FIRMADO por : JOSE MANUEL PRIETO BARRIO, SUBDIRECTOR / SUBDIRECTORA GENERAL de S.G. DE CALIDAD Y SEGURIDAD INDUSTRIAL (MINETUR). A fecha : 11/05/2016 19:23:03
Este documento se ha almacenado en el Archivo de Constancias Electrónicas (ARCE) del MINETUR, accesible desde www.minetur.gob.es/arce, con Código de Consulta y Verificación 3522016-10574507RKAIXVXIR9UB
El documento consta de un total de 3 folios. Folio 1 de 3.

MINISTERIO
DE INDUSTRIA, ENERGÍA
Y TURISMO

DIRECCIÓN GENERAL DE INDUSTRIA Y
DE LA PEQUEÑA Y MEDIANA EMPRESA

SUBDIRECCIÓN GENERAL DE
CALIDAD Y SEGURIDAD INDUSTRIAL

E 9

E9-10R-05.11257

Comunicación sobre/ *Communication concerning the:*

- homologación/ *approval granted*
- ~~ampliación de una homologación/ *approval extended*~~
- ~~denegación de una homologación/ *approval refused*~~
- ~~retirada de una homologación/ *approval withdrawn*~~
- ~~cese definitivo de homologación/ *production definitely discontinued*~~

de un tipo de subconjunto eléctrico/ electrónico en aplicación del Reglamento nº 10/ *of a type of electrical/ electronic sub-assembly with regard to ECE Regulation No. 10*

Nº de homologación/ *Type-approval N°*: E9-10R-05.11257
Nº de extension/ *Extension No.*: --

SECCION I/ *SECTION I*

1. Marca (razón social)/ *Make (trade name of manufacturer)*: FRISTOM

2. Tipo y denominación(es) comercial (es)/ *Type and general commercial description(s)*:
FT-140 LED, Ver documentación aportada/ *See technical documentation*

3. Medio de identificación del tipo, si está marcado en el ~~*vehículo*~~, el componente o la ~~unidad técnica independiente~~/ *Means of identification of type, if marked on the ~~vehicle~~, component or ~~separate technical unit~~*: Ver documentación aportada/ *See technical documentation*

3.1. Emplazamiento de estas marcas/ *Location of that marking*: Ver documentación aportada/ *See technical documentation*

4. Categoría de vehículo/ *Category of vehicle*: --

5. Nombre y dirección del fabricante/ *Name and address of manufacturer*:
FRISTOM SPÓLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA SPÓLKA KOMANDYTOWA
80-014 Sicienko ul.Przemyslowa 5
POLAND

6. Emplazamiento y forma de colocación de la marca de homologación CEE en componentes y unidades técnicas independientes/ *In the case of components and separate technical units, location and method of affixing of the approval mark*: Ver documentación aportada/ *See technical documentation*

7. Dirección(es) de la(s) planta(s) de montaje/ *Address(es) of assembly plant(s)*:
FRISTOM SPÓLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA SPÓLKA KOMANDYTOWA
80-014 Sicienko ul.Przemyslowa 5
POLAND

8. Información complementaria (si procede)/ *Additional information (where applicable)*: Véase el apéndice/ *See appendix*

FIRMADO por : JOSE MANUEL PRIETO BARRIO, SUBDIRECTOR / SUBDIRECTORA GENERAL de S.G. DE CALIDAD Y SEGURIDAD INDUSTRIAL (MINETUR). A fecha : 11/05/2016 19:23:03
Este documento se ha almacenado en el Archivo de Constancias Electrónicas (ARCE) del MINETUR, accesible desde www.minetur.gob.es/arce, con Código de Consulta y Verificación 3522016-10574507RKAIXVXIR9UB
El documento consta de un total de 3 folios. Folio 2 de 3.

E 9

E9-10R-05.11257

9. Servicio técnico encargado de la realización de los ensayos/ *Technical service responsible for carrying out the tests*: IDIADA

10. Fecha del acta de ensayo/ *Date of test report*: 26-04-2016

11. Número del acta de ensayo/ *Number of test report*: PC16040372

12. Observaciones (si las hubiera)/ *Remarks (if any)*: Véase el apéndice/ *See appendix*

13. Lugar/ *Place*: MADRID

14. Fecha/ *Date*: Ver firma electrónica/ *See electronic signature*

15. Firma/ *Signature*:

SUBDIRECTOR GENERAL DE CALIDAD Y SEGURIDAD INDUSTRIAL
Resolución P.D. 25-10-2012

16. Se adjunta el índice del expediente de homologación en posesión de las autoridades competentes, la cual puede obtenerse a petición del interesado/ *The index to the information package lodged with the approval authority, which may be obtained on request is attached*

17. Motivos de extensión/ *Reasons for extension*: --

FIRMADO por : JOSE MANUEL PRIETO BARRIO, SUBDIRECTOR / SUBDIRECTORA GENERAL de S.G. DE CALIDAD Y SEGURIDAD INDUSTRIAL (MINETUR). A fecha : 11/05/2016 19:23:03
Este documento se ha almacenado en el Archivo de Constancias Electrónicas (ARCE) del MINETUR, accesible desde www.minetur.gob.es/arce, con Código de Consulta y Verificación 3522016-10574507RKAIXVXIR9UB
El documento consta de un total de 3 folios. Folio 3 de 3.

E9

E9-10R-05.11257

Apéndice del certificado de homologación Nº E9 10R-05.11257
relativo a la homologación de subconjuntos eléctricos o electrónicos en lo que se refiere al Reglamento Nº10

Appendix to Type-approval communication form Nº E9 10R-05.11257
concerning the type-approval of an electrical/electronic sub-assembly under Regulation Nº 10

1. Información adicional/ *Additional information (where applicable)*:

1.1. Tensión nominal del sistema eléctrico/ *Electrical system rated voltage*: Ver documentación aportada/ *See technical documentation*

1.2. Este SEE puede utilizarse en todos los vehículos con las siguientes restricciones/ *This ESA can be used on any vehicle type with the following restrictions*: Ver documentación aportada/ *See technical documentation*

1.2.1. Condiciones de instalación, si las hubiera/ *Installation conditions, if any*: Ver documentación aportada/ *See technical documentation*

1.3. Este SEE sólo puede utilizarse en los tipos de vehículo siguientes/ *This ESA can only be used on the following vehicle types*: --

1.3.1. Condiciones de instalación si las hubiera/ *Installation conditions, if any*: --

1.4. El método o métodos específicos de ensayo utilizados y los márgenes de frecuencias abarcados para determinar la inmunidad han sido/ *The specific test method(s) used and the frequency ranges covered to determine immunity* were: 20-2000MHz

1.5. Laboratorio acreditado según ISO 17025 y reconocido por el organismo homologador responsable de realizar los ensayos/ *Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests*: LGAI

2. Observaciones/ *Remarks (if any)*: --

L'Albornar - Apartado de Correos 20
E - 43710 Santa Oliva (Tarragona)
España

Tel. +34 977 166000
Fax +34 977 166007
e-mail: idiada@idiada.com

INFORME / *REPORT* Nº PC16040372

REGLAMENTO CEPE/ONU 10R05 REFERENTE A LA COMPATIBILIDAD ELECTROMAGNÉTICA
UN/ECE REGULATION 10R05 RELATING ELECTROMAGNETIC COMPATIBILITY

Solicitante/ *Applicant*	: FRISTOM SPÓLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA SPÓLKA KOMANDYTOWA 80-014 Sicienko ul.Przemyslowa 5 POLAND
Fabricante/ *Manufacturer*	: FRISTOM SPÓLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA SPÓLKA KOMANDYTOWA 80-014 Sicienko ul.Przemyslowa 5 POLAND
Marc/ *Mark*	: FRISTOM
Tipo/ *Type*	: FT-140 LED
Denominación comercial/ *Commercial description*	: Ver documentación aportada/ *See technical documentation*
Lugar y fecha de emisión del informe/ *Place and date of issue*	: L'Albornar, Santa Oliva (Tarragona), 26-04-2016

CONCLUSIONES: Este componente CUMPLE con las prescripciones sobre compatibilidad electromagnética relativo al REGLAMENTO CEPE/ONU 10R05, como se detalla en el anexo a este informe.
CONCLUSIONS: This component FULFILS the prescriptions about electromagnetic compatibility, in application to UN/ECE REGULATION 10R05, as detailed in the annex to this report.

Realizado/ *Performed by*

Neus Estrada Testa
INGENIERO DE ENSAYOS
TEST ENGINEER

V. Bº./ *Revised by:*

Ramon Santafé Guiu
JEFE DE DEPARTAMENTO
DEPARTMENT MANAGER

PC16040372

* LOS RESULTADOS PRESENTADOS SE REFIEREN UNICAMENTE A LA MUESTRA ENSAYADA.
THE PRESENTED RESULTS REFER ONLY TO THE TESTED SAMPLE
* QUEDA TERMINANTEMENTE PROHIBIDA LA REPRODUCCION PARCIAL DE ESTE INFORME SIN PERMISO EXPRESO DE IDIADA.
THE PARTIAL REPRODUCTION OF THIS REPORT WITHOUT THE PERMISSION OF IDIADA IS COMPLETELY FORBIDDEN

LGAI Technological Center, S.A.
Campus de la UAB
Ronda de la Font del Carme, s/n
E-08193 Bellaterra (Barcelona)
T +34 93 567 20 00
F +34 93 567 20 01
www.appluslaboratories.com

TEST REPORT

Petitioner's reference:

APPLUS+ IDIADA
L' Albornar, PO Box 20
Santa Oliva
43710 Tarragona
SPAIN

Represented by: Neus Estrada

File Number: **15/31707458**

Date of issue: 31/03/2016

ENAC ENSAYOS Nº 9/LE894

ELECTROMAGNETIC COMPATIBILITY TESTS

RELATED STANDARD:	UN Regulation 10, revision 5
DEVICE UNDER TEST:	LAMP FT-140 LED
Manufacturer:	FRISTOM
Number of samples:	1

TEST SITE AND DATE:

Test product reception:	11/01/2016
Test initial date:	22/01/2016
Test final date:	01/02/2016
Test site:	Applus+ LGAI (Bellaterra)

IDIADA PC16040372

TEST RESULTS SUMMARY:

TEST	Result
Radiated emissions	PASS
Radiated Immunity	PASS
Conduced transient emissions	PASS
Electrical transients immunity	
Pulse 1	PASS
Pulse 2a	PASS
Pulse 2b	PASS
Pulse 3a	PASS
Pulse 3b	PASS
Pulse 4	PASS

The test results are shown in detail on the following pages.

Authorized Signatory/ies

Date of issue: Bellaterra, 31/03/2016

José Villén
Firmado por:
José Villen Ruiz
LGAI Technological Center
EMC
Technical Manager
Test Manager
Electrical & Electronics
LGAI Technological Center, S.A.

The test result is only valid for the equipment tested. This document will not be reproduced otherwise than in full. A summary of the test report may be reproduced only when it is clearly that it is a summary and the summary has been approved by APPLUS+ LGAI by writing.

Service Quality Assurance

Applus+, guarantees that this work has been made in accordance with our Quality and Sustainability System, fulfilling the contractual conditions and legal norms.

Within our improvement program we would be grateful if you would send us any commentary that you consider opportune, to the person in charge who signs this document, or to the Quality Manager of Applus+, in the following e-mail address: satisfaccion.cliente@applus.com

IDIADA PC16040372

INDEX

ELECTROMAGNETIC COMPATIBILITY TESTS 1
1 TEST CONDITION 4
1.1 Equipment Under Test (EUT) 4
1.2 EUT conditions 4
1.3 Test conditions: 5
1.4 Functional statuses classification: 5
2 TEST RESULTS 6
2.1 Radiated emissions 7
2.1.1 Measurement parameters. 7
2.1.2 Limits 7
2.1.3 Test result table. Sample #1 8
2.1.4 Test result graphs. 8
2.1.4.1 Ambient noise measurements. 9
2.1.4.2 EUT measurements 9
2.2 Radiated immunity 10
2.2.1 Result table 11
2.3 Voltage transient emissions 13
2.3.1 Result table 14
2.3.2 Test result graphs 15
2.3.2.1 Slow pulses. Switch ON 16
2.3.2.2 Slow pulses. Switch OFF 16
2.3.2.3 Slow pulses. Permanent 17
2.3.2.4 Fast pulses. Switch ON 17
2.3.2.5 Fast pulses. Switch OFF 18
2.3.2.6 Fast pulses. Permanent 19
2.4 Voltage transient immunity 19
2.4.1 Pulse 1 20
2.4.2 Pulse 2a 21
2.4.3 Pulse 2b 22
2.4.4 Pulse 3a 23
2.4.5 Pulse 3b 24
2.4.6 Pulse 4 25
3 EQUIPMENT 26
4 MEASURING UNCERTAINTIES 27
28

IDIADA PC16040372

1 TEST CONDITION

1.1 Equipment Under Test (EUT)

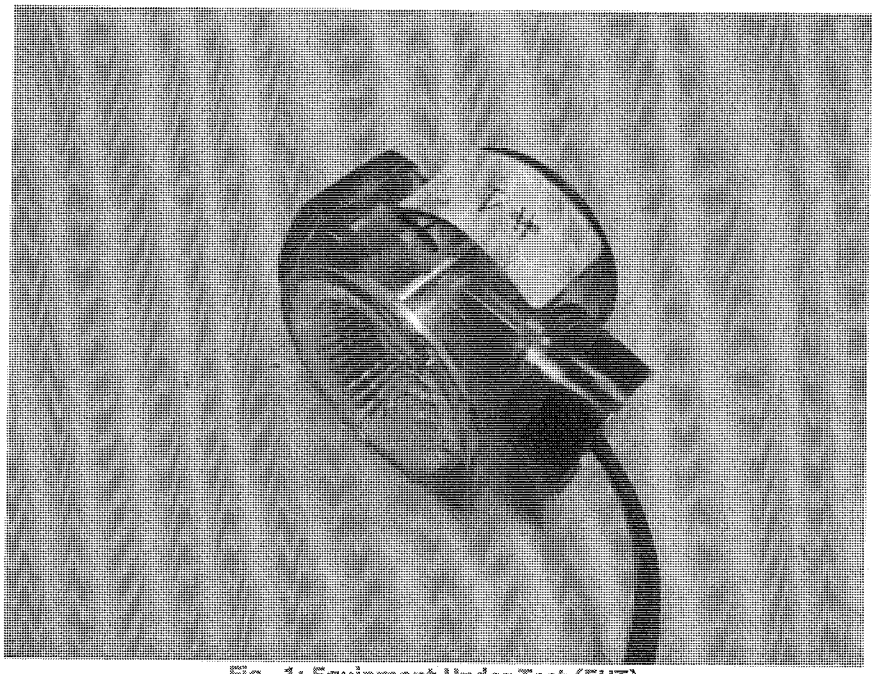


Fig. 1: Equipment Under Test (EUT)

IDIADA PC16040372

1.2 EUT conditions

The DUT configuration is as follows:

- Supplied at 13.5 V_{dc} (12 V system)

Colour Wire	Function
White	GND
Black	Positive

1.3 Test conditions:

Radiated emissions

DUT conditions according to the previous item (1.2. DUT conditions).

Conduced transient emissions

DUT conditions according to the previous item (1.2. DUT conditions)

Electrical transient immunity

DUT conditions according to the previous item (1.2. DUT conditions)

Radiated immunity

DUT conditions according to the previous item (1.2. DUT conditions)

IDIADA PC16040372

1.4 Functional statuses classification:

Class	Definition
A	All functions of a device performs as designed during and after exposure to disturbance
B	All functions of a device perform as designed during exposure. However, one or more of them can go beyond specified tolerance. All functions return automatically to within normal limits after exposure is removed. Memory functions shall remain Class A
C	One or more functions of a device do not perform as designed during exposure but return automatically to normal operation after exposure is removed.
D	One or more functions of a device do not perform as designed during exposure and do not return to normal operation until exposure is removed and the device is reset by simple "operator/use" action.
E	One or more functions of a device do not perform as designed during exposure and cannot be returned to proper operation without repairing or replacing the device.

IDIADA PC16040372

2 TEST RESULTS

2.1 Radiated emissions

Test site	Test date	Environmental conditions
SAC 2	01/02/2016	Temperature: 24.1 ºC Humidity: 40,8 % Atm. Pressure: 1007 mbar

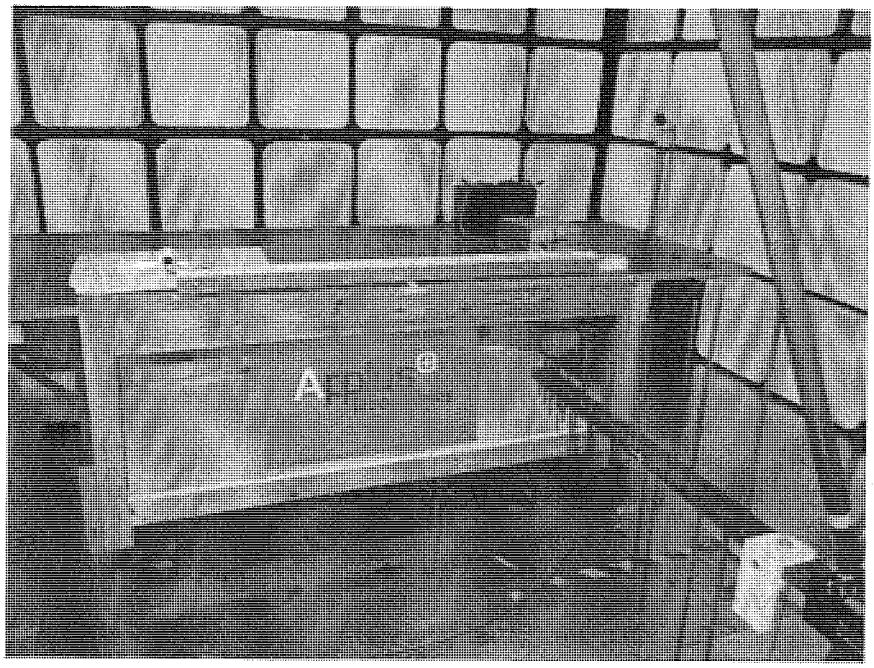


Fig. 2: General test setup. From 30MHz to 1000MHz.

2.1.1 Measurement parameters.

Frequency	Resolution Bandwidth (Peak and Average)	Step size	Measurement time (Peak and Average)	Measurement time (Quasipeak)
30MHz – 1 GHz	120 kHz	40 kHz	15 ms	1 s

IDIADA PC16040372

2.1.2 Limits

Narrowband radiated emissions (NB)

Limit (dBµV/m)		
30-75 MHz	**75-400 MHz**	**400 MHz – 1 GHz**
L=52-25.13log(f/30)	L=42+15.13log(f/75)	L=53

Broadband radiated emissions (BB)

Limit (dBµV/m)		
30-75 MHz	**75-400 MHz**	**400 MHz – 1 GHz**
L=62-25.13log(f/30)	L=52+15.13log(f/75)	L=63

Peak detectors are used and correction factor of 20 dB is applied as defined in CISPR 12 (5th edition 2001)

2.1.3 Test result table. Sample #1

Sample	Frequency range	Polarization	Result
#1	30MHz – 1000 MHz	Horizontal	PASS
		Vertical	PASS

IDIADA PC16040372

2.1.4 Test result graphs.

2.1.4.1 Ambient noise measurements.

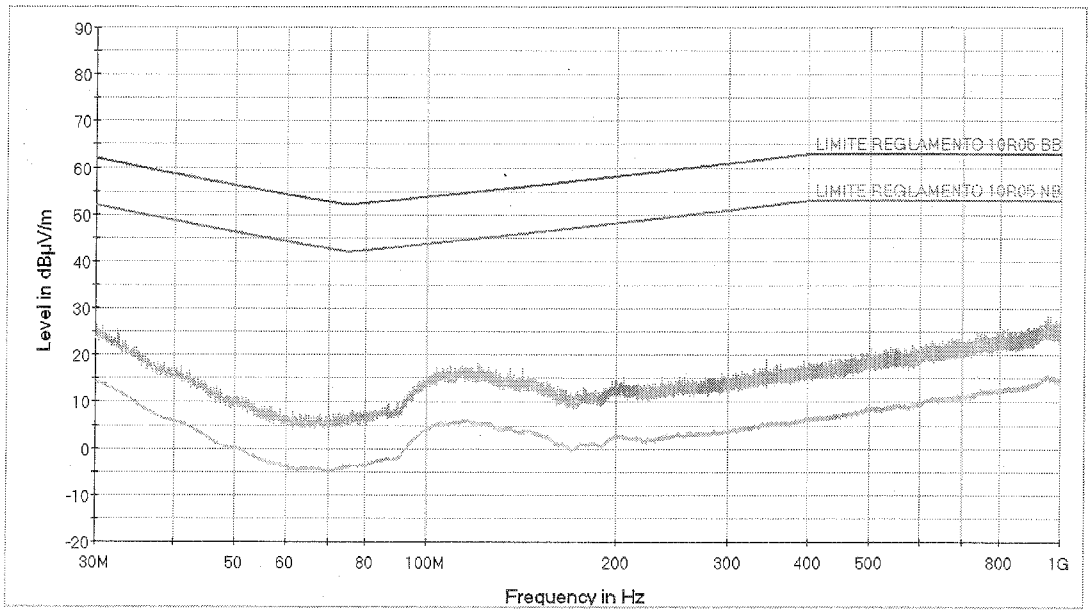


Fig. 3: Ambient noise measurement. From 30MHz to 1000MHz.
Horizontal polarization
GREEN (Peak measurement). BLUE (Average measurement).

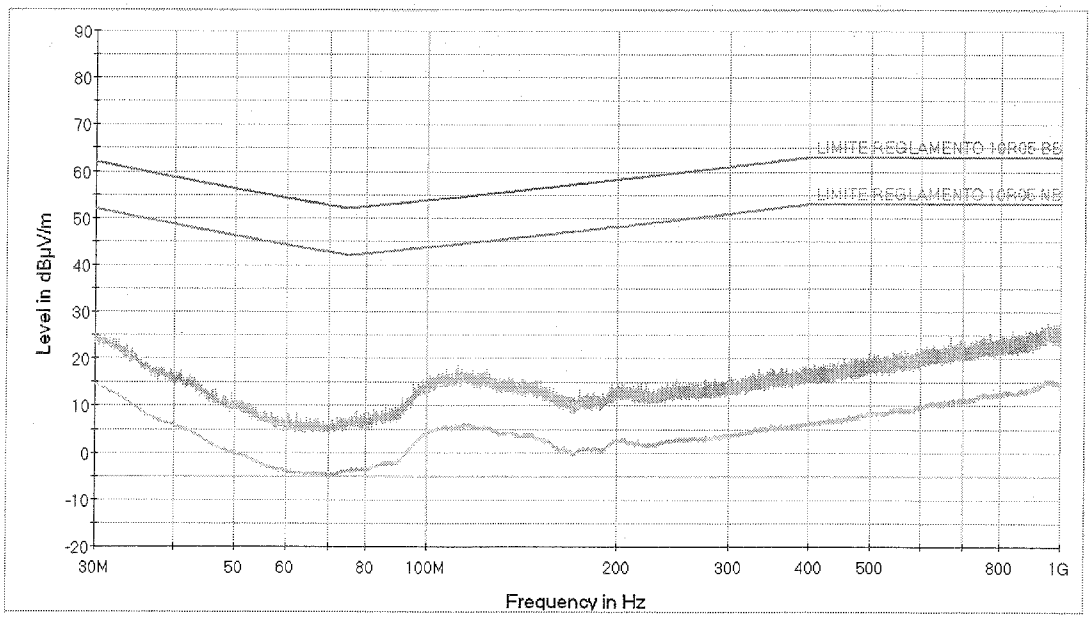


Fig. 4: Ambient noise measurement. From 30MHz to 1000MHz.
Vertical polarization
GREEN (Peak measurement). BLUE (Average measurement).

IDIADA PC16040372

2.1.4.2 EUT measurements

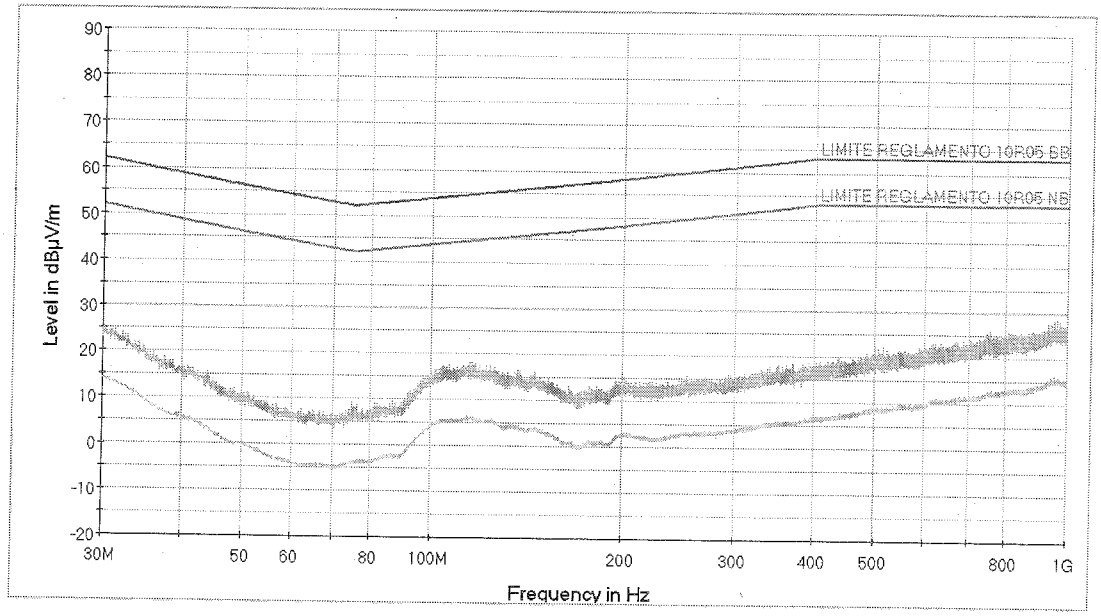


Fig. 5: EUT measurement. Sample #1. 30MHz to 1000MHz.
Horizontal polarization.
GREEN (Peak measurement). BLUE (Average measurement).
Peak measurement is below the Broadband limit line.
Average measurement is below the Narrowband limit line.

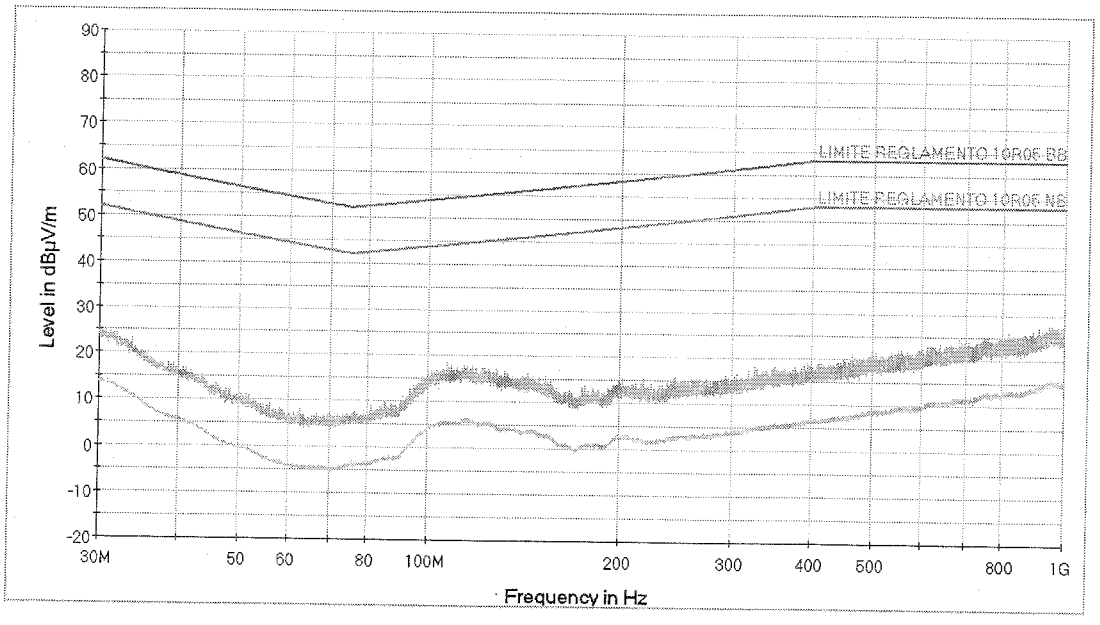


Fig. 6: EUT measurement. Sample #1. 30MHz to 1000MHz.
Vertical polarization.
GREEN (Peak measurement). BLUE (Average measurement).
Peak measurement is below the Broadband limit line.
Average measurement is below the Narrowband limit line.

IDIADA PC16040372

2.2 Radiated immunity

Test site	Test date	Environmental conditions
SAC 1	22/01/2016	Temperature: 22.1 ºC Humidity: 49.6 % Atm. Pressure: 1007 mbar

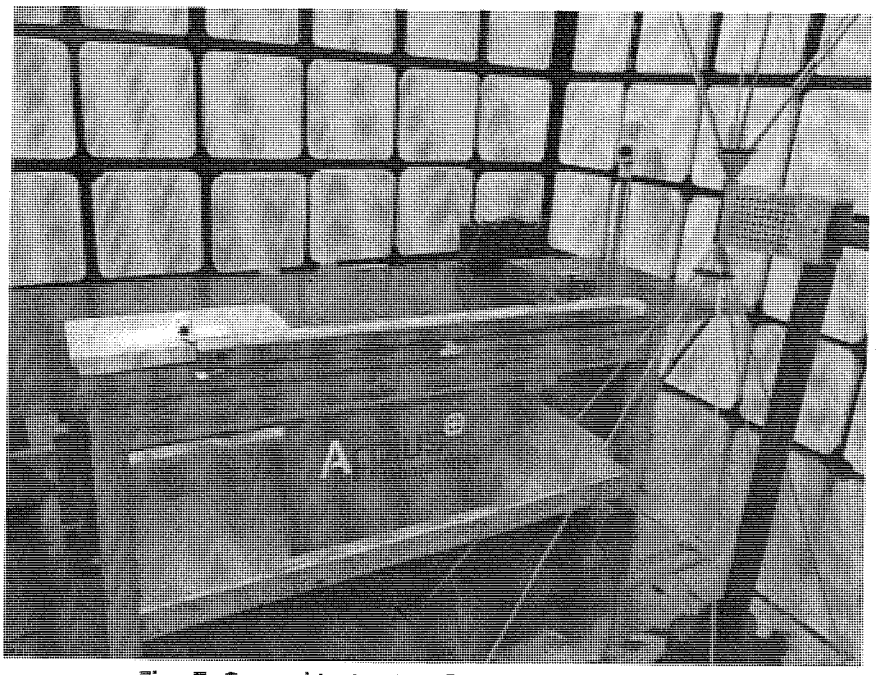


Fig. 7: General test setup. From 30MHz to 100MHz.

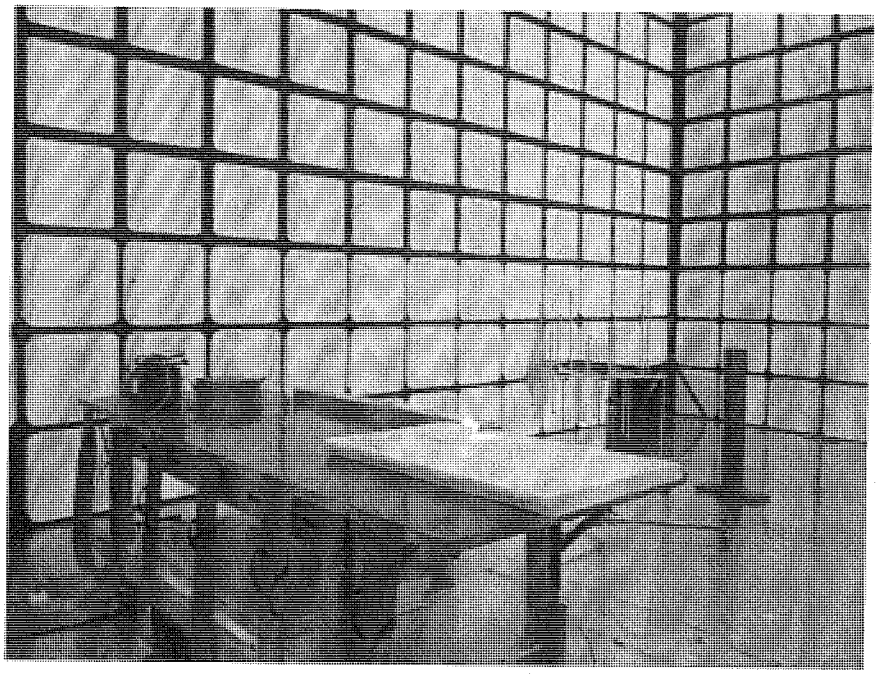


Fig. 8: General test setup. From 100MHz to 1GHz.

IDIADA PC16040372

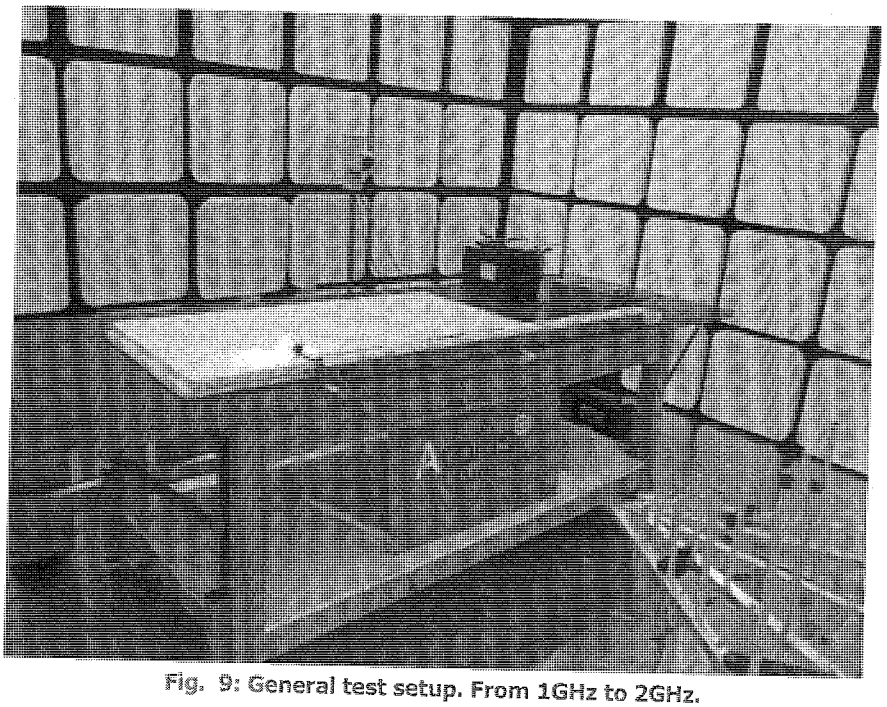


Fig. 9: General test setup. From 1GHz to 2GHz.

IDIADA PC16040372

2.2.1 Result table

Sample	Frequency	Severity	Modulation	Polarization	Results
#1	20 MHz-100 MHz	30 V/m	AM 1kHz 80%	Vertical	PASS
	100 MHz-800 MHz		AM 1kHz 80%		PASS
	800 MHz-1 GHz		PM 217Hz 577µs		PASS
	1 GHz-2 GHz		PM 217Hz 577µs		PASS

IDIADA PC16040372

2.3 Voltage transient emissions

Test site	Test date	Environmental conditions
SPS	28/01/2016	Temperature: 21.3 °C Humidity: 42 % Atm. Pressure: 1030 mbar

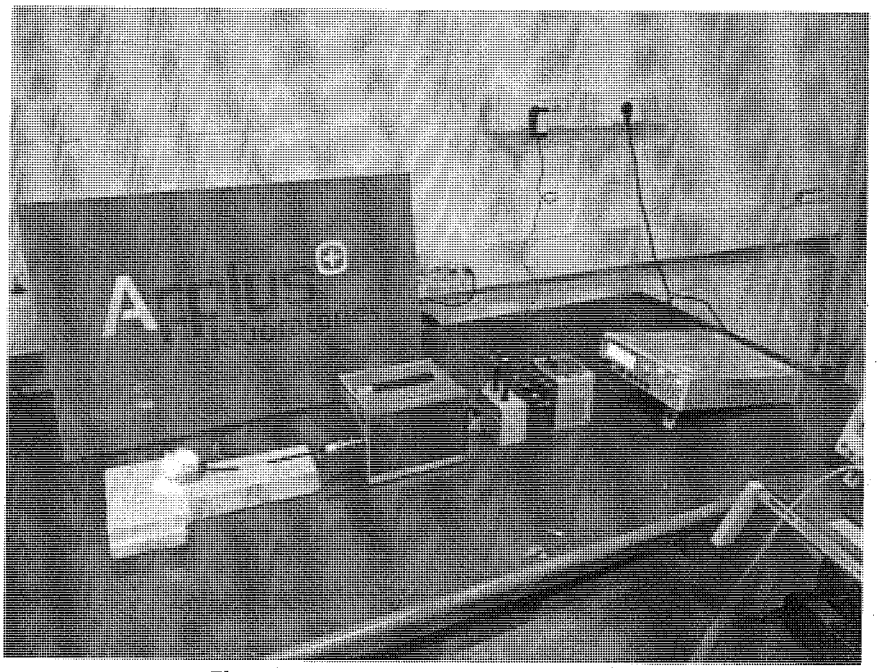


Fig. 10: Detail test setup. Slow pulses.

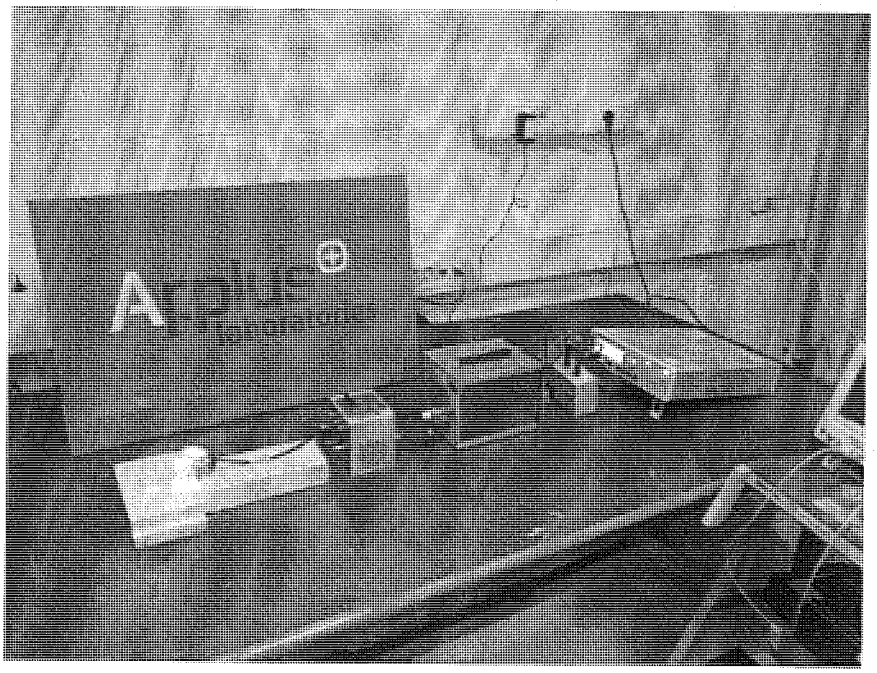


Fig. 11: General test setup. Fast pulses

IDIADA PC16040372

2.3.1 Result table

Sample	Setup	Connection Disconnection Permanent	|Vmax| (V)	|Vmin| (V)	Maximum allowed pulse amplitude
#1	Slow Pulses	Switch on	14.2	0	+75 V -100 V
		Switch off	13.6	0	
		Permanent	13.80	13.2	
	Fast Pulses	Switch on	14.45	0	+75 V -100 V
		Switch off	13.9	0	
		Permanent	13.85	13.2	

IDIADA PC16040372

2.3.2 Test result graphs

2.3.2.1 Slow pulses. Switch ON

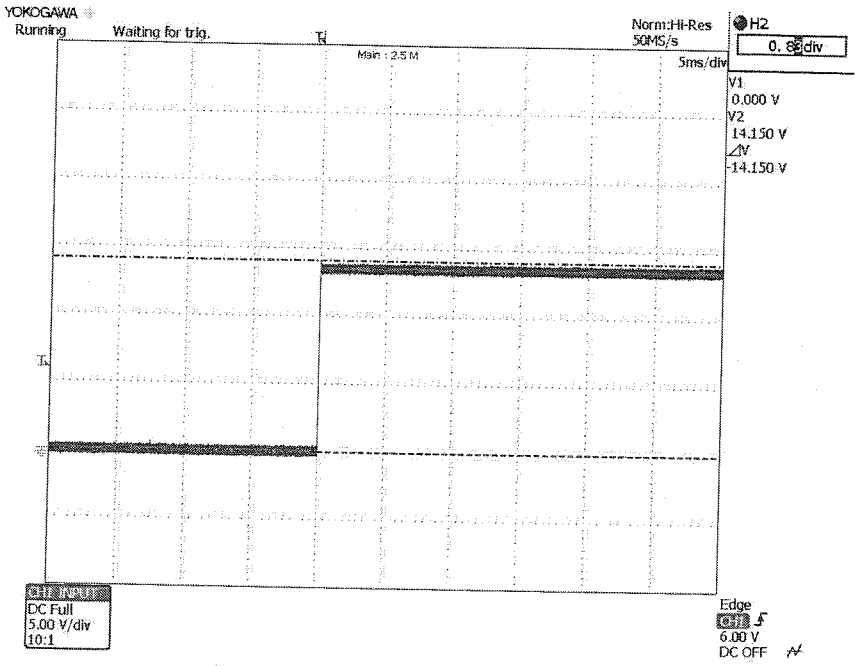


Fig. 12: Voltage switch ON. 5 ms/div

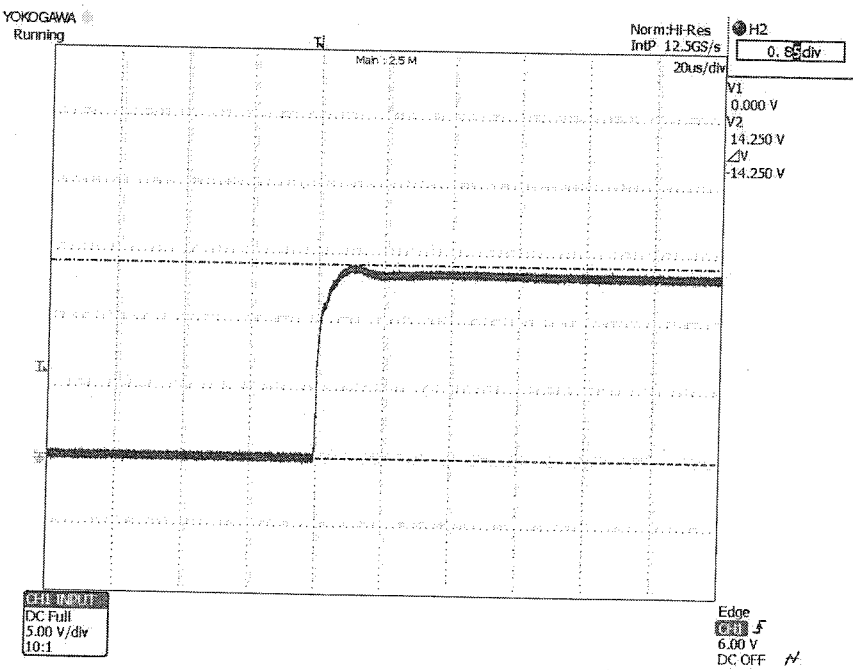


Fig. 13: Voltage switch ON. 20 us/div.

IDIADA PC16040372

2.3.2.2 Slow pulses. Switch OFF

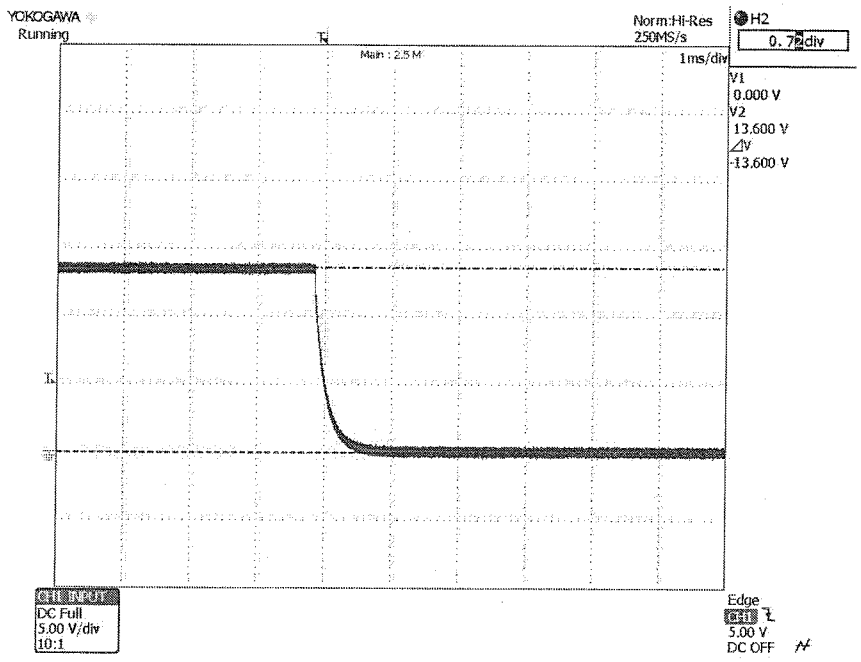


Fig. 14: Voltage switch OFF. 1 ms/div

2.3.2.3 Slow pulses. Permanent

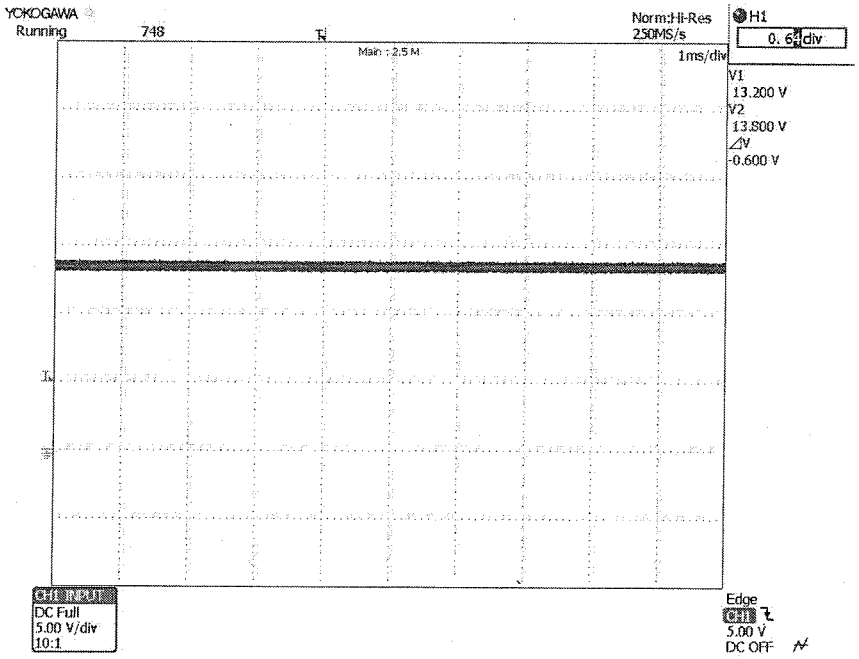


Fig. 15: Permanent. 1 ms/div

IDIADA PC16040372

2.3.2.4 Fast pulses. Switch ON

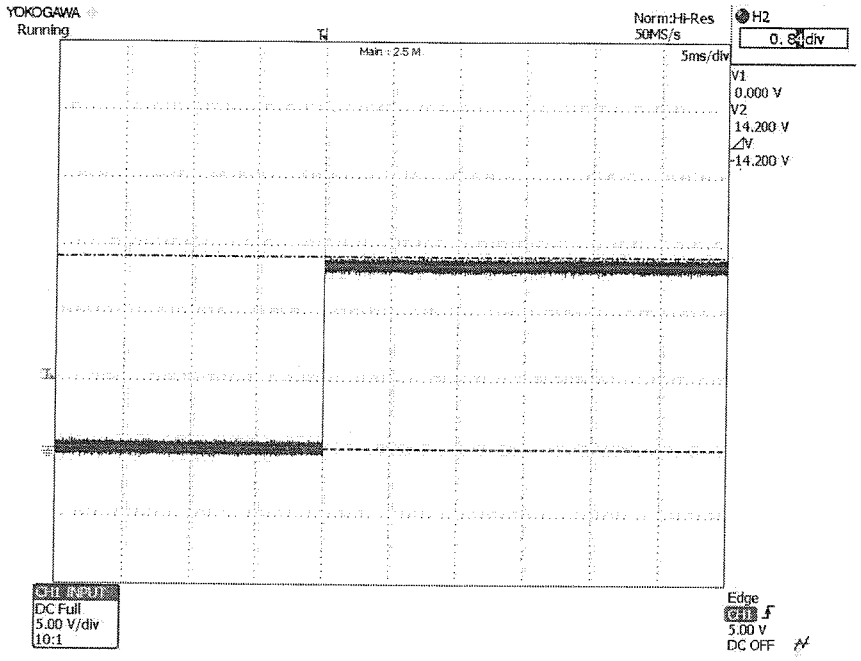


Fig. 16: Voltage switch ON. 5 ms/div

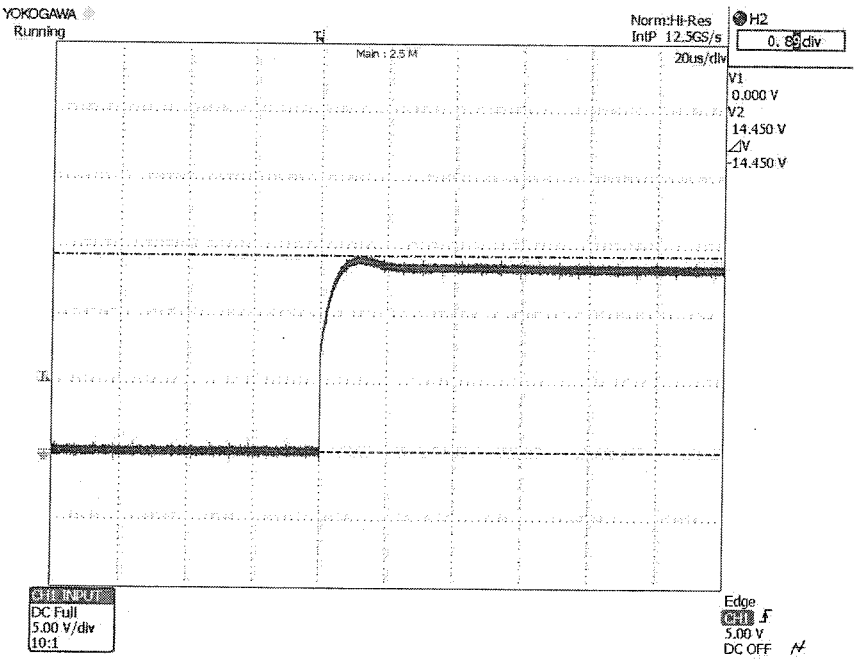


Fig. 17: Voltage switch ON. 20 us/div

IDIADA PC16040372

2.3.2.5 Fast pulses. Switch OFF

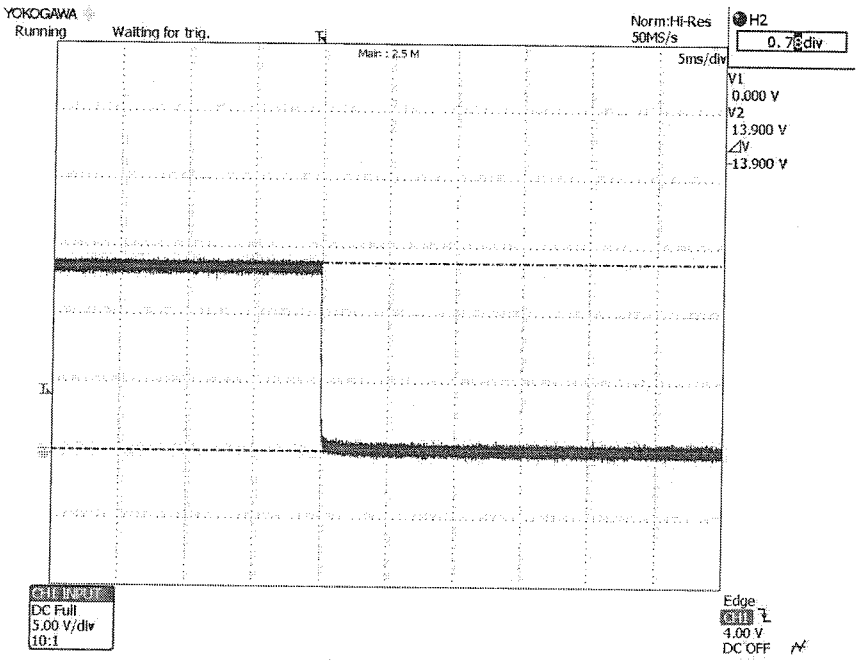


Fig. 18: Voltage switch OFF. 5 ms/div

2.3.2.6 Fast pulses. Permanent

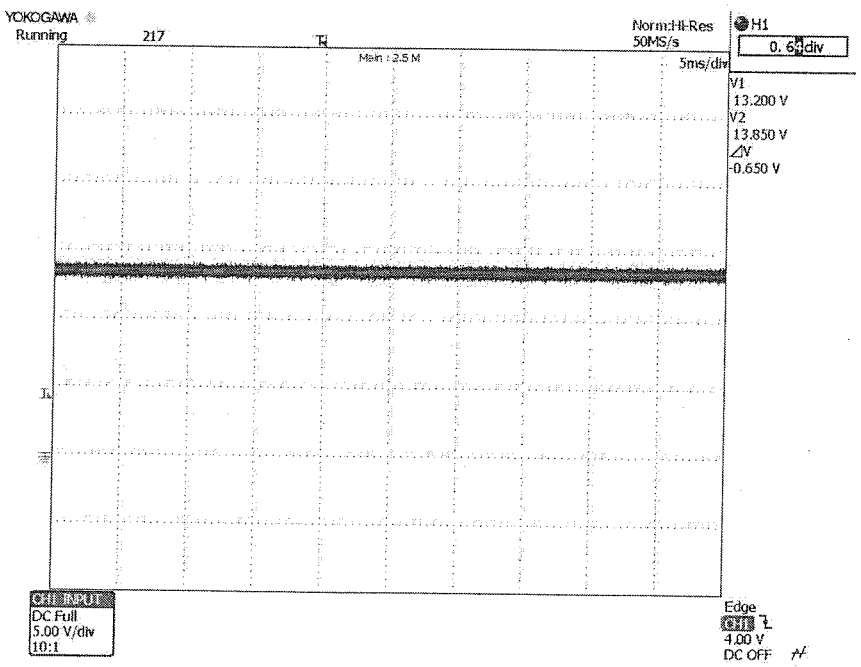


Fig. 19: Permanent. 5 ms/div

IDIADA PC16040372

2.4 Voltage transient immunity

Test site	Test date	Environmental conditions
SPS	22/01/2016	Temperature: 21.4 ºC Humidity: 43.3 % Atm. Pressure: 1028 mbar

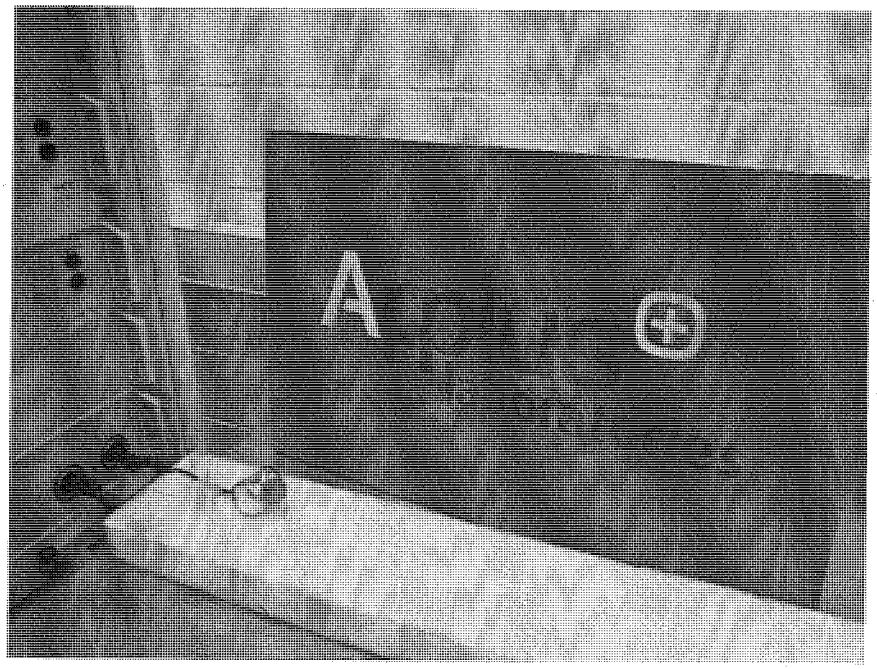


Fig. 20: General test setup. Pulses 1,2a,3a,3b.

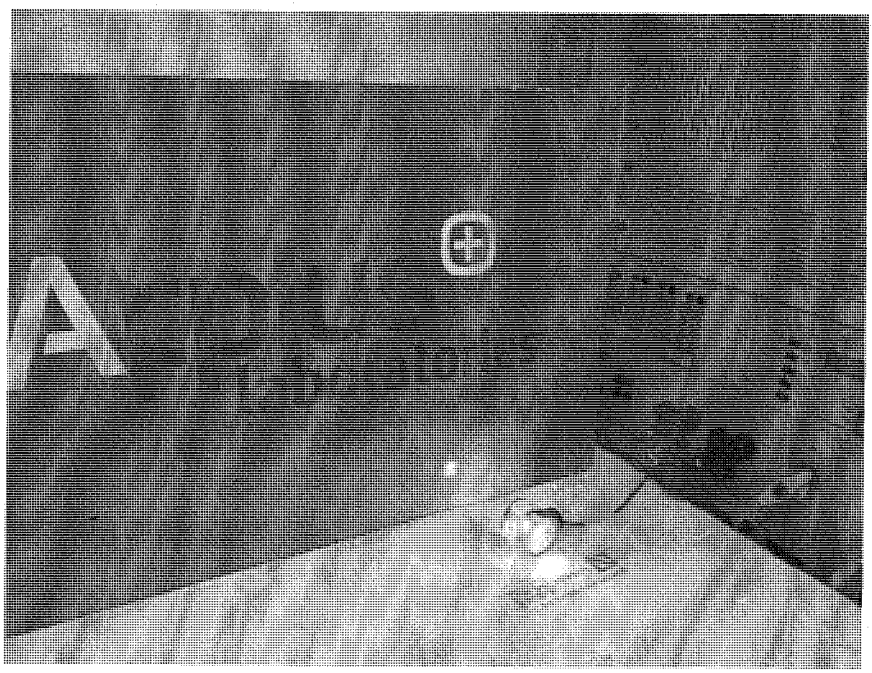
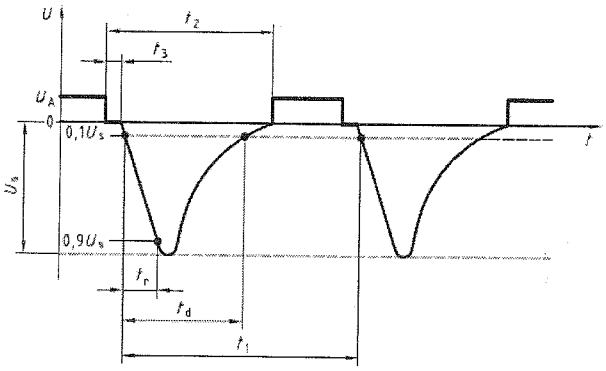


Fig. 21: General test setup. Pulse 2b, 4

IDIADA PC16040372

2.4.1 Pulse 1

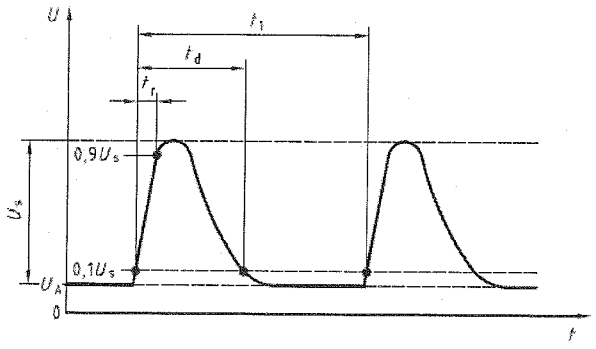


Parameters	Values
U_A	13.5 V
U_S	-75 V
R_i	10 Ω
t_d	2 ms
t_r	1 µs
t_1	0.5 s
t_2	200 ms
t_3	<100 us
Number of pulses	5000

Coupling	Performance Criteria
Power supply	Class C
Sample	**Result / Comments**
#1	EUT do not perform as designed during test (it turns off for a short time when pulse is applied), but returns to normal operation after test. Class C

IDIADA PC16040372

2.4.2 Pulse 2a

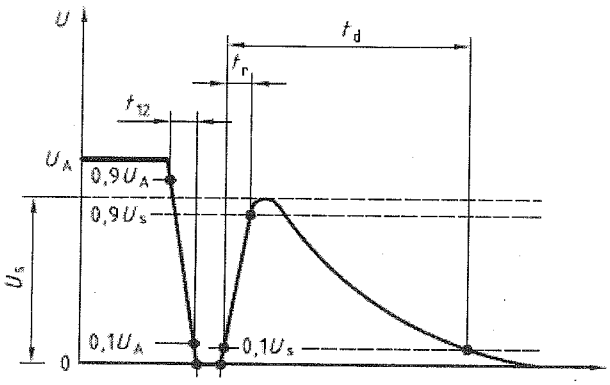


Parameters	Values
U_A	13.5 V
U_S	37 V
R_i	2 Ω
t_d	50 µs
t_r	1 µs
t_1	0.2 s
Number of pulses	5000

Coupling	Performance Criteria
Power supply	Class B
Sample	**Result / Comments**
#1	Correct EUT performance during and after test. Class A

IDIADA PC16040372

2.4.3 Pulse 2b

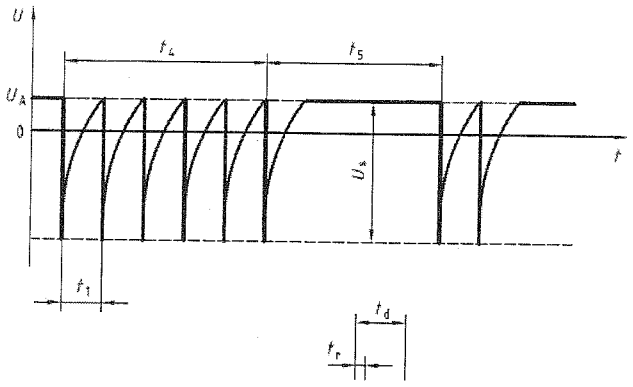


Parameters	Values
U_A	13.5 V
U_S	10 V
R_i	0 Ω
t_d	0.5s
t_r	1 ms
t_6	1 ms
t_{12}	1 ms
Number of pulses	10

Coupling	Performance Criteria
Power supply	Class C
Sample	**Result / Comments**
#1	EUT do not perform as designed during test (it turns off for a short time when pulse is applied), but returns to normal operation after test. Class C

IDIADA PC16040372

2.4.4 Pulse 3a

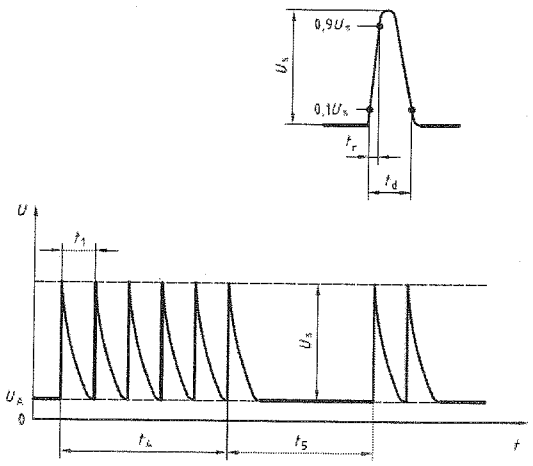


Parameters	Values
U_A	13.5 V
U_S	-112 V
R_i	50 Ω
t_d	100 ns
t_r	5 ns
t_1	100 µs
t_4	10 ms
t_5	90 ms
Test time	1 hour

Coupling	Performance Criteria
Power supply	Class A
Sample	**Result / Comments**
#1	Correct EUT performance during and after test. Class A

IDIADA PC16040372

2.4.5 Pulse 3b

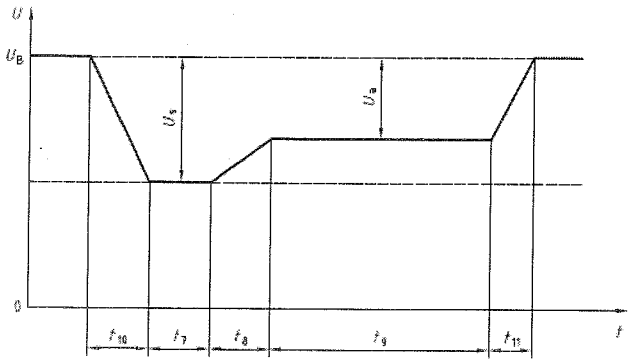


Parameters	Values
U_A	13.5 V
U_S	75 V
R_i	50 Ω
t_d	100 ns
t_r	5 ns
t_1	100 µs
t_4	10 ms
t_5	90 ms
Test time	1 hour

Coupling	Performance Criteria
Power supply	Class A
Sample	**Result / Comments**
#1	Correct EUT performance during and after test. Class A

IDIADA PC16040372

2.4.6 Pulse 4



Parameters	Values
U_B	12 V
U_S	-6 V
U_A	-2.5 V
R_i	0Ω
t_{10}	5 ms
t_7	40 ms
t_8	50 ms
t_9	20 s
t_{11}	100 ms
Number of pulses	3

Coupling	Performance Criteria*
Power supply	Class C
Sample	**Result / Comments**
#1	Light intensity decreases (does not turn off) during test. It returns to normal operation after disturbance is removed. Class B

* Class B (for EUT which must be operational during engine start phases)

IDIADA PC16040372

3 EQUIPMENT

Radiated Emissions test
1 x BATTERY AUTO 12V ()
BILOGOPERIODIC ANTENNA CHASE MOD CBL6111 S/N 1058 (05-ER-159)
DIGITAL MULTIMETER FLUKE MOD: 115 (104961)
EMI TEST RECEIVER RHODE & SCHWARZ ESU40 S/N: 100165 (1041155)
GROUND PLANE (104659)
LISN AUTO ROHDE & SCHWARZ MOD: ESH3-Z6, 100A (104803)
LISN AUTO ROHDE & SCHWARZ MOD: ESH3-Z6, 100A (104804)
50 OHMS LOAD SHUNER MOD: 65 N-50-0-11/133 LOAD (104958)
50 OHMS LOAD SHUNER MOD: 65 N-50-0-11/133 LOAD (104959)
POWER SUPPLY HEWLETT PACKARD MOD: 6032A (05-ER-040)
PRE-AMPLIFIER 9KHz-1300MHz HEWLETT P. MOD: 8447F OPT H64 (05-ER-127)
SEMIANECHOIC CHAMBER EUROSHIELD SAC 2 MOD: TC2 (104563)
TEST SOFTWARE RODHE & SCHWARZ EMC32 V8.52 (1041047)
TESTO PROBE MOD:625 (1041018)

Radiated Immunity Test
SEMIANECHOIC CHAMBER EUROSHIELD SAC 1 MOD: TC1 (104446)
12V AUTOMOTIVE BATTERY (104658)
50 OHMS LOAD SHUNER MOD: 65 N-50-0-11/133 LOAD (104958)
50 OHMS LOAD SHUNER MOD: 65 N-50-0-11/133 LOAD (104959)
DOUBLE LOGO L4 (1041370)
EXTENSOR ANTENNA EMCO (1041046)
GROUND PLANE (1041274)
HP-IB FIBER EXTENDERS HEWLETT PACKARD MOD: 37204A (104167)
HP-IB FIBER EXTENDERS HEWLETT PACKARD MOD: 37204A (104441)
HP-IB FIBER EXTENDERS HEWLETT PACKARD MOD: 37204A (104460)
LISN AUTO ROHDE & SCHWARZ MOD: ESH3-Z6, 100A (104803)
LISN AUTO ROHDE & SCHWARZ MOD: ESH3-Z6, 100A (104804)
POWER SUPPLY HEWLETT PACKARD MOD:6032A (05-ER-040)
SIGNAL GENERATOR RHODE & SCHWARZ MOD: SMC100A (1041262)
POWER AMPLIFIER AR MOD: 500A100M2 10KHz-100MHz (104520)
POWER AMPLIFIER AR MOD: 1000W1000M12 100MHz-1000MHz (104151)
DIRECTIONAL COUPLER AR MOD: DC2600 10KHz-250MHz (104533)
DIRECTIONAL COUPLER AR MOD: DC6280 80MHz-1000MHz (104165)
POWER METER RHODE & SCHWARZ MOD: NRP2 (1041270)
POWER SENSOR RHODE & SCHWARZ MOD: NRP2 9kHz-6GHz (1041260)
POWER SENSOR RHODE & SCHWARZ MOD: NRP2 9kHz-6GHz (1041261)
SIGNAL GENERATOR RHODE & SCHWARZ MOD: SMR40 1GHz-40GHz (104894)
POWER AMPLIFIER BONN ELECTRONIK MOD: BLMA 1040-200/100D
DIRECTIONAL COUPLER MICROWAVE CORPORATION MOD: 440229 1GHz-4GHz (104646)
POWER METER RHODE & SCHWARZ MOD: NRP2 (1041317)
POWER SENSOR RHODE & SCHWARZ MOD: NRP-Z21 (1041318)
POWER SENSOR RHODE & SCHWARZ MOD: NRP-Z21 (1041319)
E-FIELD PROBE DARE MOD: RADISENSE 4 (1041188)
FIELD METER DARE MOD: CTR1002A (1041189)
DIGITAL MULTIMETER FLUKE MOD: 115 (104961)
PROBE TESTO (Temp./Humidity) MOD.625 (1041018)

IDIADA PC16040372

Measurement of conduced transient emissions
10:1 PASSIVE PROBE YOKOGAWA MODEL 701943 (104974)
4 CHANNEL DIGITAL OSCILLOSCOPE YOKOGAWA MOD: DL9140L (104969)
40 OHMS SHUNT RESISTOR (1041302)
DIGITAL MULTIMETER FLUKE MOD:115 (104961)
LISN (V-LISN 5uH) SCHWARZBECK MOD: NNBM 8124 (1041292)
SPITZENBERGER SPIES VIECHTACH AUTOMOTIVE SIMULATION SYSTEM (104976)
ELECTRONIC SWITCH BS 200N100 (1041312)

Conducted transient immunity
10:1 PASSIVE PROBE YOKOGAWA MODEL 701943 (104974)
4 CHANNEL DIGITAL OSCILLOSCOPE YOKOGAWA MOD: DL9140L (104969)
DIGITAL MULTIMETER FLUKE MOD:115 (104961)
EM TEST UCS 200M (1041123)
ISMISO SOFTWARE V.4.16 (1041121)
ISO 7637- ROAD VEHICLES TEST SOFTWARE V.1.37 (1041122)
PROBE TESTO MOD.625 (1041018)
SPITZENBERGER SPIES VIECHTACH AUTOMOTIVE SIMULATION SYSTEM (104976)

4 MEASURING UNCERTAINTIES

Test	Uncertainty
Radiated emissions test	± 3.9 dB
Transient Immunity	--
Voltage transient emissions	--
Radiated Immunity	± 1.7 dB

Table 1: Measuring uncertainties

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by a coverage factor k=2. which for normal distribution corresponds to a coverage probability of approximately 95%.

IDIADA PC16040372

IDIADA

DOCUMENTACIÓN TÉCNICA /
TECHNICAL DOCUMENTATION

IDIADA PC16040372

FICHA DE CARACTERÍSTICAS PARA LA HOMOLOGACIÓN DE TIPO DE UN SUBCONJUNTO ELÉCTRICO O ELECTRÓNICO EN LO REFERENTE A LA COMPATIBILIDAD ELECTROMAGNÉTICA DE ACUERDO AL ANEXO IIB DEL R-ECE 10.05 / *INFORMATION DOCUMENT TYPE-APPROVAL OF AN ELECTRIC/ELECTRONIC SUB-ASSEMBLY WITH RESPECT TO ELECTROMAGNETIC COMPATIBILITY ACCORDING TO ANNEX IIB OF ECE-R10.05*

Fecha de aplicación / *Application date*:5/04/2016

Contenido / *Content*

DOCUMENTO / *DOCUMENT*	**PÁGINA / *PAGE***
Aspectos Generales / *General Aspects*	2
Únicamente Applicable para Sistemas de Carga / *Only Applicable for Charging Systems*	4
Apéndice 1 / *Appendix 1*	5

FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentowana przez FRISTOM sp. z o.o.

IDIADA PC16040372

ASPECTOS GENERALES / *GENERAL ASPECTS*

1	Marca / *Make*	: FRISTOM
2	Tipo / *Type*	: **FT-140 LED**
	Denominación(es) commercial(es) / *General commercial description(s)*	: **Combined 3 function LED signalling lamp**
3	Medio de identificación del tipo de component o unidad técnica independiente / *Means of identification of type, if marked on the component/separate technical unit*	: Labelled, See Appendix 1
3.1	Ubicación de esa marca / *Location of that marking*	: Flexible fitting arm of the product, See Appendix 1
4	Nombre y dirección del fabricante / *Name and address of manufacturer*	: **FRISTOM Spółka z ograniczoną odpowiedzialnością Spółka komandytowa** 86-014 Sicienko ul.Przemysłowa 5/ Poland
	Nombre y dirección del representante autorizado (si procede) / *Name and address of authorized representative (if any)*	: N/A
5	En el caso de componentes y UTI, emplazamiento y forma de colocación de la marca de homologación CE / *In the case of components and STU, location and method of affixing of the EC approval mark*	: See Appendix 1
6	Dirección(es) de la(s) planta(s) de montaje / Address(es) of assembly plant(s)	: **FRISTOM Spółka z ograniczoną odpowiedzialnością Spółka komandytowa** 86-014 Sicienko ul.Przemysłowa 5/ Poland
7	Este SEE se homologará como / *This ESA shall be approved as a*	: COMPONENT

FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa
NIP: 5542926937, REGON 34164090
reprezentowana przez FRISTOM sp. z o.o.

IDIADA PC16040372

8	Restricciones de uso y condiciones de instalación / *Any restrictions of use and conditions for fitting*	: Only for use in DC voltage circuits from 12-36V $_{DC}$
9	Tensión nominal del sistema eléctrico / *Electrical system rated voltage*	: 12-36V $_{DC}$ / see APPENDIX1

FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentowana przez FRISTOM sp. z o.o.

IDIADA PC16040372

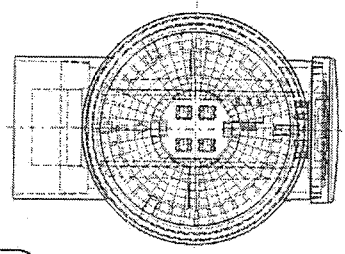
ÚNICAMENTE APLICABLE PARA SISTEMAS DE CARGA / *ONLY APPLICABLE FOR CHARGING SYSTEMS*

10	Cargador / *Charger*	: N/A
11	Corriente de Carga / *Charging current*	: N/A
12	Corriente nominal máxima (en cada modo en caso necesario) / *Maximal nominal current (in each mode if necessary)*	: N/A
13	Tensión de carga nominal / *Nominal charging voltage*	: N/A

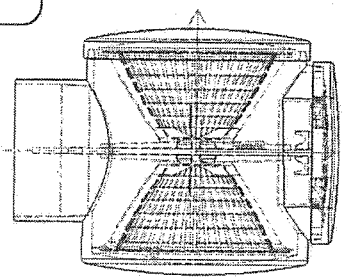
FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentowana przez FRISTOM sp. z o.o.

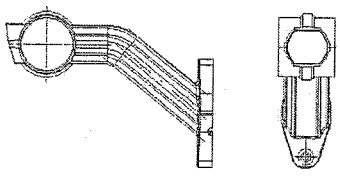
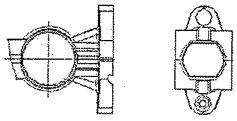
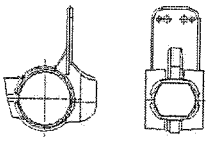
IDIADA PC16040372

APÉNDICE I / *APPENDIX I*



FT-140 LED (view without flexible mounting arm)



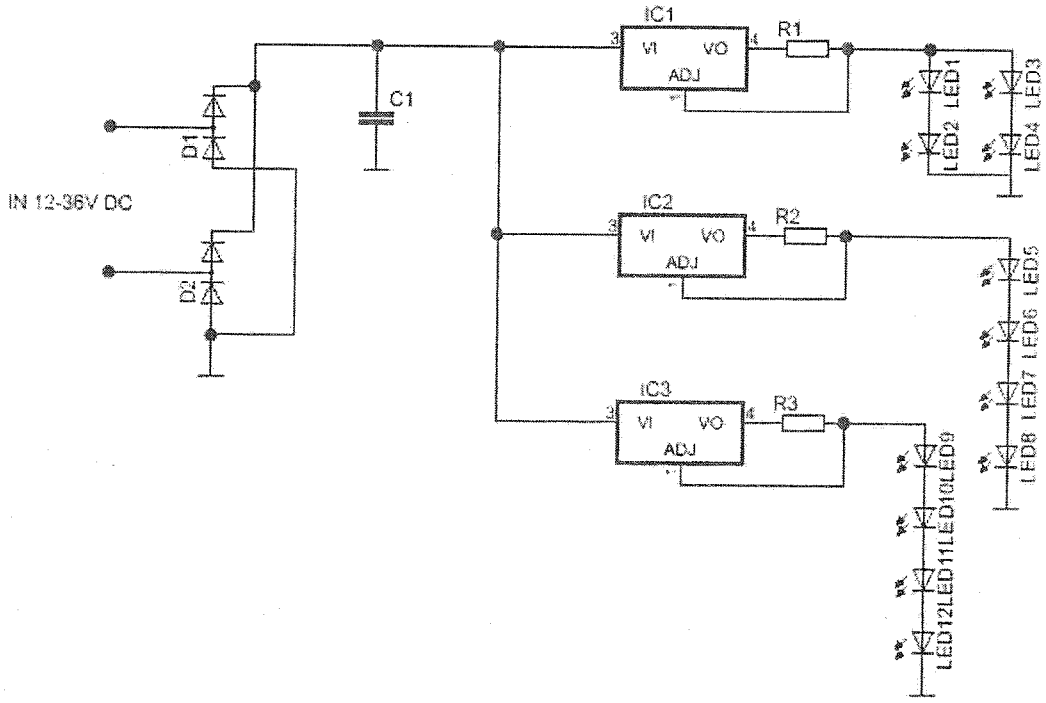
FT-140 LED variants		
FT-140 LED variant F	FT-140 LED variant A	FT-140 LED variant W
		

FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentowana przez FRISTOM sp. z o.o.

IDIADA PC16040372

Diagrama de bloques electrónicos / *Electronic block diagram*
TYPE FT-140 LED (red , white and amber light color)

rated voltage **12V/24V** current : **0,1A/0,1A** ; rated power **1,2 W/2,4 W**



FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentowana przez FRISTOM sp. z o.o.

IDIADA PC16040372

Lista de componentes del SEE / *List of components constituting the ESA*
TYPE FT-140 LED (red , white and amber light color)

- R1,2 - 33R
- R3 - 51R
- C1 - 2,2uF/100V
- D1,2 - BAV99
- LED1-4 - ET-3528W
- LED5-8 - LY A67F-AABA
- LED9-12 - ET-3528R
- IC1-3 - TS317CW RM

FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentowana przez FRISTOM sp. z o.o.

IDIADA PC16040372