CDVI
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COMPLIANCE ASSESMENT WITH DIRECTIVE 2014/30/EU

Equipment name:
Part number:

Test report no: CEM
RELEASE:0

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Contents

1 Purpose

The following test report presents all the results obtained at assesment test on .

2 List of standards and tests performed

Based on product standards :

EN 50130-4: 2011

Test standards:

EN 61000-4-2: 2009,
EN 61000-4-3: 2006 / A1 : 2008 / A2 : 2010,
EN 61000-4-4: 2012,
EN 61000-4-5: 2014 / A1 : 2017 ,
EN 61000-4-6: 2014,
EN 61000-4-11: 2004 / A1: 2017,
EN 55022:2010
EN 61000-3-2: 2014
EN 61000-3-3: 2013

Radio standards:

ETSI EN 301 489-1 (1.9.2),
ETSI EN 301 489-3 (2.1.1)

Tests	**Procedure**	**Severity of levels**	
Immunity tests			
1. Repetitive electrical fast transients	EN 61000-4-4	2 kV on main; 1 kV on other circuits	A
2. Surge immunity test	EN 61000-4-5	2kV on main; 1kV on other circuits	A
3. Electrostatic discharge	EN 61000-4-2	8kV on the air; 6kV contact	A
4. Radiated electromagnetic field	EN 61000-4-3	3V/m; 10V/m	A
5. Conducted disturbances	EN 61000-4-6	3V/m; 10V/m	A
6. Voltage dips and variations	EN 61000-4-11	60%, 200ms; 100%, 100ms	A
Emission measurements			
7. Radiated emissions	EN 55022	Within the limits	A
8. Conducted disturbances	EN 55022	Within the limits	A
Other emission measurements			
9. Harmonic current emissions	EN 61000-3-2	Within the limits	N/A
10. Voltage fluctuations and flicker	EN 61000-3-3	Within the limits	N/A

A: test case apply to the test object
N/A : test case does not apply to the test object
N/R : No performed

3 Description and features of the equipment under test

Voltage supply :
Consumption :
Electronic card release :

4 Wiring diagram

Montage.jpg

5 Test setup

6 Operating mode

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

7 Abbrevations used in this report

FC : Normal behavor
FI : Abnormal behavor
P: Pass

F : Fail

Behavor criteria:

1. normal behavor ;
2. Temporary deterioration or self-recovering loss of function when the disturbance is removed ;
3. Temporary deterioration or loss of function requiring a reset of the system or the intervention of an operator;
4. Temporary deterioration or loss of non-recoverable function due to damage.

8 Rapid transient immunity tests in bursts on supply circuits

Standard : EN 61000-4-4
Test equipment: Haefely PEFT Junior

8.1 Test conditions

See wiring diagram.
tm : 5ns
td : 50ns
Burts duration : 15ms
Period: 300ms
Test duration : 60s minimum

8.2 Test results

8.2.1 On power ports

Level	Voltage	Remark	Result	Verdict
1	+/- 0.5 kV	FC	1	C
2	+/- 1 kV	FC	1	C
3	+/- 2 kV	FC	1	C
X	+/- 3–4 kV	FC	1	C

8.2.2 On I/O signal, data and control ports

Level	Volatge	Remark	Result	Verdict
1	+/- 0.5 kV	FC	1	C
2	+/- 1 kV	FC	1	C
3	+/- 2 kV	FC	1	C
X	+/- 3 – 4 kV	FC	1	C

9 Rapid transient immunity tests in bursts on lines and terminals

Standard: EN 61000-4-4
Test equipment: Haefely PEFT Junior
Decoupling network: Haefely 093 506-1

9.1 Test conditions

See wiring diagram
Rising time: 5ns
Decreasing time: 50ns
Burst duration : 15ms
Period: 300ms
Test duration: 60s minimum

9.2 Test results

9.2.1 On I/O signal, data and control ports

Level	Voltage	remark	Behavor	Verdict
1	+/- 0.5 kV	FC	1	C
2	+/- 1 kV	FC	1	C
3	+/- 2 kV	FC	1	C
X	+/- 3 – 4 kV	FC	1	C

10 Surge test immunity on circuits

Standard : EN 61000-4-5
Test equipment:
Profline système SCHAFFNER
NSG 2050, PNW 2055
Surge wave : 8/20μs

10.1 Common mode test conditions

See wiring diagramm
Number of surges : 5 / phase angle
Delay beetween surges : 1 /mn
Source impedance : 12 Ohms
Coupling: L-PE; N-PE; L-N-PE

10.2 Test results

Class	Voltage	Remark	Result	Verdict
1	+/- 0.5 kV	FC	1	C
2	+/- 1 kV	FC	1	C
3	+/- 2 kV	FC	1	C
X	+/- 3 – 4 kV	FC	1	C

10.3 Differentiel mode test conditions

Nomber of surges : 5
Delay beetween surges: 1 /mn
Source impedance : 2 Ohms

10.4 Test results

Class	Voltage	Remark	Result	Verdict
1	+/- 0.5 kV	FC	1	C
2	+/- 1 kV	FC	1	C

11 Surge test immunity on on lines and terminals

Standard : EN 61000-4-5
Test equipment: Profline système SCHAFFNER
NSG 2050 / PNW 2055
Surge wave: 8/20μs
Coupling network CDN 117, INA 170, INA 2055

11.1 Test conditions

See wiring diagram
Number of surges: 5
Delay between surges : 1 min
Source impedance : 2 ohms
Common mode: 40 Ohms + 0,5μF

11.2 Surge test on lines and terminals

Class	Voltage	Remark	Result	Verdict
1	+/- 0.5 kV	FC	1	C
2	+/- 1 kV	FC	1	C
3	+/- 2 kV	FC	1	C
X	+/- 3 kV – 4kV	FC	1	C

12 Electrostatic discharge immunity tests

12.1 Indirect contact discharges

Standard : EN 61000-4-2
Test equipment : Haefely PSB 25B
Cd+Cs =150pF ; Rd=330 Ohms

12.1.1 Test conditions

See wiring diagram
10 contact discharges per point on the horizontal plane
10 contact discharges per point on vertical plane
For test points location, refer §20

12.1.2 Test results

Discharges on horizontal plane

Points	Voltage	Remark	Result	Verdict
1–4	+/- 4 kV	FC	1	C
1–4	+/- 5 kV	FC	1	C
1–4	+/- 6 kV	FC	1	C
1–4	+/- 8 kV	FC	1	C

Discharges on vertical plane

Points	Voltage	remark	Result	Verdict
1–4	+/- 4 kV	FC	1	C
1–4	+/- 5 kV	FC	1	C
1–4	+/- 6 kV	FC	1	C
1–4	+/- 8 kV	FC	1	C

12.2 Direct discharges

12.2.1 Test conditions

See wiring diagram
10 contact discharges per point
10 discharges per point in the air
For test points location, refer §20

12.2.2 Test results

Air discharges

Points	Voltage	Remark	Results	verdict
1 à 5	+/- 4 kV	FC	1	C
1 à 5	+/- 8 kV	FC	1	C
1 à 5	+/- 12 kV	FC	1	C
1 à 5	+/- 15 kV	FC	1	C

Contact discharges

Points	Voltage	Remark	Result	Verdict
1 à 5	+/- 4 kV	FC	1	C
1 à 5	+/- 5 kV	FC	1	C
1 à 5	+/- 6 kV	FC	1	C
1 à 5	+/- 8 kV	FC	1	C

13 Radiated, radio-frequency, electromagnetic field immunity test

Standard : EN 61000-4-3
Test equipment :
SML02 ROHDE & SCHWARZ AmplifierWA1000
Antenne AS2 ; probe PCB
Probe H-fied: PR 1000

13.1 Test conditions

See wiring diagram
Severity : 3V/m ou 10V/m
Frequency range: 30MHz à 1Ghz
Modulation: 80% 1kHz sinusoîdal

13.2 Test results

Level	Remark	Result	Verdict
3 V/m	FC	1	C
10V/m	FC	1	C

14 Immunity to conducted disturbances, induced by radio-frequency fields

Standard : EN 61000-4-6
Test equipment:
SML02 ROHDE & SCHWARZ Amplificateur MRF 80
Coupling network: CDN 1 et attenuator - 6 dB

14.1 Test conditions

See wiring diagram
Level : 140 dBμV / 10V rms ; 129.5 dBμV / 3V rms
Frequency range : balayage de 0.15 MHz à 80 MHz
Modulation: 80 % 1kHz sinusoîdal
Pulse modulation: 1Hz 0.5s ON; 0.5s OFF

14.2 test results

Level	Remark	Result	Verdict
140dBμV	FC	1	C

15 Voltage variations immunity tests

Standard : EN 61000-4-11
Test equipment: 108-TMX SCHAFFNER
Drived by: NSG 1006

15.1 Test conditions

See wiring diagram
Level: 230V +10%, 230 V - 15%

15.2 Test results

Level	Duration	Remark	Result	Verdict
+10%	10 s	FC	1	C
-15%	10 s	FC	1	C

16 Voltage dips, short interruptions immunity tests

Standard : EN 61000-4-11
Test equipment: 108-TMX SCHAFFNER
Drived by: NSG 1006

16.1 Test conditions

See wiring diagram
Applied on main supply voltage circuit
Duration of voltage shorts: 10 ; 20 ; 100 ; 200 ms
Duration of volatge dips: 10 ; 20 ; 100 ms
Number of voltage fluctuations: 3 /durée
Delay between fluctuations : 10s

16.2 Test results

Level	Duration	Remark	Result	Verdict
60%	0,5; 1;5;10 periods	FC	1	C
100%	0,5; 1; 5 periods	FC	1	C

17 Radiated emission measurements

Standard : EN 55022 Classe B
Test equipment: xxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxx

17.1 Test conditions

See wiring diagram
Bandwith : 120kHz
Frequency range : 30MHz – 1GHz

17.2 Test results

Level	Polarity	Remark	Verdict
Voir graphe	Horizontale	1	C
Voir graphe	Verticale	1	C

Measurements in horizontal polarity

ERH.png

Measurements in vertical polarity


ERV.png

18 Conducted emission measurements

Standard : 55022 Classe B
Test equipment: ********** **********

18.1 Test conditions

See wiring diagram
Bandwith: 9 kHz
Frequency range: 0.15 MHz – 30 MHz

18.2 Test results

Level	Polarity	Remark	Verdict
See graph	Phase	1	C
See graph	Neutral	1	C

Measurements on phase

ECL.png

Measurements on neutral

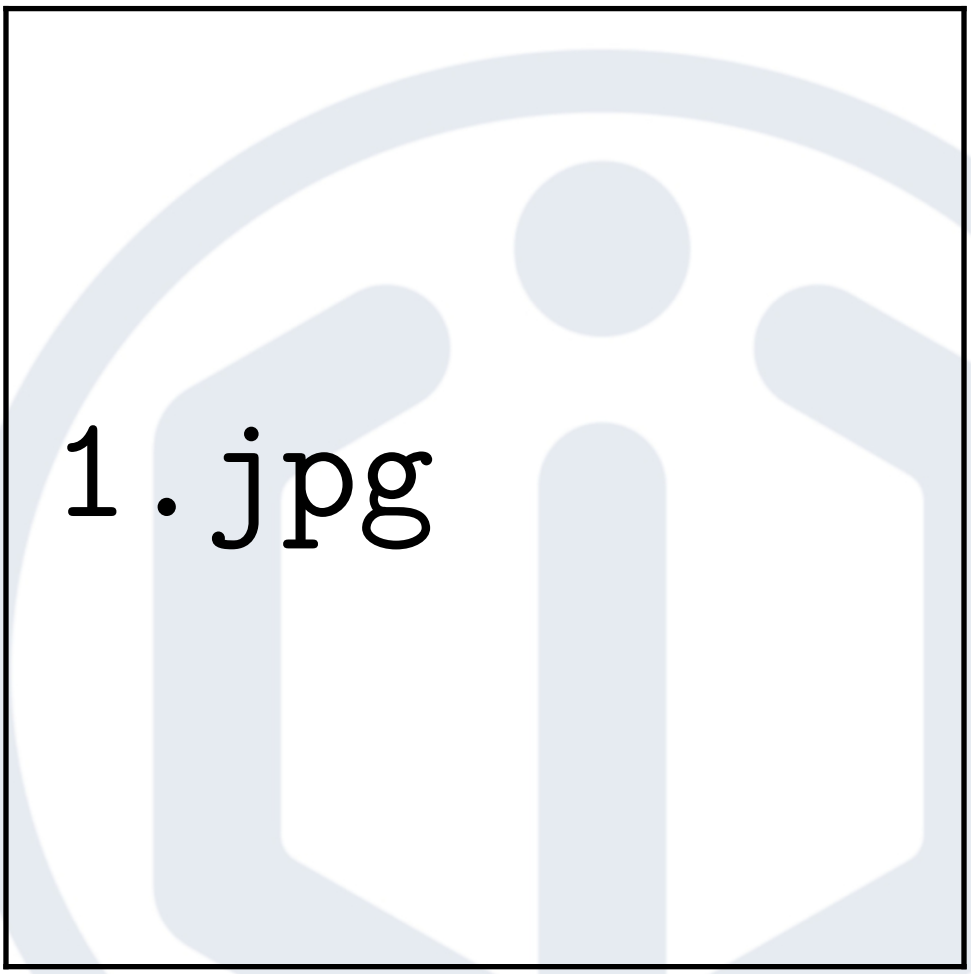

ECN.png

19 Summary of test results and compliance notice

Test	Procedure	Result
Immunity tests		
1. Repetitive electrical fast transients	EN 61000-4-4	C
2. Surge immunity test	EN 61000-4-5	C
3. Electrostatic discharge	EN 61000-4-2	C
4. Radiated electromagnetic field	EN 61000-4-3	C
5. Conducted disturbances	EN 61000-4-6	C
6. Voltage dips and variations	EN 61000-4-11	C
Emission measurements		
7. Radiated emissions	EN 55022	C
8. Conducted disturbances	EN 55022	C
Other emission measurements		
9. Harmonic current emissions	EN 61000-3-2	N/A
10. Voltage fluctuations and flicker	EN 61000-3-3	N/A

Le complies with european directive 2014/30/UE.

20 Internal and external photographs of the EUT




11.jpg

Fig 1 – Photos du clavier PROFIL100EC

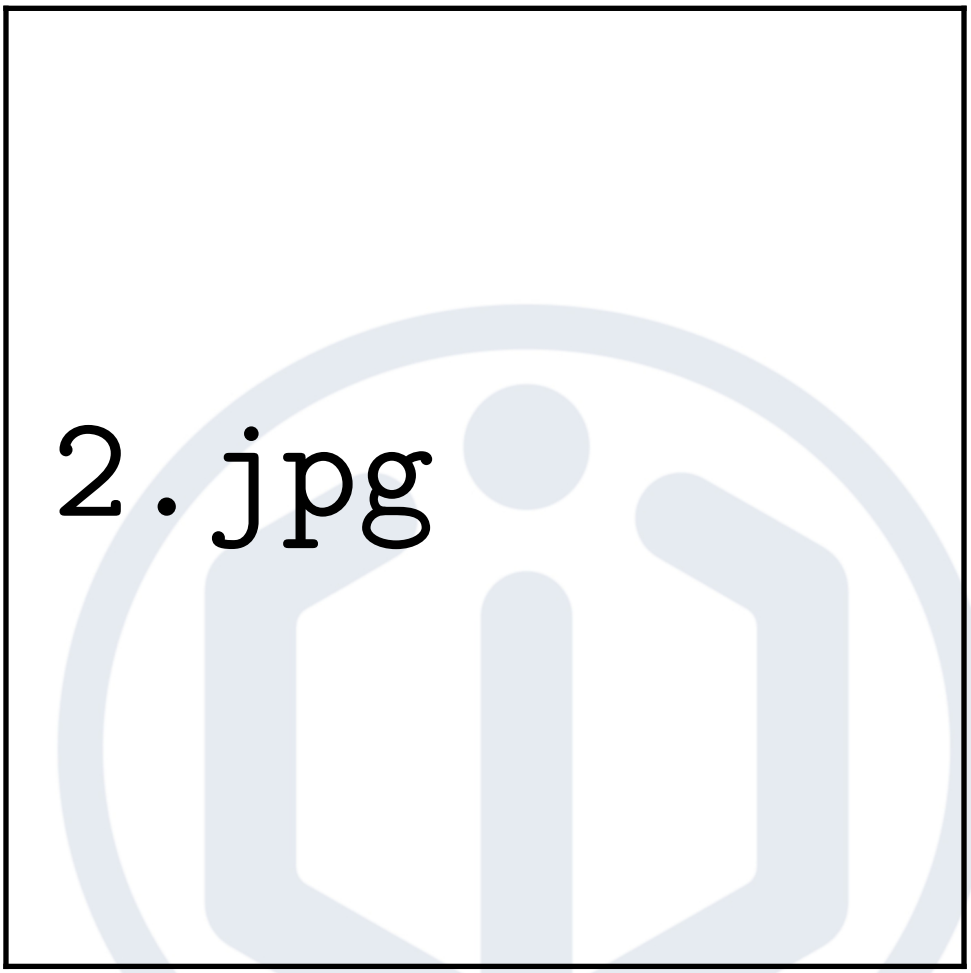


Fig 2 – Boitier électronique déporté

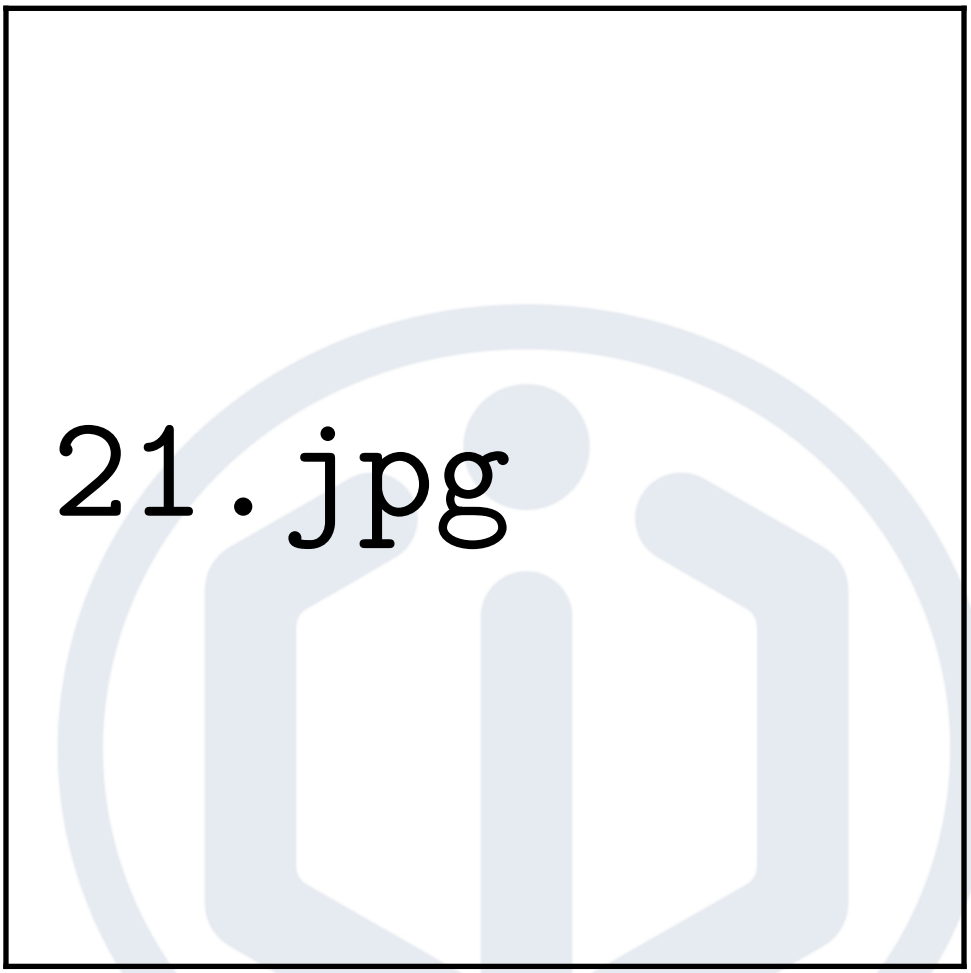


Fig 3 – Carte électronique dans le boitier déporté

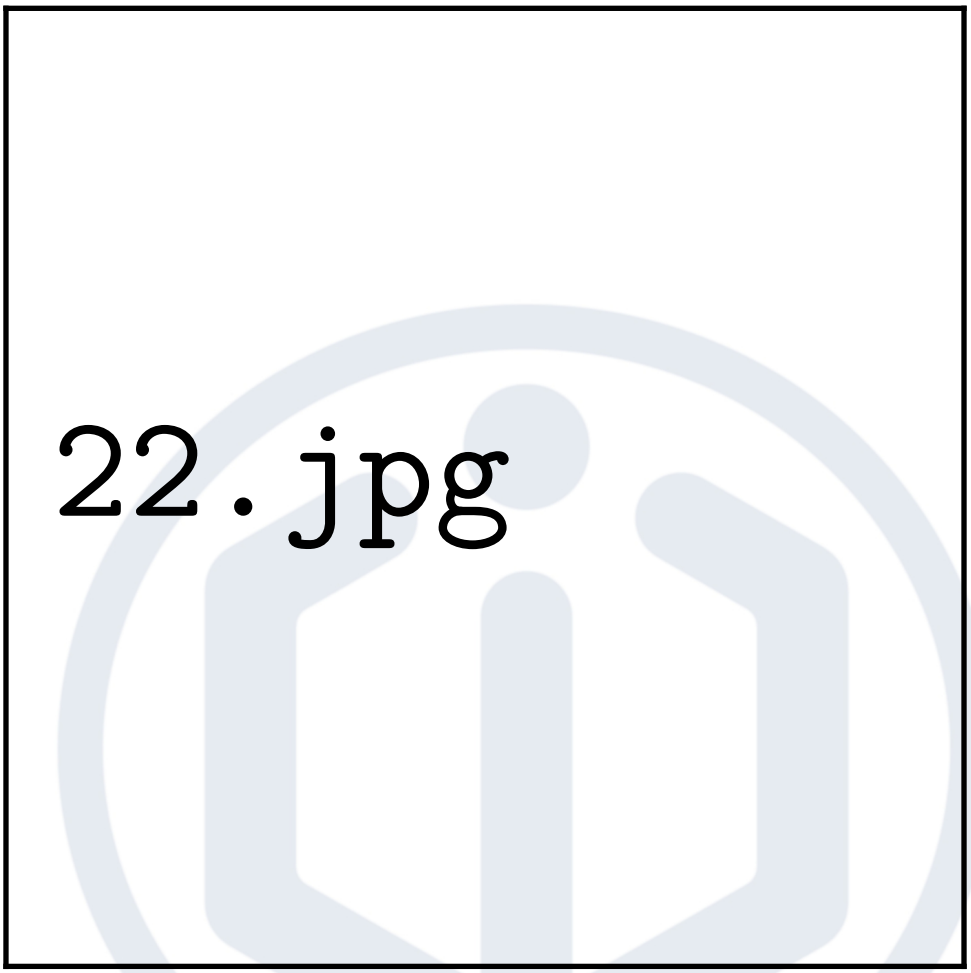


Fig 4 – Carte électronique face composants

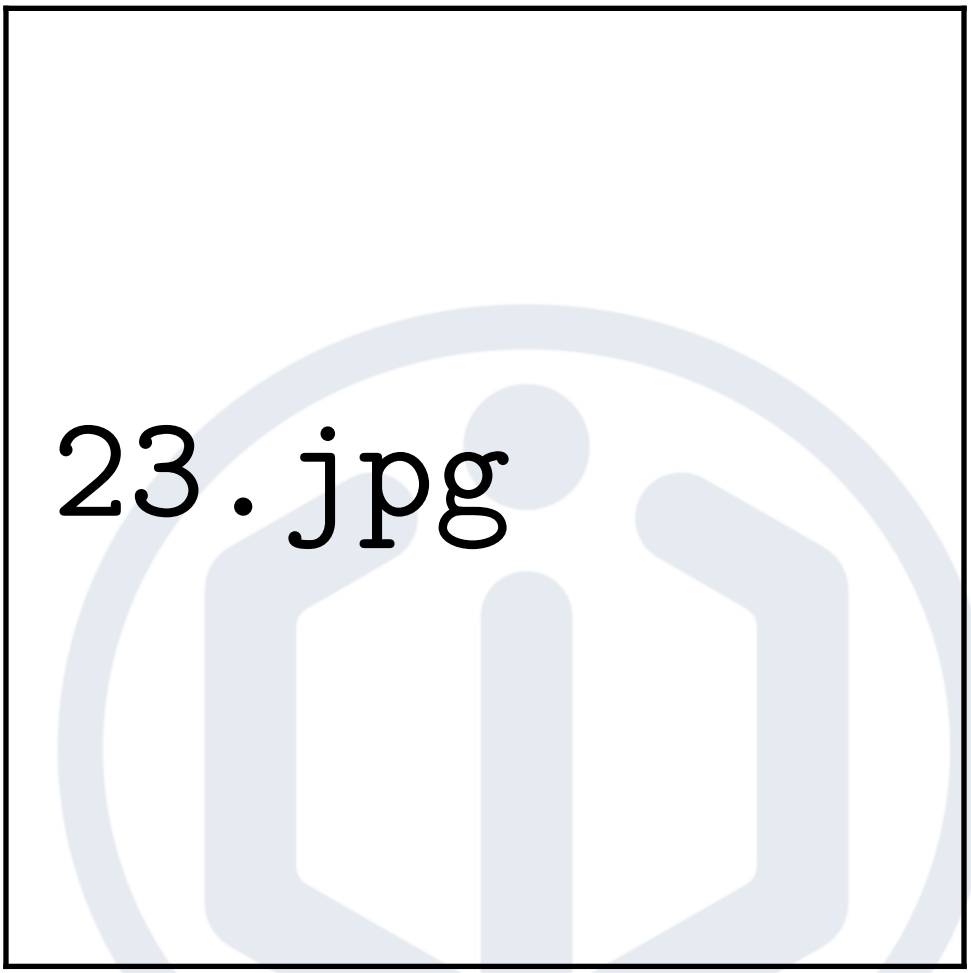


Fig 5 – Carte électronique face soudures

21 Test photographs

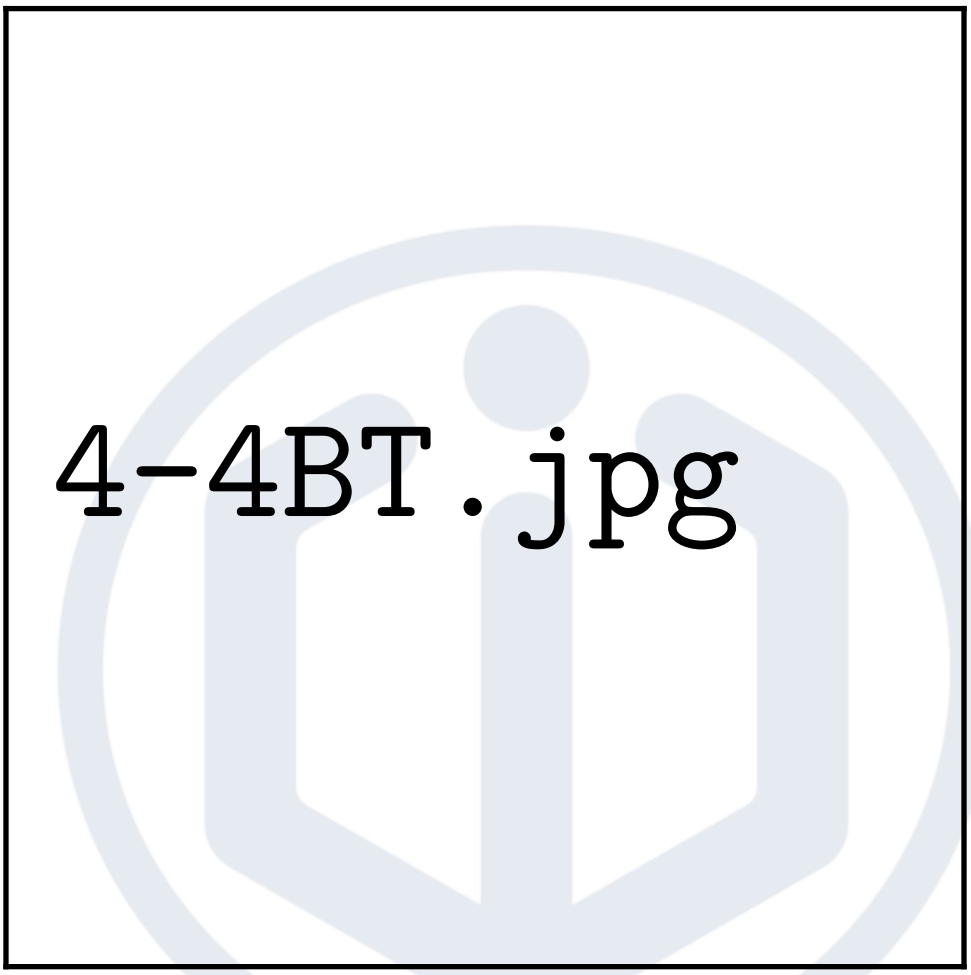


Fig 6 – Repetitive electrical fast transients test immunity on primary circuits

Fig 7 – Conducted emissions measurement

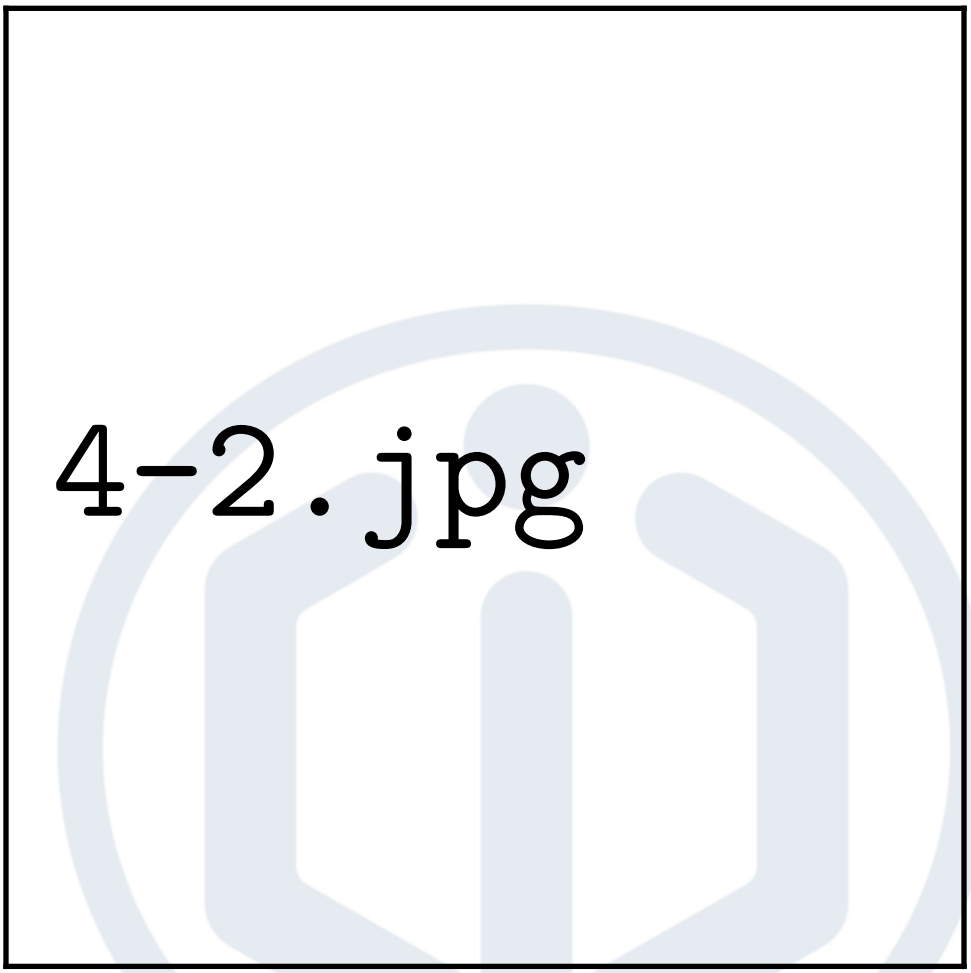


Fig 8 – Electrostatic discharge test immunity

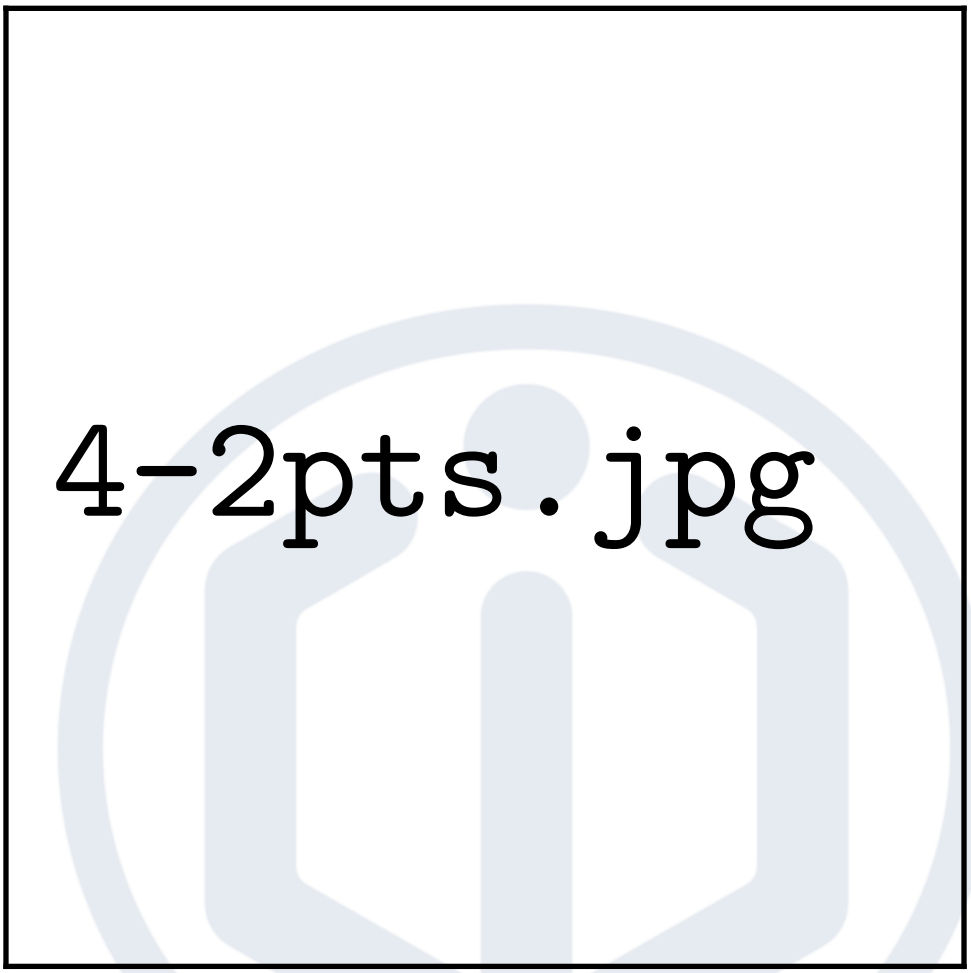


Fig 9 – Test points location for Electrostatic discharge test immunity

Fig 11 – Surge immunity test on I/O ports and terminals

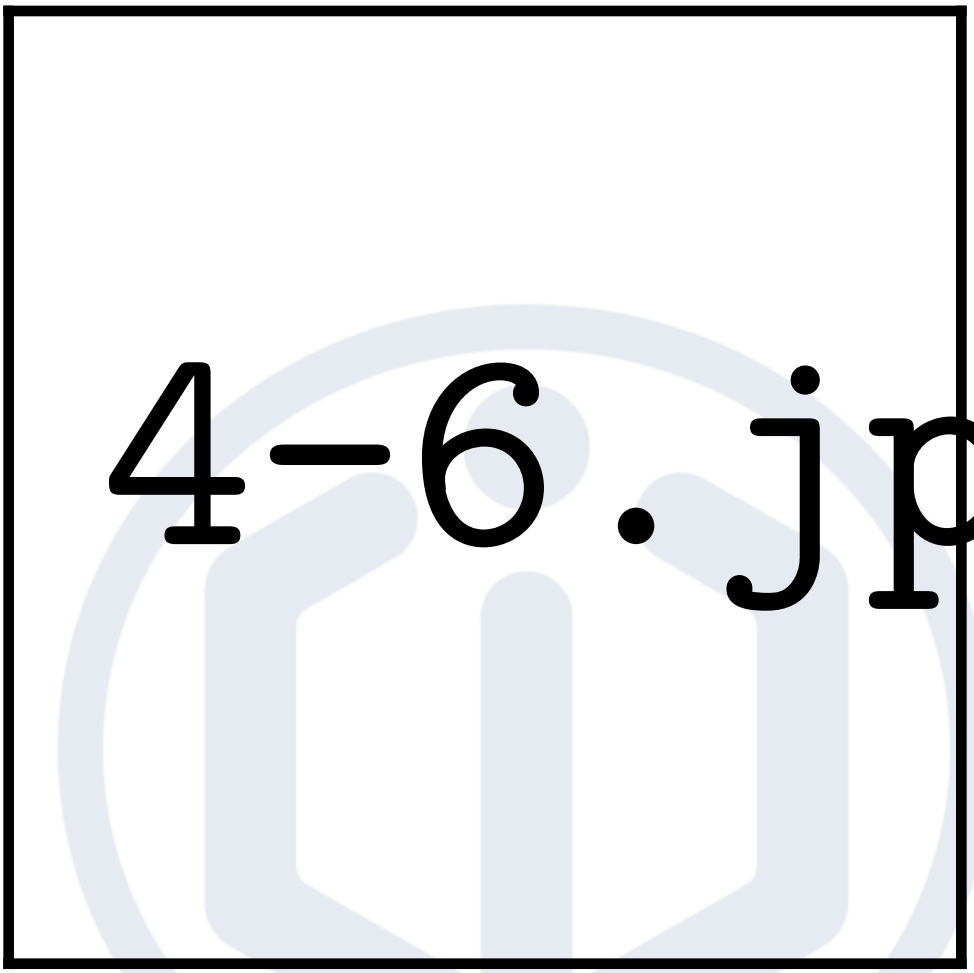


Fig 12 – Conducted disturbances, induced by radio-frequency fields immunity test

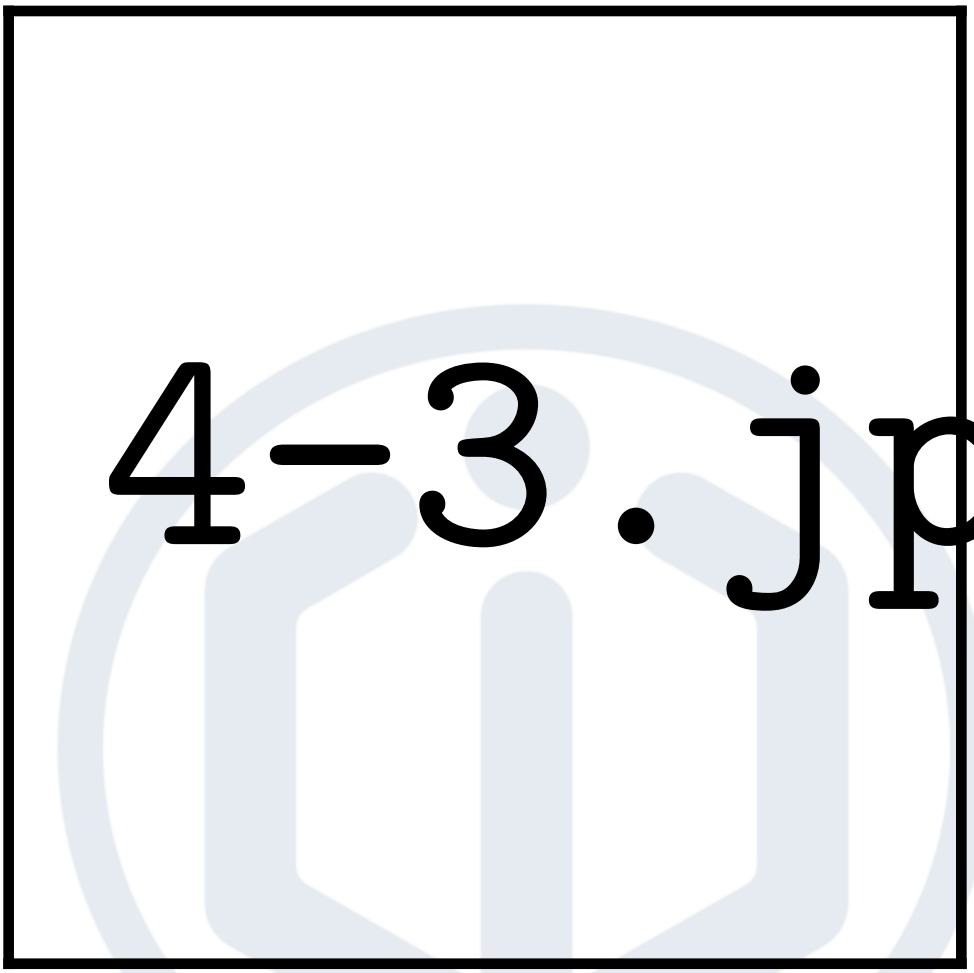


Fig 13 – Radiated, radiofrequency, electromagnetic field immunity test