Laboratories GSD SRL

CE MARKING

ELECTROMAGNETIC COMPATIBILITY
ELECTRICAL SAFETY
LASER SPECTROSCOPY
ENVIRONMENTAL PHYSICS

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Organizzazione con Sistema di Gestione certificato
Company with Management System certified
ISO 9001:2008

SINCERT

Report n. 13288

Manufacturer: **UR Fog S.r.l.**
Via Collegno, 11
10143 Torino
Italy

Test Family Name: **FAST 02-03**

Test Item Name: **FAST 02**

PISA, OCTOBER 17, 2013

G.S.D. s.r.l.
Via Marmiceto, 8
56121 OSPEDALETTO - PISA
Tel. 050.984254 - Fax 050.984262
P. IVA 01343950505

SENIOR EMC TEST MANAGER
Dr. Gian Luca Genovesi

QUALITY MANAGER
Dr. David Pelliccia

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1 MANUFACTURER AND EUT IDENTIFICATION[1]

Manufacturer	**UR Fog S.r.l.**
Address	Via Collegno, 11 10143 Torino Italy
Test Family Name	**FAST 02-03**
Test Item Name	**FAST 02**
Product Family	**FAST 02** **FAST 03**
Date of reception	**October, 04, 2013**
Sampling	**Random from production**
Power	**230 Vac 50 Hz**
Test Item Description	***"Sistema Nebbiogeno"***

[1]A detailed documentation is preserved in the internal fascicle.

2 REFERENCE STANDARDS

Tests and measurements are performed accordingly to the reference standards given in the table below:

TEST	*STANDARD*
Emission: Conducted	CEI EN 61000-6-3: 2007 + /A1:2013
Emission: Radiated	CEI EN 61000-6-3: 2007 + /A1:2013
Emissions: harmonics	EN 61000-3-2:2007 +/A1/A2:2011
Emissions: voltage fluctuations and flicker	CEI EN 61000-3-3:2009
Fast transients (EFT-Bursts)	CEI EN 50130-4:2012
Radio Frequency Electromagnetic Fields radiated susceptibility	CEI EN 50130-4:2012
Radio Frequency common mode	CEI EN 50130-4:2012
Surges	CEI EN 50130-4:2012
Voltage dips and interruptions	CEI EN 50130-4:2012
ESD immunity test	CEI EN 50130-4:2012
Electrical Safety Verifications	CEI EN 60335-1:2008 +/A13:2009 + /A14:2012 + /A15:2012

Performance criteria
In order to conform to the emission standards the equipment shall meet the limits of conducted and radiated emission.
•*Performance Criterion* **A**
The EUT shall continue to operate as intended during and after the test.
•*Performance Criterion* **B**
The EUT shall continue to operate as intended after the test.
•*Performance Criterion* **C**
Temporary degradation or loss of function or performance is allowed during the test, provided the function is self recoverable, or can be restored at the end of the test by operation of the controls, as defined in the relevant equipment standard and in the technical specification published by the manufacturer.

3 TEST GENERALITY

Immunity performance criteria are performed accordingly to the reference standards given in the table below:

IMMUNITY TEST	*MINIMUM CRITERION*
Fast transients (EFT-Bursts)	B
Radio Frequency Electromagnetic Fields radiated susceptibility	A
Radio Frequency common mode	A
Surges	B
Voltage dips and interruptions	B/C
ESD immunity test	B

Evaluation criteria

Functional test

Disposition of test and measure

Test and/or measure disposition is compliance with the relative reference standard. The configuration of the test sample has been varied to achieve maximum disturbance and susceptibility. Test performed on FAST 02 sample.

Ancillary equipment:
Switching Adaptor HESAVISION mod. AT1A12V (CE marked)

Environmental Conditions

Temperature = (295 ± 3) K

Relative humidity = (50 ± 5) %

Summary of Test Results

TEST	***RESULT***
Emission: Conducted	*Pass*
Emission: Radiated	*Pass*
Emissions: harmonics	*Pass*
Emissions: voltage fluctuations and flicker	*Pass*
Fast transients (EFT-Bursts)	*Pass*
Radio Frequency Electromagnetic Fields radiated susceptibility	*Pass*
Radio Frequency common mode	*Pass*
Surges	*Pass*
Voltage dips and interruptions	*Pass*
ESD immunity test	*Pass*
Electrical Safety Verifications	*Pass*

Note

Results are referred to complete system and sub systems. For the results see related sections.

Extensions

The results refer only to the sampled EUT and under the specified conditions.

4 CONDUCTED EMISSIONS

Equipment shall meet the limits below when using a CISPR16 quasi-peak and average detector receivers.

FREQUENCY RANGE (MHz)	*QUASI-PEAK LIMIT* [dB(µV)]	*AVERAGE LIMIT* [dB(µV)]
0.15 - 0.50	66÷56(*)	56÷46(*)
0.50 - 5	56	46
5 - 30	60	50

(*) *Limit decreasing linearly with logarithm of frequency*

Test Equipment

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
EMI Receiver	HP	HP8546A	01/2014
EMI Receiver Filter Section	HP	HP85460A	01/2014
Screened Room	GSD	CSC01	01/2014
Transient Limiter	HP	11947A	01/2014

Test procedure: CE22R01

Test method

Test method was in accordance with the reference standard.

EUT modes of operations were tested in order to achieve the maximum level of emission.

Results

Graphics in following figures show some registrations of the frequency spectrum of the conducted emissions.

As regards intermittent disturbances, no click were observed: Equipment complied with the test specification limits.

Job Number	13288
Test Name	Conducted Emissions EN 61000-6-3
EUT Name	UR Fog S.r.l. - FAST 02

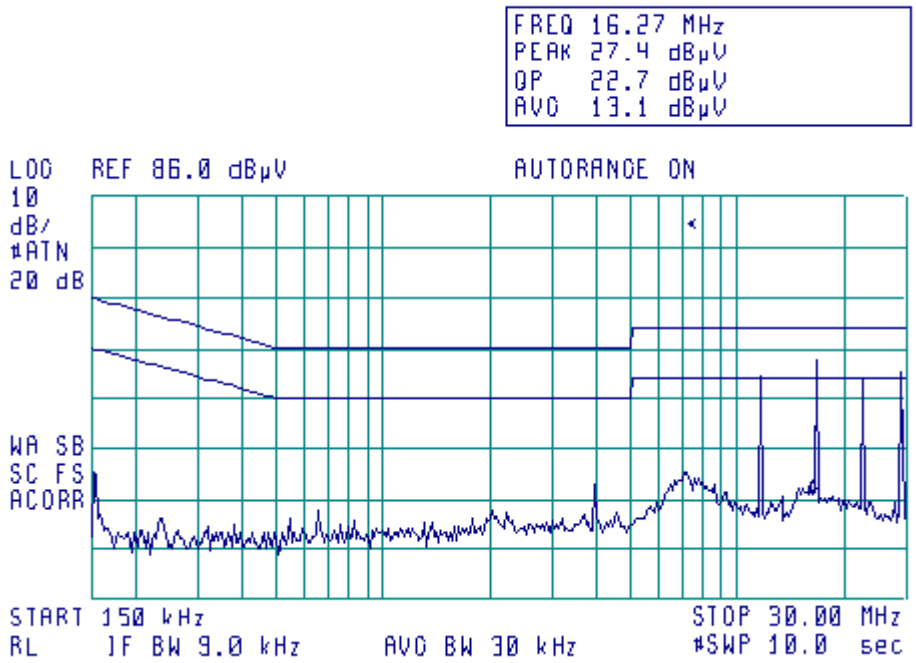


Fig. 4 1

B Band (0.15 – 30 MHz): phase 1

Job Number	13288
Test Name	Conducted Emissions EN 61000-6-3
EUT Name	UR Fog S.r.l. - FAST 02

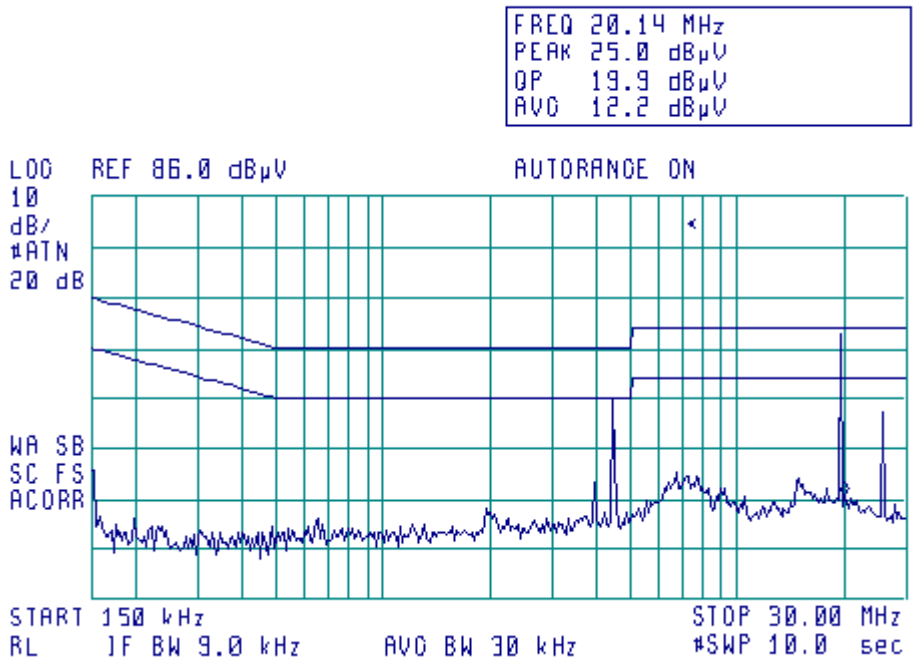


Fig. 4 2

B Band (0.15 – 30 MHz): phase 2

5 RADIATED EMISSIONS

In the following table you can find the limits established by the reference standard:

DISTANCE (m)	*FREQUENCY RANGE (MHz)*	*QUASI-PEAK LIMIT [dB (µV/m)]*
3	30 ÷ 230	40
3	230 ÷ 1000	47

Test Equipment

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
EMI Receiver	HP	HP8546A	01/2014
EMI Receiver Filter Section	HP	HP85460A	01/2014
Anechoic Chamber	Comtest	CSA01	01/2014
Bilog Antenna	Schaffner	CBL6112B	01/2014
Horn Antenna	EMCO	3115	01/2014
Controller	Deisel	HD100	01/2014
Turn Table	Deisel	MA240	01/2014

Test procedure: RE22R02

Notes

Azimuth position EUT-Antenna corresponding to 0° identifies the rotating table orientation (TT) in which the instrument to be tested shows the front part turned towards the antenna. Positive grades individuate clockwise rotations of TT when this one is observed from the top. For negative degrees, TT rotation is anticlockwise.

Antenna height respect to the mass plane is conventionally individuated with: MA=XXX where XXX indicates the height (always positive for e>100) expressed in cm.

Antenna horizontal polarization is indicated by POL=H.

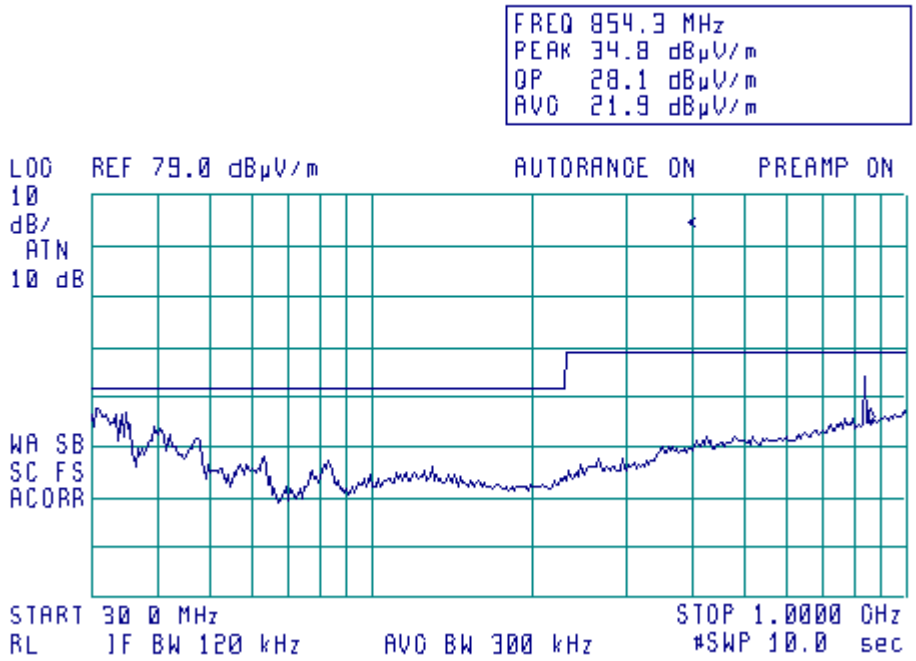
Antenna vertical polarization is indicated by POL=V.

Accordingly to reference standard, a limit relaxing factor equal to 20 dB for decade for measurements performed at 3 m has been used.

Results and conclusions

In all the operative conditions, equipment complied with the standard limits. Graphics in following figures show the most significant registrations of the performed measurements.

Job Number	13288
Test Name	Radiated Emissions EN 61000-6-3
EUT Name	UR Fog S.r.l. - FAST 02

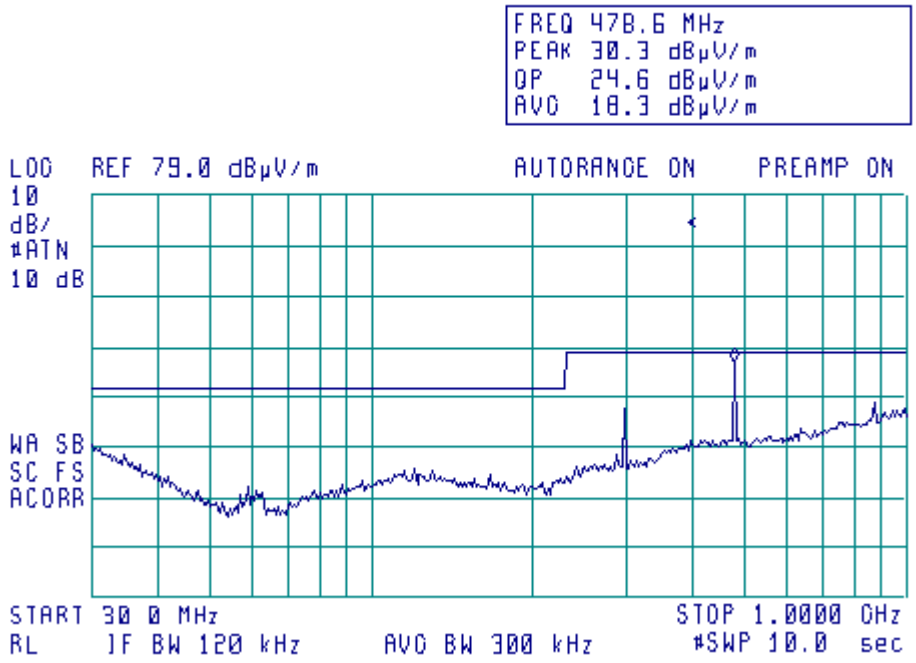


Notes:
Pol.=V
TT=0°
MA=100cm

Fig. 5 1

Record of the measurement of radiated emissions.

Job Number	13288
Test Name	Radiated Emissions EN 61000-6-3
EUT Name	UR Fog S.r.l. - FAST 02



Notes:
Pol.=H
TT=0°
MA=100cm

Fig. 5 2

Record of the measurement of radiated emissions.

6 EMISSIONS: CURRENT HARMONICS

The following table gives the limits given by EN 61000-3-2 standard:

current harmonic order n	***maximum current value A***
odd current harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	0.15 15/n
even current harmonics	
2	1.08
4	0.43
6	0.30
$8 \leq n \leq 40$	0.23 8/n

Test method

The test method was in accordance with the reference standard.
EUT modes of operations were tested in order to achieve the maximum level of emission.

Test equipment

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
AC SOURCE	PACIFIC POWER SOURCE	140-AMX	01/2014
ANALYZER	EM TEST	DPA 500N	01/2014

Test procedure: CE32R00

Results

The equipment complied with the test specification limit.
Graphic in fig. 6.1 shows the registration of the frequency spectrum of the current harmonics emissions

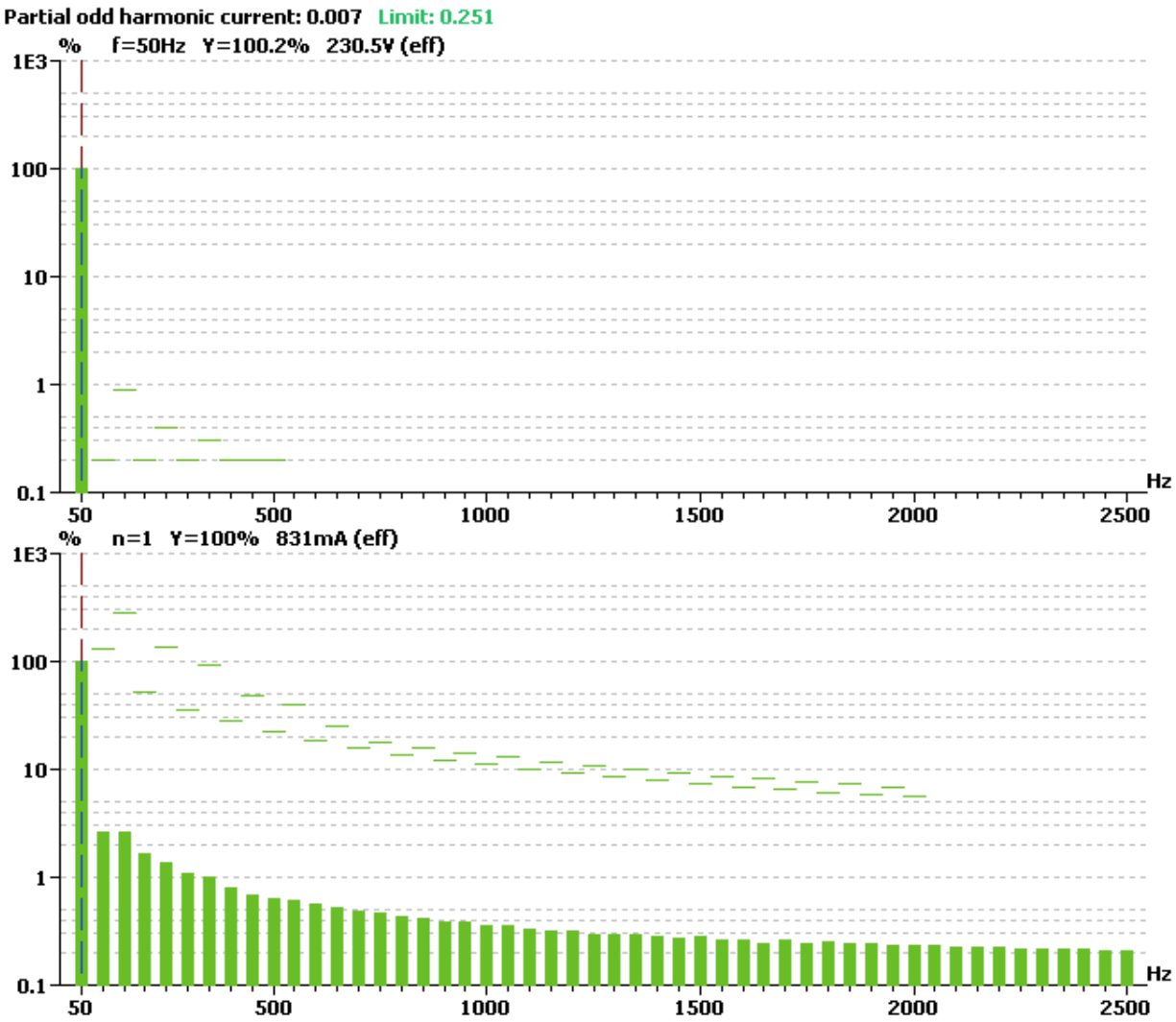


Fig. 6 1
Limit and frequency spectrum of the current harmonic emissions

7 EMISSIONS: FLICKER

The following table give the limits given by EN 61000-3-3 standard:

Variable	*Limit*
P_{st}	≤ 1.0
P_{lt}	≤ 0.65
d_c	≤ 3%
d_{max}	≤ 4%
d(t)	≤ 3% (t < 200 msec)

Observation period for measure of P_{st}: T_p = 20 min.
Observation period for measure of P_{lt}: T_p = 120 min.

Test method

The test method was in accordance with the reference standard.
EUT modes of operations were tested in order to achieve the maximum level of emission.

Test equipment

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
AC SOURCE	PACIFIC POWER SOURCE	140-AMX	01/2014
ANALYZER	EM TEST	DPA 500N	01/2014
REFERENCE IMPEDANCE	GSD	IR001	01/2014
REFERENCE IMPEDANCE	GSD	IRN001A	01/2014

Test procedure: CE32R00

Results

Variable	*Measure*
P_{st}	0,95
P_{lt}	0,55
d_c	1,10%
d_{max}	1,20%
d(t) ≥ 3%	0.0 ms

The equipment complied with the test specification limit.

8 ELECTRICAL FAST TRANSIENT (EFT/BURSTS) IMMUNITY TEST

Equipment shall meet the immunity limits below.

Equipment shall meet the immunity limits given in the following table: characteristics of pulses are shown (EN 61000-4-4)

U_p			
RISE TIME (ns)	*DURATION (at 50%) (ns)*	*BURST DURATION (ms)*	*BURST PERIOD (ms)*
5	50	15	300

Test time length: 2 minutes

Test method

Test method was in accordance with §6.2 of the reference standard and §7 - §8 of EN 61000-4-4.

Amplitude limits as in EN 50130-4 is 2KV for AC input and 1KV for signal cables.

Test procedure: CS44R00

Test Equipment

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
Burst Generator	KEYTEK	CEMASTER	01/2014
Burst Generator	Compliance Design Inc.	EFT/B 100	01/2014
Capacitive Clamp	Teseo	-	01/2014

Results

APPLICATION (Transients)	*SIGNALS*	*DIFFERENTIAL MODE PHASE*	*DIFFERENTIAL MODE NEUTRAL*	*DIFFERENTIAL MODE PE*	*COMMON MODE*
	RESULT (Pass/Fail)	*RESULT (Pass/Fail)*	*RESULT (Pass/Fail)*	*RESULT (Pass/Fail)*	*RESULT (Pass/Fail)*
+ 2 kV	-	*Pass*	*Pass*	*Pass*	*Pass*
- 2 kV	-	*Pass*	*Pass*	*Pass*	*Pass*

The equipment continued to operate as intended after the test.

9 Radio Frequency Electromagnetic Fields Radiated Susceptibility

The following table shows the e.m. field parameters:

Amplitude (unmodulated) [*] *(V/m)*	*Frequency (MHz)*	*Modulation (Frequency/Deep)*	*Step Size (%)*
10	80 ÷ 2000	1 kHz / AM 80% 1 Hz (0,5 s ON; 0,5 s OFF)	1

[*] R.M.S. EFFECTIVE VALUE

Test Equipment

Equipment	Manufacturer	Model	Next Calibration
RF Signal Generator	HP	8648A	01/2014
Function Generator	HP	HP33120A	01/2014
Amplifier	Amplifier Research	30W1000M7	--
Amplifier	Amplifier Research	75A250	--
Amplifier	GTC	GRF5016A	--
Power Meter	HP	HPE4419B	01/2014
Power Sensor	HP	HP8481D	01/2014
Power Sensor	HP	HP8482A	01/2014
Directional Coupler	HP	778D-012	01/2014
Directional Coupler	Amplifier Research	DC3010	01/2014
Antenna Biconical	AH Systems	SAS-200/543	01/2014
Antenna Log-Periodic	AH Systems	SAS-200/512	01/2014
Antenna Horn	EMCO	3115	01/2014
Anechoic Chamber	Comtest	CSA01	01/2014
Controller	Deisel	HD100	01/2014
Turn Table	Deisel	MA240	01/2014

Test procedure: RS43R02

Results and conclusions

FRONT ***RESULT** (Pass/Fail)*		***BACK*** ***RESULT** (Pass/Fail)*	
Vertical Polarization	Horizontal Polarization	Vertical Polarization	Horizontal Polarization
Pass	*Pass*	*Pass*	*Pass*

RIGHT ***RESULT** (Pass/Fail)*		***LEFT*** ***RESULT** (Pass/Fail)*	
Vertical Polarization	Horizontal Polarization	Vertical Polarization	Horizontal Polarization
Pass	*Pass*	*Pass*	*Pass*

The equipment continued to operate as intended during the test.

10 RADIO FREQUENCY, COMMON MODE

The following tables give the parameters of test.

FREQUENCY RANGE (MHz)	*RF INTENSITY (Volt)*	*MODULATION*
0.15 – 100	10 V	1 kHz / AM 80% 1 Hz (0,5 s ON; 0,5 s OFF)

Test Instrumentation

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
RF SIGNAL GENERATOR	HP	8648A	01/2014
AMPLIFIER	AMPLIFIER RESEARCH	75A250	--
POWER METER	HP	HPE4419B	01/2014
POWER SENSOR	HP	HP8481D	01/2014
POWER SENSOR	HP	HP8482A	01/2014
DIRECTIONAL COUPLER	AMPLIFIER RESEARCH	DC3010	01/2014
CDN	GSD	M3	01/2014
CDN	GST	T4	01/2014
CURRENT INJECTION CLAMP	FCC	F-203I	01/2014

Test Procedure: CS406R03

Results

LINE	*RESULT (Pass/Fail)*
Main Power	*Pass*

The equipment continued to operate as intended during the test.

11 SURGE IMMUNITY TEST

The following table give the parameters of test.

RISE TIME *(μs)*	***LENGTH OF PULSE (50%)*** *(μs)*	***AMPLITUDE*** *(kV)*	
1.2	50	± 1 (Line - Line)	± 2 (phase - earth)

Test instrumentation

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
SURGE GENERATOR	KEYTEK	CEMASTER	01/2014

Test procedure: CS405R01

Results:

LINE *(Mains Power/Signal)*	***AMPLITUDE*** [*] ***/ PHASE*** *(kV / DEGREE)*	***RESULT*** *(Pass/Fail)*
Mains Power: phase1 – phase2	+ 0.5 / +1 @ 0°-90°-270°	*Pass*
Mains Power: phase1 – phase2	- 0.5 / 1 @ 0°-90°-270°	*Pass*
Mains Power: phase1 – earth	+ 0.5 / +1 /+2 @ 0°-90°-270°	*Pass*
Mains Power: phase1 – earth	- 0.5 / 1 / -2 @ 0°-90°-270°	*Pass*
Mains Power: phase2 – earth	+ 0.5 / +1 /+2 @ 0°-90°-270°	*Pass*
Mains Power: phase2 – earth	- 0.5 / 1 / -2 @ 0°-90°-270°	*Pass*

[*] The open circuit voltage

The equipment continued to operate as intended after the test.

12 VOLTAGE DIPS AND SHORT INTERRUPTIONS

The following table give the parameters of test:

TEST	***TEST REDUCTION*** *(Reduction %U_r)*	***LENGTH*** *(Cycles)*
Voltage Dips	60%	0,5 / 1 / 5 / 10
Voltage Dips	30%	0,5 / 1 / 5 / 10
Short Interruption	100%	0,5 / 1 / 5

Test instrumentation

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
PQF GENERATOR	KEYTEK	CEMASTER	01/2014

Test procedure: CS411R02

Results

LEVEL *(% reduction / periods)*	***RESULT*** *(Pass/Fail)*
30 / 0,5 / 1 / 5 / 10	*Pass*
60 / 0,5 / 1 / 5 / 10	*Pass*
100 / 0,5 / 1 / 5	*Pass*

The equipment continued to operate as intended after the test.

13 ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Equipment shall meet the immunity limits given in the following table: characteristics of pulses are shown (EN 61000-4-2).

VOLTAGE (kV)	*FIRST CURRENT PEAK (±10%) (A)*	*RISE TIME (ns)*	*CURRENT (±30%) at 30 ns (A)*	*CURRENT (±30%) at 60 ns (A)*
6	22,5	0.7 - 1	12	6
8	30	0.7 - 1	16	8

Test method

Test method was in accordance with §6.1 of the reference standard and §7 - §8 of EN 61000-4-2. 10 positive and 10 negative discharges with intervals of at least 1 second between discharges were applied in each test point.

Test instrumentation

EQUIPMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
ESD Generator	Keytek	MZ–15FC	01/2014
Screened Chamber	GSD	CSC01	01/2014

Test procedure: ESD42R01

Results

4 kV CONTACT DISCHARGE	*DIRECT RESULT (Pass/Fail)*	*INDIRECT VCP RESULT (Pass/Fail)*	*INDIRECT HCP RESULT (Pass/Fail)*
+ 2, 4, 6 kV	*Pass*	*Pass*	*Pass*
- 2, 4, 6 kV	*Pass*	*Pass*	*Pass*
8 kV AIR DISCHARGE	***DIRECT RESULT (Pass/Fail)***	***INDIRECT VCP RESULT (Pass/Fail)***	***INDIRECT HCP RESULT (Pass/Fail)***
+ 2, 4, 8 kV	*Pass*	*Pass*	*Pass*
- 2, 4, 8 kV	*Pass*	*Pass*	*Pass*

The equipment continued to operate as intended after the test.

14 ELECTRICAL SAFETY

Reference standard	CEI EN 60335-1:2008, 3th edition July 2008 +/A13:2009, /A14:2012, /A15:2012 CLASSIFICATION CEI: 61-150 Title: *"Household and similar electrical appliances - Safety"* *Part 1: General requirements*
Test place	GSD Laboratories – Pisa
Test procedure	BT335-01-R00
Test performing period	2013 October 04-10
Number of instruments under test	Nr. 1 system
Evaluation criteria	Test, measurement and visual tests
Test and measurement instructions	For each test and measurement the instructions have been taken from the relative reference standard
Instrument description	*"Sistema Nebbiogeno"*
Sampling	Random from production
Power Supply/ Nominal Power	230 Vac 50 Hz
Documentation	User's manual rev. 1.0.0 September 2013
Auxiliaries devices and/or peripheries	--
Classification	Class I equipment
Environmental conditions	See § 3
Extensions	Test and measurements results refer exclusively to the tested specimen and to the specified test conditions.
Acronyms	P = Pass F = Fail NA = Not applicable -- = No remark required

Test Equipment

INSTRUMENT	MANUFACTURER	MODEL	NEXT CALIBRATION
Electrical Tests Device	SCHLEIG - VOLTA	GLP2	01/2014
Data acquisition system	HEWLETT-PAKARD	HP34970A	01/2014
Multiplexer	HEWLETT-PAKARD	HP34901A	01/2014
Digital Multimeter	ESCORT	EDM-83BS	01/2014
Digital Multimeter	FLUKE	87	01/2014
Digital Multimeter	GW	GDM-351	01/2014
Analog Multimeter	ICE	680 R	01/2014
Power analyser	XITRON	2503AH	01/2014
Power meter	HEWLETT-PAKARD	HP436A	01/2014
Test Finger	GSD	PF01-950	01/2014
Articulate Test Finger	GSD	APF01-950	01/2014
Impact Hammer	GSD	IH02-950	01/2014
Still sphere	GSD	SS02-1	01/2014
Current probe	ESCORT	ECT - 689	01/2014
Digital Oscilloscope	TEKTRONIX	TDS 520B	01/2014
Analogue Oscilloscope	GW	GOS-652	01/2014
Thermocouples	RS	219-4309	01/2014
Isolating Transformer	GSD	XF03	--
High tension probe	FLUKE	80K–40HV	01/2014
High tension probe	TEKTRONIX	P6015A	01/2014
Active differential probe	TEKTRONIX	P5200	01/2014
Climatic Chamber	GSD	HC01	01/2014
Test probe	GSD	TP01-950	01/2014
Variac	GSD	VC01	--
Leakage current test equipment	GSD	MD 01	01/2014
Dielectric strength test equipment	GSD	HP01	01/2014
Dynamometer	GSD	DYM02-1	01/2014
Thermometer / Hygrometer mechanic	BERLIN	Polymeter 1	01/2014
Continuity earth test equipment	GSD	IT01	01/2014
HV transformer	GSD	HV01	--
Power Supply	HEWLETT-PAKARD	HP6291A	01/2014
Variac	BELOTTI	T-10NC3	--
Digital Thermometer	RS	206-3750	01/2014
Climatic Chamber	Angelantoni	CH 1200 C	01/2014

14.1 ELECTRIC STRENGTH TEST

Classification:	Class I equipment
Limits:	Test voltage to apply for one minute at insulation under test: 3000 V_{AC} (between metalized case and the two phases); 1500 V_{AC} (between ground and the two phases)
Test procedure:	BT335-01-R00/RD
Test set-up:	Test performed on the whole equipment
Measure uncertainty:	≤ 3% of test voltage ≤ 6% of test current
Operative set-up:	Not connected to power supply
Compliance criteria:	There shall be no breakdown of insulation, nor superficial, nor disruptive
Result:	No breakdown of insulation observed. EUT complies with standard prescriptions.

TEST INSTRUMENTATION

Instrument	*Manufacturer*	*Model*	*Next calibration*
Electrical tests device	Volta/Schleig	GLP2	01/2014
Instrument for dielectric rigidity test	GSD	HP01	01/2014
Insulator transformer	GSD	XF03	--
"Variation voltage supply" tests device	GSD	VC01	01/2014
High Voltage probe	Fluke	80k-40	01/2014
Multimeter	Hewlett Packard	HP34970A	01/2014
Multimeter	Fluke	Fluke 87	01/2014
Multimeter	Escort	EDM-83BS	01/2014

14.2 EARTH CIRCUIT RESISTANCE

Classification:	Class I equipment
Limits:	R < 0.1 Ω between the parts connected to earth and the same protection earth
Test procedure:	BT335-01-R00/IP
Test set-up:	Test performed on the whole equipment
Measure uncertainty:	5%
Operative set-up:	not connected to power supply
Compliance criteria:	Resistance must not be above the specified limits
Result:	Maximum measured resistance = 0.085 Ω Measure complies with the test specification limit

TEST INSTRUMENTATION

Instrument	*Manufacturer*	*Model*	*Next calibration*
Electrical tests device	Volta/Schleig	GLP2	01/2014
Insulator transformer	GSD	XF03	--
"Variation voltage supply" tests device	GSD	VC01	01/2014
High Voltage probe	Fluke	80k-40	01/2014
Multimeter	Hewlett Packard	HP34970A	01/2014
Multimeter	Fluke	Fluke 87	01/2014
Multimeter	Escort	EDM-83BS	01/2014

14.3 RESIDUAL VOLTAGE

Classification:	Class I equipment
Limits:	V < 35 Vac (peak) or 60 Vdc after 1 sec
Test procedure:	BT335-01-R00/RV
Test set-up:	Test performed on the whole equipment
Measure uncertainty:	5%
Operative set-up:	not connected to power supply
Compliance criteria:	Resistance must not be above the specified limits
Result:	Residual Voltage under limit. Measure complies with standard prescriptions.

TEST INSTRUMENTATION

Instrument	*Manufacturer*	*Model*	*Next Calibration*
Digital oscilloscope	Tektronix	TDS520B	01/2014
Active differential probe	Tektronix	P5200	01/2014
Insulator transformer	GSD	XF03	--
"Variation voltage supply" tests device	GSD	VC01	01/2014
Multimeter	Hewlett Packard	HP34970A	01/2014
Multimeter	Fluke	Fluke 87	01/2014
Multimeter	Escort	EDM-83BS	01/2014
Multimeter	ICE	S.Tester 68R	01/2014
Variac mono-phase	GSD	VC02	–

14.4 LEAKAGE CURRENT MEASUREMENT

Classification:	Class I equipment
Limits:	I < 0,7 mA
Test procedure:	BT335-01-R01/LC
Measure uncertainty:	5% of measured current
Operative set-up:	normal operation
Compliance criteria:	Resistance must not be above the specified limits
Result:	Maximum value measured: I < 0,65 mA Measure complies with the test specification limit

TEST INSTRUMENTATION

Instrument	*Manufacturer*	*Model*	*Next calibration*
Electrical tests device	Volta/Schleig	GLP2	01/2014
Insulator transformer	GSD	XF03	--
"Variation voltage supply" tests device	GSD	VC01	01/2014
MD device for leakage current measurement	GSD	MD35/01	01/2014
Multimeter	Hewlett Packard	HP34970A	01/2014
Multimeter	Fluke	Fluke 87	01/2014
Multimeter	Escort	EDM-83BS	01/2014

14.5 INSULATION RESISTANCE TEST

Classification:	Class I equipment
Limits:	R > 2 MΩ
Test procedure:	BT950/R01/IR
Test set-up:	Test performed on the whole equipment
Measure uncertainty:	≤ 3% of test voltage ≤ 6% of test current
Operative set-up:	not connected to power supply
Compliance criteria:	Resistance, calculated as the ratio between the applied tension and the absorbed current, must be above 2 MΩ
Result:	R > 20 MΩ . Measure complies with standard prescriptions.

TEST INSTRUMENTATION

Instrument	*Manufacturer*	*Model*	*Next calibration*
Electrical tests device	Volta/Schleig	GLP2	01/2014
HV generator	Ital Elettronica	P24	01/2014
Insulator transformer	GSD	XF03	--
Limit-maker resistance	GSD	RL01	01/2014
“Variation voltage supply” tests device	GSD	VC01	01/2014
High Voltage probe	Fluke	80K-40	01/2014
Multimeter	Hewlett Packard	HP34970A	01/2014
Multimeter	Fluke	Fluke 87	01/2014
Multimeter	Escort	EDM-83BS	01/2014

15 PHOTOS

Fig. 15 1
EUT front view

Fig. 15 2
EUT rear view

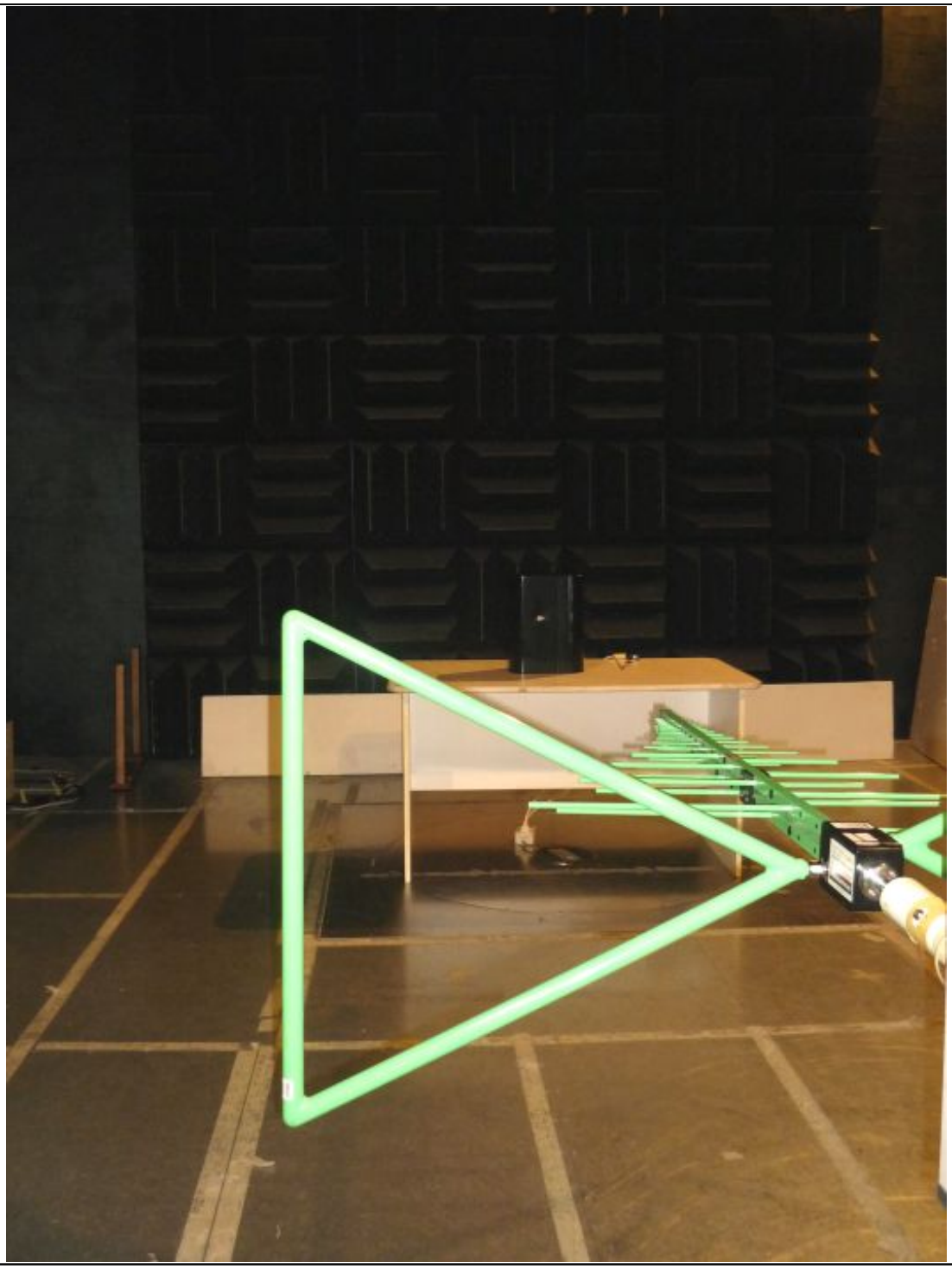


Fig. 15 3
Radiated Emissions Test Setup inside Semianechoic Chamber

Fig. 15 4
Radiated Susceptibility Test Setup inside Semianechoic Chamber

Fig. 15 5
Conducted Emissions Test Setup

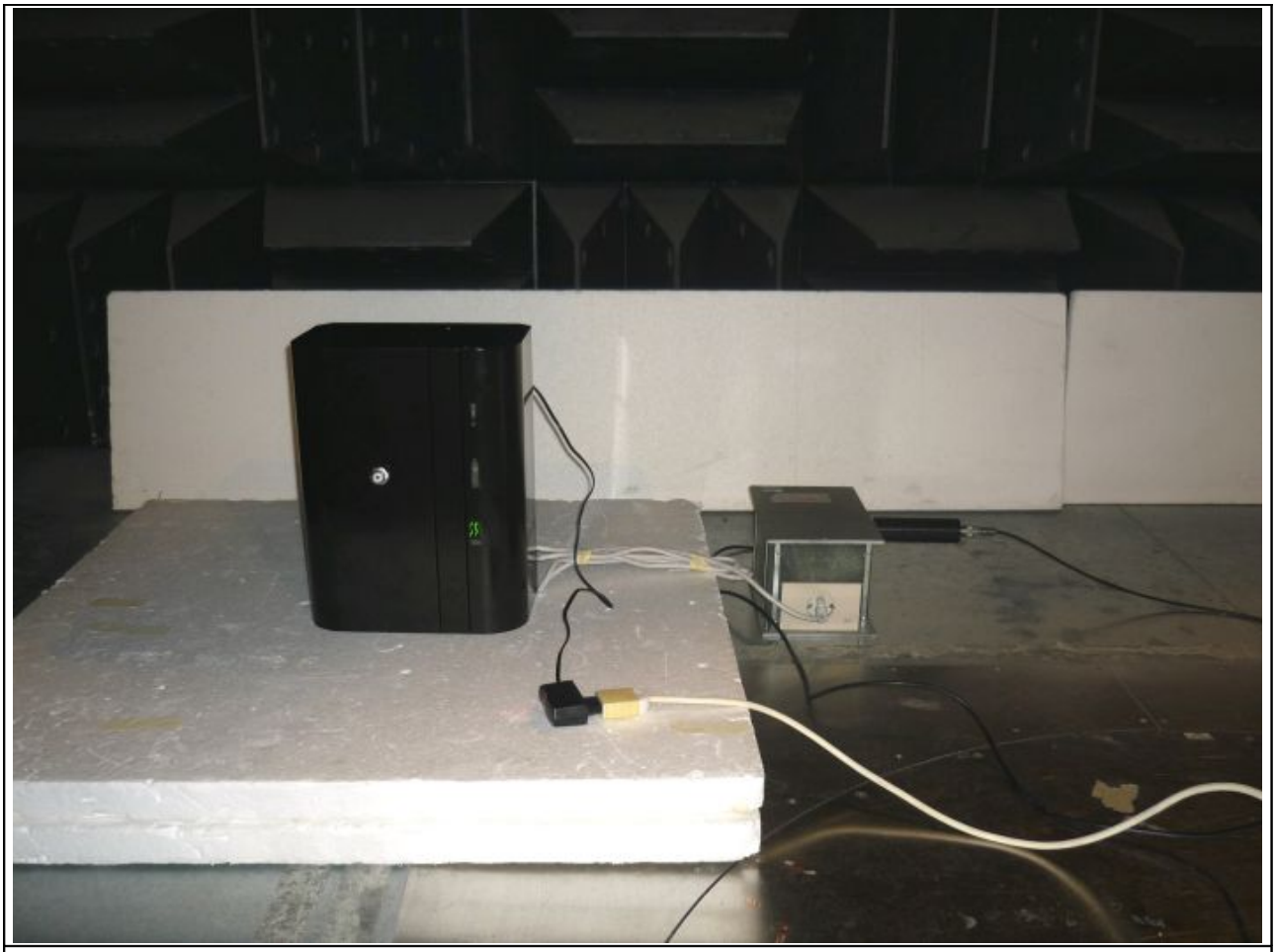


Fig. 15 6
Conducted Susceptibility Test Setup