

ΣΥΜΦΩΝΑ ΜΕ ΤΟ ΠΡΟΤΥΠΟ NF C 17-102

Η ΚΕΦΑΛΗ ΘΑ ΠΡΕΠΕΙ ΝΑ ΑΝΤΕΧΕΙ ΚΕΡΑΥΝΙΚΟ ΡΕΥΜΑ 100 ΚΑ 10/350 μ s

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L'échantillon doit être soumis trois fois à un courant d'essai donné dans le Tableau C.2. L'intervalle de temps entre chaque essai doit permettre à l'échantillon de se refroidir à la température ambiante.

Tableau C.2 – Valeur du courant I_{imp}

$I_{crête}$ (kA)	Q (A.s)	W/R (kJ/ Ω)
100	50	2 500

Une forme d'onde typique pouvant réaliser ces paramètres est l'onde 10/350. La relation entre $I_{crête}$, Q et W/R est donnée par les formules :

$$Q \text{ (As)} = 0,5 I_{crête} \text{ (kA)} \quad \text{(C.1)}$$

$$W/R \text{ (kJ}/\Omega) = Q^2 \text{ (As)} \quad \text{(C.2)}$$

Les tolérances sur la valeur crête du courant $I_{crête}$, la charge Q et l'énergie spécifique W/R sont :

- $I_{crête} \pm 10 \%$
- $Q \pm 20 \%$
- $W/R \pm 35 \%$



Ο ΣΥΓΚΕΚΡΙΜΕΝΟΣ ΤΥΠΟΣ ΚΕΦΑΛΗΣ ΕΧΕΙ ΠΕΡΑΣΕΙ ΜΕ ΕΠΙΤΥΧΙΑ ΤΗ ΔΟΚΙΜΗ ΑΝΤΟΧΗΣ ΣΕ ΡΕΥΜΑ > 175kA

6. Scheme and location of the arrangement used in the test

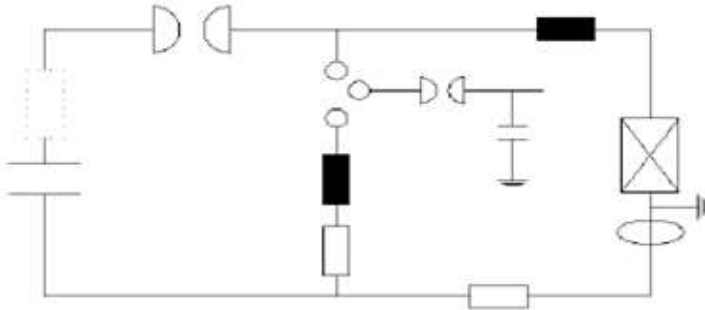


Figure 6.1. Scheme used for performing current test

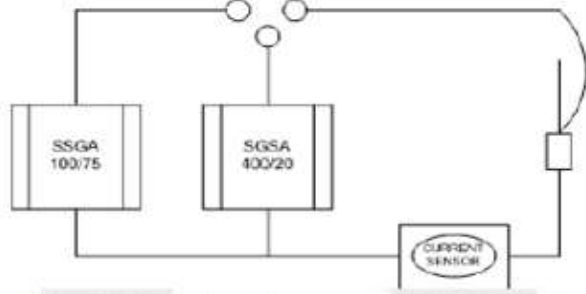


Figure 6.2. Localization of the arrangement in the current test

7. Results

7.1. Current test

	LRIC-IE14-2/1		
	I_{peak} (kA)	Q (A-s)	W/R (kJ/Ω)
Real	175	101	8818
Standard	200	100	10000
CC (%)	-12%	1%	-11%

Table 7.1.1. Peak currents, charge and specific energy for the three applied impulses

PASS CRITERIA	RESULT
The current recording doesn't reveal any indication of deterioration or perforation of the sample.	PASS
The visual inspection don't reveal any indication of deteriorations or perforation excepts the part that drain off the lightning current where traces of emissions and superficial fusion can appear.	PASS
The LR TESTER shows that the device is working properly after testing (PASS).	PASS

Table 7.1.2. Pass criteria for current test

TEST NUMBER: LRIC-IE14-2-2

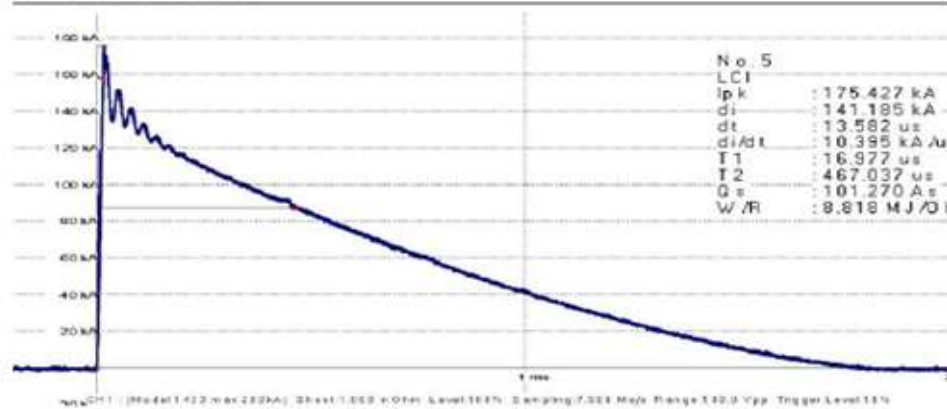


Figure 7.1.1. Current impulse to 200kA applied to the sample



Figure 7.1.2. State of the sample after the current test

3. General test description

3.1. Current test

One impulse at 200kA shall be applied to the sample, with a load of 100A-s and a specific energy of 10000kJ/Ω.

Pass Criteria:

- The current recordings and the visual inspection shall not reveal any indication of damage or perforation, except the parts that drain off the lightning current where traces of emission and superficial fusion can appear.
- The lightning rod shall be checked as it would be in the field as per manufacturer's maintenance plan

3. Opinions and interpretations

Not applicable.

10. General conditions

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Ο ΣΥΓΚΕΚΡΙΜΕΝΟΣ ΤΥΠΟΣ ΚΕΦΑΛΗΣ ΕΧΕΙ ΠΕΡΑΣΕΙ ΜΕ ΕΠΙΤΥΧΙΑ ΤΗ ΔΟΚΙΜΗ ΑΝΤΟΧΗΣ ΣΕ ΡΕΥΜΑ > 182kA

TEST NUMBER: LRIC-IE13-80-2

TEST NUMBER: LRIC-IE13-80-2

6. Scheme and location of the arrangement used in the test

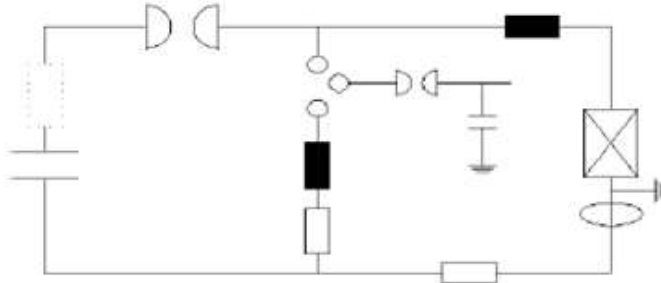


Figure 6.1. Scheme used for performing current test

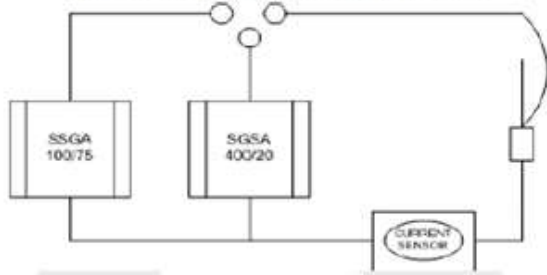


Figure 6.2. Localization of the arrangement in the current test

7. Results

7.1. Current test

LRIC-IE13-80/1			
	I_{peak} (kA)	Q (A·s)	W/R (kJ/Ω)
Real	182.90	98.40	8894
Standard	200.00	100.00	10000
CC (%)	-8.55%	-1.61%	-11%

Table 7.1.1. Peak currents, charge and specific energy for the three applied impulses

PASS CRITERIA	RESULT
The current recording doesn't reveal any indication of deterioration or perforation of the sample.	PASS
The visual inspection don't reveal any indication of deteriorations or perforation excepts the part that drain off the lightning current where traces of emissions and superficial fusion can appear.	PASS
The LR TESTER shows that the device is working properly after testing (PASS).	PASS

Table 7.1.2. Pass criteria for current test

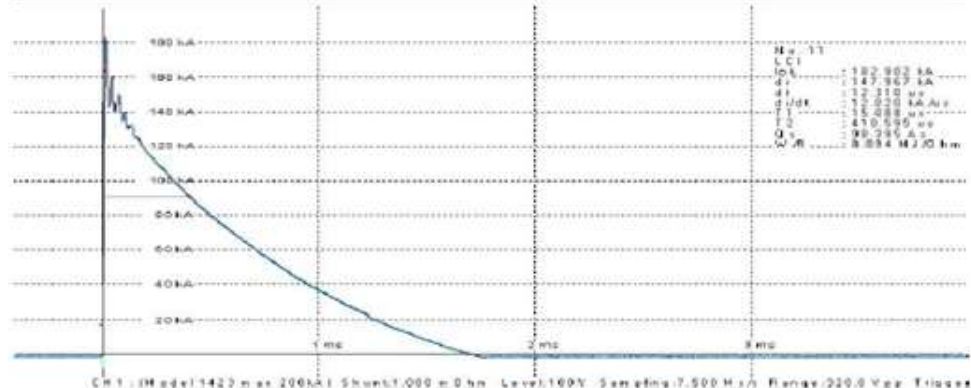


Figure 7.1.1. Current impulse to 200kA applied to the sample



Figure 7.1.2. State of the sample after the current test

8. General test description

8.1. Current test

One impulse at 200kA shall be applied to the sample, with a load of 100A·s and a specific energy of 10000kJ/Ω.

Pass Criteria:

- The current recordings and the visual inspection shall not reveal any indication of damage or perforation, except the parts that drain off the lightning current where traces of emission and superficial fusion can appear.
- The lightning rod shall be checked as it would be in the field as per manufacturer's maintenance plan

9. Opinions and interpretations

Not applicable.

10. General conditions

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TEST REPORT

Nº LRIC-IE14-2-2

DATE OF ISSUE:	06/11/2014
TESTING LABORATORY:	Lightning Research Institute of Catalonia
APPLICANT'S NAME:	Cirprotec, S.L. C/ Lepanto, 49 · 08223 · Terrassa (Barcelona) · Spain
TEST SPECIFICATION	
TEST:	Current test to 200kA
TEST METHODOLOGY:	UNE 21186: Protección contra el rayo: Pararrayos con dispositivo de cebado (2011). NF C 17-102: Protection contre la foudre: Systèmes de protection contre la foudre à dispositif d'amorçage (2011) PRLAB17 version 3.0.
OBJECT UNDER TEST	
TRADE MARK:	CPT
MANUFACTURER:	Cirprotec, S.L. C/ Lepanto, 49 · 08223 · Terrassa (Barcelona) · Spain
MODEL:	Nimbus 60 (complete description see page 2).

Test results contained in this report refer exclusively to the objects under test. Tests have been performed to one sample. Sample has been submitted to environmental treatment before testing.

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CONCLUSIONS

The sample has been submitted to one impulse to 200kA without showing any signal of damage or perforations of the sample, except the parts that drain off the lightning current where appear traces of emission and superficial fusion. After that, the device has been checked with the LR-TESTER with satisfactory results.



Bàrbara Vidal Jiménez
Technical Manager

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