2, Class A										
	Odd harmonics							Even harmonics			
Harmonic Order n	3	5	7	9	11	13	15≤n≤39	2	4	6	8≤n≤40
Limit	2.30	1.14	0.77	0.4	0.33	0.21	0.15(15/n)	1.08	0.43	0.3	0.23(8/n)
Test value	1.54	0.74	0.17	0.14	0.18	0.15	0.06	0.50	0.11	0.16	0.06

Voltage fluctuations and flicker					
	Maximum permissible flicker and voltage fluctuation as per En 61000-3-3				
Value	P_{st}	P_{lt}	$d(t) - 500ms$	d_c	d_{max}
Limit	1.0	0.65	3.3%	3.3%	4%
Test value	0.07	0.10	0.3%	0.41%	0.68%

Volt-watt response mode and Volt-var response mode are closed by default.

Comments

GW3048-EM and GW3648-EM is similar to GW5048-EM in circuit and construction except for output rating of current and power. The test result can refer to GW5048-EM.