Electromagnetic Compatibility SECTOR (EMC)

Product description:	Equipment for aesthetic use			
Tested model:	Biocleaner			
HW revision:	BIOCLEANER_A	**SW/FW revision:**	10_03	
Test specification:	EN 55014-1:2006-12 +A1 EN 55014-2:1997-02 +A1 +A2			
Performed tests:	All applicable tests			
Result:	***Pass*** ☒	***Fail*** ☐	***See § 5*** ☐	
Manufacturer:	**Tecnodal S.n.c** Via Mascherpa, 14 20048 – Carate Brianza (MI)			
Manufacturing Plant:	Same as Manufacturer			
Applicant:	Same as Manufacturer			
Customer:	**Maione Attilio for HEALTH GATE S.r.l** Via Roma, 366 – 10121 Torino - Italy			
Purchase Order:	Email	**dated:**	2010-09-30	
Order Confirmation:	CO 2010-0322	**dated:**	2010-09-30	
Samples receiving date:	2010-09-30			
Tests date:	**from:** 2010-10-13	**to:**	2010-11-05	

Test Laboratory:	**Test site:**
INTEK S.p.A. - Test and Measurement Division Via Mazzini, 75 25086 Rezzato (BS) - Italy Tel. +39.030.2591 857 Fax +39.030.2594 351 url: http://www.intek.it e-mail: info@intek.it	Same as Test Laboratory

Tested by:
Luigi Sala
Test Engineer

Approved by:
Ivo Meroni
Test and Measurement Division Manager

Autore firma digitale: Ivo Meroni
Nome distintivo: CN = Ivo Meroni C = IT
O = Intek S.p.A. OU = Divisione Prove e Misure
Motivo: I am approving this document
Posizione: Rezzato - BS - Italy

Rev.	Date	Description
00	2010-11-30	Formal issue

Results of tests and controls reported in this document refer only to samples as tested and described.
It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.
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1. PURPOSE

Purpose of this document is to contain results of the tests performed to verify correspondence of test sample, as identified and described in paragraph 3, to requirements of standards listed in paragraph 2.

2. APPLICABLE DOCUMENTS

In agreement with the manufacturer were been applied the latest EN available edition.

In the following of this test report, the “applicable documents” will be indicated without date and/or edition number and/or amendments.

2.1 REFERENCE STANDARDS

The reference standards are the harmonized product standards, or the generic standards, that specify which tests must be performed on the test sample, the applicable levels and limits and, sometimes, the operative condition of the sample during tests. The product standards are always prevalent on the generic standards.
After the analysis of main characteristics of the test sample as, for example, typology, destination of use, main functions implemented, characteristics given by manufacturer, the here below listed harmonized product/generic standards were identified:

Standard	Date	ed.	Title
EN 55014-1 + A1	2006-12 2009-05	--	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission - Product family standard
EN 55014-2 + EC + A1 + IS1 + A2	1997-02 1997-12 2001-12 2007-04 2008-10	--	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard

and basic standards listed on chapter 2.2.

2.2 BASIC STANDARDS

Basic standard are standards that specify *how* the tests must be executed, specify the lay-out for testing and specify the instruments that must be used for execution of tests required by product standards.

Standard	Date	ed.	Title
EN 55016-2-3	2006-12	--	Specification for radio disturbance and immunity measuring apparatus and methods Part 2-3: Methods of measurement of disturbances and immunity - Radiated disturbance measurements
EN 61000-4-2	2009-03	--	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
EN 61000-4-3 + A1	2006-05 2008-02	--	Electromagnetic compatibility (EMC) Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test

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3. TEST SAMPLE IDENTIFICATION

3.1 DESCRIPTION

Identification data of test samples are reported in the first page of this document.

Sample identification
Not Available
Copy of marking plate

Country of manufacturer:	Italy
Type of unit:	☐ Fixed equipment ☒ Portable equipment ☐ Panel mounting
Serial number:	Not present

3.1.1 TECHNICAL DATA

Power source:	Battery
Power supply nominal voltage:	12 Vdc
Nominal power or absorbing current:	Not declared
Dimensions:	--
Internal operating frequencies:	16 MHz

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3.1.2 CLASSIFICATION

On the basis of the definition given by the applicable standard the test sample is classified as:	Equipment intended for use in residential locations For immunity: Category III
As far as tests are concerned, test sample is considered as:	☐ Floor standing equipment ☒ Table top equipment
Other information:	--

3.1.3 ADDITIONAL INFORMATION

None

3.2 SAMPLES ORIGIN

The test samples were furnished by:		
Manufacturer ☒	**Customer** ☐	**Applicant** ☐
The beginning sampling was carried out by:		
Manufacturer ☒	**Customer** ☐	**Applicant** ☐

Received samples:	01	**Tested samples:**	01
Selection method:	**Random taking** ☐	**None** ☒	

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3.3 PORTS DESCRIPTION

ID	Name	Type	Cable Lenght	Cable Shielded	Comments
01	Enclosure	**N/E**	--	--	Plastic type
02	Electrode	**--**	< 3m	NO	--

All other input/output lines are declared by manufacturer as “not connected during standard use of tests sample” and therefore they were not submitted to tests.

ID	Name	Type	Cable Lenght	Cable Shielded	Comments
03	12 Vdc	**DC**	--	NO	Used for charge battery

Caption:

ID:	Number assigned to tested line
Name:	Name given by manufacturer
Type:	**AC** = AC Power Port **AC Mains** = AC Mains Power Port **DC** = DC Power Port **N/E** = Non-Electrical **I/O** = Signal Input or Output Port **TP** = Telecommunication Ports
Comments:	For instance type of cable used during tests; **2Pdc:** Two lines (positive and negative) **2Pac:** Two lines (phase and neutral) **3Pdc:** Three lines (positive, negative and ground) **3Pac:** Three lines (phase, neutral and ground) **PE:** Protection Earth **FE:** Functional Earth **nP:** n lines **SW:** Single wire(s) **TW:** Twisted pair

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4. TEST INFORMATIONS

Unless otherwise specified, during the tests the sample/s was/were been configured following the methods and procedure specified in the reference standard.

4.1 CONDITIONS DURING TESTING

4.1.1 TEST ATTENDANT

INTEK S.p.A. test engineer:	***Luigi Sala***
Customer agent:	**--**

4.1.2 EUT MODIFICATION

In agreement with the manufacturer, the tests performed before the modification were not repeated.

Following modifications were inserted during test:

- Electrostatic discharge:
time counter for the control output short circuit is set to a second.

4.1.3 ENVIRONMENTAL CONDITIONS

Laboratory environmental conditions are recorded during tests and they are shown on relevant chapters.

4.1.4 ABBREVIATIONS

Not Applicable = N/A
Not Required by the customer = N/R
Test Report = TR
Equipment Under Test = EUT
U_{LAB} = Laboratory Measurement Uncertainty
U_{CISPR} = Instrumentation Measurement Uncertainty
EMI = ElectroMagnetic Interference
EMS = ElectroMagnetic Susceptibility

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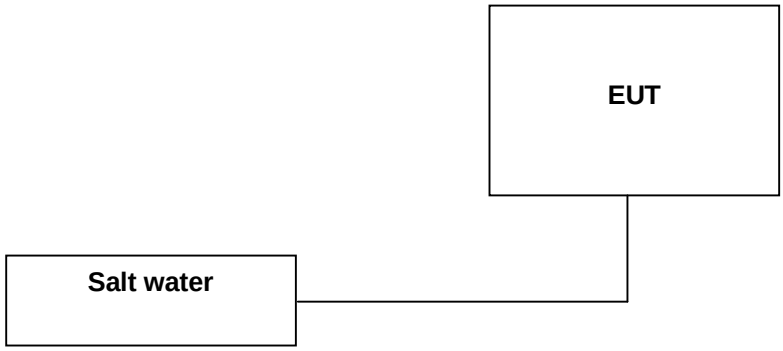
4.2 CONFIGURATION

In agreement with the	☒ Manufacturer ☐ Customer ☐ Applicant	during tests the EUT is ON.

Connections of sample are shown on following figure:



Caption:

Power Supply lines **Signal lines** **Data lines**

4.2.1 AUXILIARY EQUIPMENT DESCRIPTION

Power supply for charge internal battery

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4.3 OPERATIVE CONDITIONS

The operating conditions adopted during the tests in agreement with the

Manufacturer ☒	Customer ☐	Applicant ☐

are listed in the following table and identified by a letter (..) at which has been referred the item "Operating condition" of all paragraphs of the tests result.

Operating condition	Description	Notes
(A)	**EUT Working Power set to 15%**	--
(B)	**EUT Working Power set to 82%**	--

4.4 PERFORMANCE CRITERIA

Emission tests:
"Quasi peak" emissions, and "average" emissions if any, shall be lower than relevant limits.
Measured values are identified on plots annexed as here below described:
- Red line: "quasi peak" emission limit
- Blue line: "average" emission limit
- x [symbol] red: "quasi peak" measured value
- + [symbol] blue: "average" measured value

Immunity tests:
According to requirements of standard EN 55014-2 § 6, here below reported:
"A functional description and a definition of performance criteria, during or as a consequence of the EMC testing, shall be provided by the manufacturer and noted in the test report, based on the following criteria.

Performance criterion A: The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

The following table 14 serves as a guide to formulate the permissible degradation of the equipment under test (EUT) caused by electromagnetic stress. Not all functions of the apparatus need to be tested. The selection, the specification of functions, and the permissible degradation is left to the responsibility of the manufacturer.
Tab. 14- Examples of degradations"
Omissis - See EN 55014-2 at page 11

PERFORMANCE EVALUATION METHOD

The here above listed performance criteria were applied to the sample by means verifying the correct functioning and the information on display:
-Value of power
- Timer.

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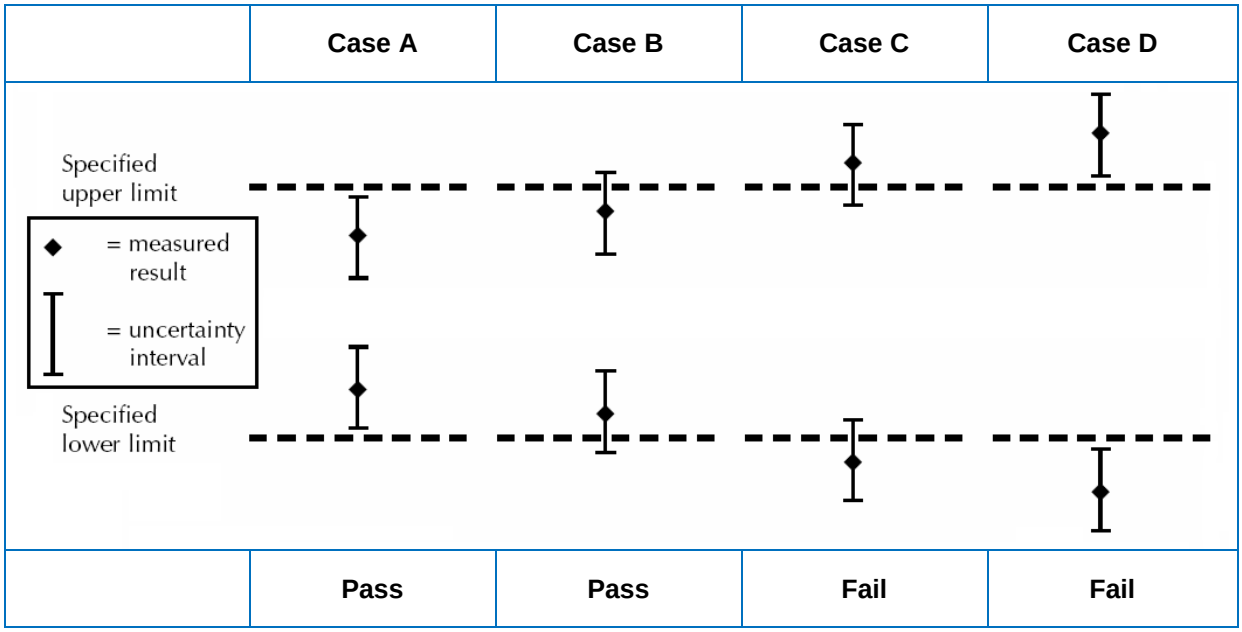
4.5 CRITERIA ADOPTED FOR COMPLIANCE EVALUATION

If applicable for compliance evaluation of test results, the Laboratory adopts the following criteria:

- Reference standard specifies uncertainty for measurements:
  - measurements uncertainty permitted;
  - instruments accuracy;
  - application of measurements uncertainty to the measured values;

  in this case the measurement complies with the requirement if the measured value is within the limits, or with the correction due to the Laboratory uncertainty.

- Reference standard doesn't specify uncertainty for measurements:
  Calculate uncertainty for measurement and compare the measured result with uncertainty band to defined acceptable limit. The measurement complies with the requirement if the probability it being within the limit is at least 50 percent (see following figure):



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5. TESTS RESULT

§ TR	Test	Reference	Port under test	Result	Annex	Notes
EMISSION TESTS						
6.2	Radiated disturbance	**EN 55014-1 § 4.1.2.2**	ID 01	***Pass***	01	--
IMMUNITY TESTS						
6.3	Electrostatic discharge	**EN 55014-2 § 5.1**	ID 01	***Pass***	--	#1
6.1	Radio frequency electromagnetic fields	**EN 55014-2 § 5.5**	ID 01	***Pass***	--	--

Notes:
#1 - After modifications described in paragraph 4.1.2

5.1 SAMPLES CORRELATION / TEST SEQUENCE

The samples were sequentially subjected to the tests described in the following paragraphs.

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6. TEST PERFORMED

6.1 RADIO FREQUENCY ELECTROMAGNETIC FIELDS

Test was performed according to requirements of standards listed on chapter 2.
The test method is compliant to requirements of the standard:

EN 61000-4-3.

6.1.1 TEST SET-UP

According to reference standard with:

Distance from the point of antenna to the EUT:	3 m (80 ÷ 1.000 MHz)
Antenna height above the floor:	155 cm respect to reference plane

6.1.2 TEST PARAMETERS

Frequency range:	80 ÷ 1.000 MHz
Frequency step:	1 % of previous frequency
Modulation:	Sine wave - 1 kHz – 80 % - AM
Dwell time:	2 seconds at each frequency
Antenna polarity:	Horizontal and vertical
Degrees of rotation of test sample, with clockwise motion, respect to transmitting antenna:	0° / 90° / 180° / 270°

6.1.3 ENVIRONMENTAL CONDITIONS

Temperature:	**24 °C ± 2 °C**	**Relative humidity:**	**50 % ± 5 %**	**Atmospheric pressure:**	**998 mBar ± 20 mBar**

6.1.4 SUMMARY OF RESULTS

Port under test: **ID 01**

Test level (#1)	Frequency range	Polarity	Performance criterion (#2)		Operating conditions (#3)	Result	Notes
			Required	Obtained			
3 V/m	80 ÷ 1000 MHz	Horizontal	A	A	(A)	***Pass***	--
3 V/m	80 ÷ 1000 MHz	Vertical	A	A	(A)	***Pass***	--

Notes:
#1 - V/m (rms) unmodulated
#2 - Performance criterion, given by applicable documents, as described in paragraph 4.4
#3 - Operating conditions as described in paragraph 4.3

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6.1.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID
Anechoic chamber	SIDT	--	0309
Signal generator	Rhode & Schwarz	SML 03	0431
Amplifier 100 W, 80÷1000 MHz	Amplifier Research	100W1000M1	0307
Log-periodic Antenna	Amplifier Research	AT 1080	0304
Directional coupler, 600 W, 80÷1000 MHz	Amplifier Research	DC 6180	0303
Power meter	Amplifier Research	PM 2002	0433
Probe for power meter	Amplifier Research	PH 2004	0434
Test software	Dare	Radimation v.5.4.15	0641
Thermometer / hygrometer	Filotecnica Salmoiraghi	1750-2/QM	0301
Barometer	Fischer	--	0224

6.1.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % (k = 2) and with n = 9 degrees of freedom:
- U_{LAB} = 0,90 dB for frequencies lower than 200 MHz;
- U_{LAB} = 1,63 dB for frequencies greater than 200 MHz.

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6.2 RADIATED DISTURBANCE

Test was performed according to requirements of standards listed on chapter 2.
The test method is compliant to requirements of the standard:

EN 55016-2-3.

6.2.1 TEST SET-UP

According to reference standard with:

Test site:	Fully anechoic room (FAR)
Antenna height above the floor:	169 cm (half height of anechoic room)
Distance from the point of antenna to the EUT:	3 m
Antenna polarity:	Horizontal and vertical

6.2.2 TEST PARAMETERS

Preliminary scan:	0° to 180° (45° step) with peak detector
Final measurement:	0° to 315° (45° step) with quasi peak detector
Frequency measurement range:	30 ÷ 1000 MHz
Limits:	As standard required

6.2.3 ENVIRONMENTAL CONDITIONS

Temperature: **24 °C ± 2 °C** **Relative humidity:** **50 % ± 5 %** **Atmospheric pressure:** **998 mBar ± 20 mBar**

6.2.4 SUMMARY OF RESULTS

Annex N.	Annex Page N.	ID File	Polarity	Port under test	Operating conditions (#1)	Result	Notes
01	01-02	10_0425_fh_a	Horizontal	ID 01	(B)	***Pass***	--
01	03-04	10_0425_fv_a	Vertical	ID 01	(B)	***Pass***	--

Notes:
#1 - Operating conditions as described in paragraph 4.3.

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6.2.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID
EMI Receiver	Rohde & Schwarz	ESU26	0692
Biconical log-periodic antenna	Antenna Research Associates	LPB-2513	0308
Measurement Software	Rohde & Schwarz	EMC32 PLUS	0686
Full Anechoic Chamber	SIDT Europe	--	0309
Turntable	HD	DS 415	0302
Thermometer / hygrometer	Filotecnica Salmoiraghi	1750-2/QM	0301
Barometer	Fischer	--	0224

6.2.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % (k = 2) and with n = 9 degrees of freedom:
- U_{LAB} = 2,68 dB except for the frequency range from 410 MHz to 450 MHz where U_{LAB} = 4,33 dB,
and $U_{LAB} < U_{CISPR}$ = 5,2 dB (measurement instrumentation uncertainty) in according to standards CISPR 16-4-1 and CISPR 16-4-2

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6.3 ELECTROSTATIC DISCHARGE

Test was performed according to requirements of standards listed on chapter 2.
The test method is compliant to requirements of the standard:

EN 61000-4-2.

6.3.1 TEST SET-UP

According to reference standard.

6.3.2 TEST PARAMETERS

Repetition rate:	1 discharge every 1 second
Number of discharges for contact discharge type:	10 discharges
Number of discharges for air discharge type:	10 discharges
Polarity:	Positive and negative

6.3.3 ENVIRONMENTAL CONDITIONS

Temperature:	**25 °C ± 2 °C**	**Relative humidity:**	**45 % ± 5 %**	**Atmospheric pressure:**	**998 mBar ± 20 mBar**

6.3.4 SUMMARY OF RESULTS

Port under test: **ID 01**

Test voltage	Coupling method	Discharge point	Performance criterion (#1)		Operating conditions (#2)	Result	Notes
			Required	Obtained			
8 kV	Air	Non conductive parts	B	A	(A)	***Pass***	#3 - #4
4 kV	Direct discharge	Conductive parts	B	B	(A)	***Pass***	#4 - #5
4 kV	Indirect discharge	VCP	B	A	(A)	***Pass***	#4
4 kV	Indirect discharge	HCP	B	A	(A)	***Pass***	#4

Notes:
#1 - Performance criterion, given by applicable documents, as described in paragraph 4.4.
#2 - Operating conditions as described in paragraph 4.3.
#3 - No discharge detected.
#4 - After modifications described in paragraph 4.1.2.
#5 - During application of the disturbance power bar indicates 100% by the end of the test is reported automatically to the value set.

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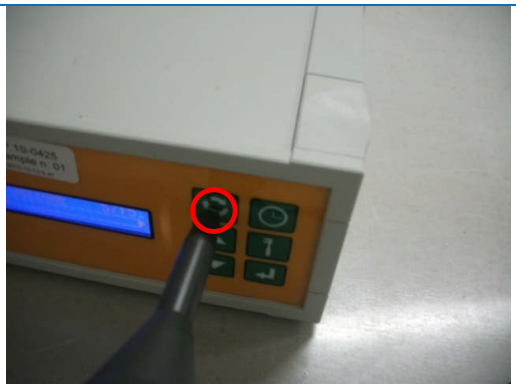	
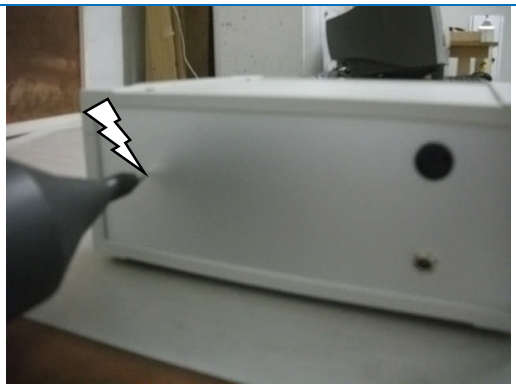	*Blank*

Legend

Air discharge

Contact discharge

Point of application of the discharges

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6.3.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID
ESD Generator	EMC-Partner	ESD-3000	0764
RC filter 150 Ω – 330 pF	EMC-Partner	ESD3000DN1	0765
High-voltage relay module	EMC-Partner	ESD3000RM32	0769
VCP - HCP	INTEK	--	--
Thermo/Hygro/Barometer	Fischer	--	0224

6.3.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % (k = 2) and with n = 9 degrees of freedom:
- U_{LAB} = 1,06 A.

7. TEST INSTRUMENTATION

The list of instruments is given in the relative paragraph of every test.

8. EUT DOCUMENTATION

Description	Code	Date - revision
User manual	Not available	--
Component list	“Lista componenti BIOCLEANER_A” (see annex 02)	--
Wiring diagram	Not available	--

9. ANNEXES LIST

Annex N.	Description
01	Radiated disturbance.
02	Technical documentation provided by the Manufacturer.

End of test report.

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INTEK S.p.A. - EMC Test Laboratory

EUT Information

Description:

EUT Name:	BIOCLEANING
Manufacturer:	Tecnodal S.r.l.
Serial Number:	--
Operating Conditions:	EUT ON - Voltage supply 12 Vdc -
Comment:	ON 82%
Test Description:	EN 55014-1
Test Site:	Anechoic chamber
Trasducer:	Antenna
Polarity/Distance:	Horizontal / 3 m
Operator Name:	Luigi Sala

EMI Auto Test Template: CISPR 16-2-3 Field 30-1000 MHz

Hardware Setup:	CISPR 16-2 Field 30-1000 MHz
Measurement Type:	Open-Area-Test-Site
Frequency Range:	30 MHz - 1 GHz
Graphics Level Range:	0 dBµV/m - 80 dBµV/m

Preview Measurements:

Scan Test Template: CISPR 16-2-3 pre 30-1000MHz

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	MaxPeak	120 kHz	0,03 s	ESU 26 [ESU 26]

Data Reduction:

Limit Line #1:	EN 55014-1
Peak Search:	10 dB , Maximum Results: 20
Subrange Maxima:	20 Subranges , Maxima per Subrange: 1
Acceptance Offset:	-6 dB
Maximum Number of Results:	400
After Data Reduction:	Interactive data reduction

Maximization Measurements:

Template for Single Meas.: CISPR 16-2-3 max 30-1000MHz

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	MaxPeak	120 kHz	0,2 s	ESU 26 [ESU 26]

Adjustment:

Template for Single Meas.: CISPR 16-2-3 pre 30-1000MHz

Final Measurements:

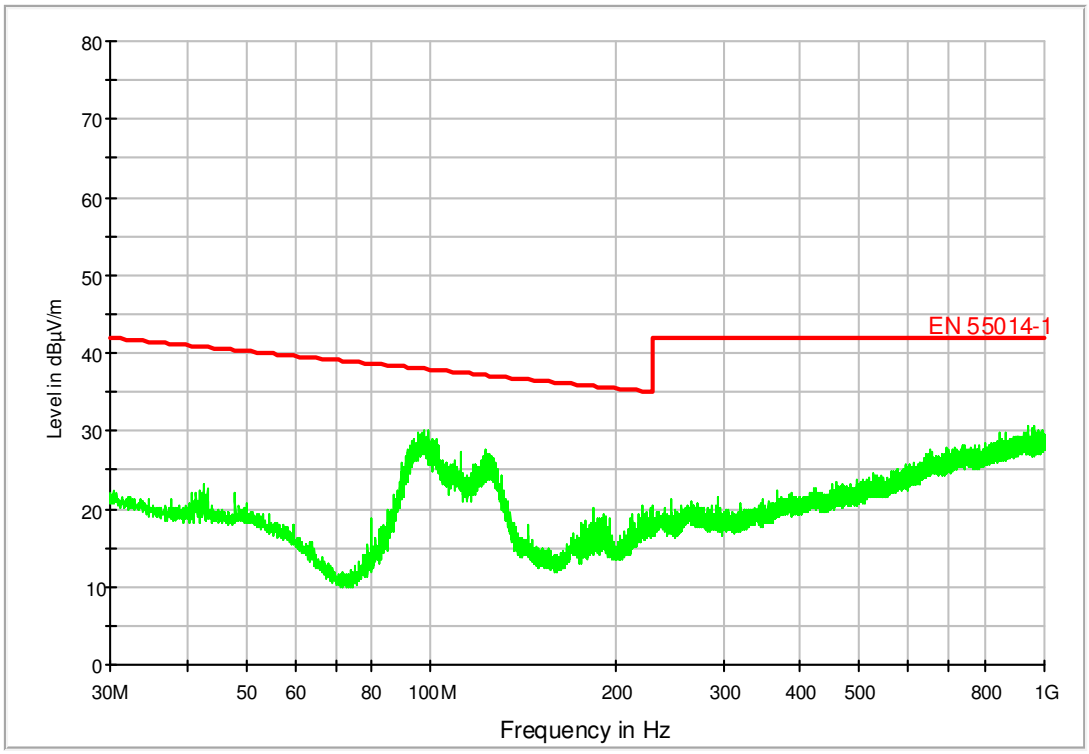
Template for Single Meas.: CISPR 16-2-3 fin 30-1000 MHz

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	1 s	ESU 26 [ESU 26]

Report Settings:

Report Template: CISPR 16-2-3 Field 30-1000 MHz

CISPR 16-2-3 Field 30-1000 MHz



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EUT Information

Description:

EUT Name:	BIOCLEANING
Manufacturer:	Tecnodal S.r.l.
Serial Number:	--
Operating Conditions:	EUT ON - Voltage supply 12 Vdc
Comment:	ON 82%
Test Description:	EN 55014-1
Test Site:	Anechoic chamber
Trasducer:	Antenna
Polarity/Distance:	Vertical / 3 m
Operator Name:	Luigi Sala

EMI Auto Test Template: CISPR 16-2-3 Field 30-1000 MHz

Hardware Setup:	CISPR 16-2 Field 30-1000 MHz
Measurement Type:	Open-Area-Test-Site
Frequency Range:	30 MHz - 1 GHz
Graphics Level Range:	0 dBµV/m - 80 dBµV/m

Preview Measurements:

Scan Test Template: CISPR 16-2-3 pre 30-1000MHz

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	MaxPeak	120 kHz	0,03 s	ESU 26 [ESU 26]

Data Reduction:

Limit Line #1:	EN 55014-1
Peak Search:	10 dB , Maximum Results: 20
Subrange Maxima:	20 Subranges , Maxima per Subrange: 1
Acceptance Offset:	-6 dB
Maximum Number of Results:	400
After Data Reduction:	Interactive data reduction

Maximization Measurements:

Template for Single Meas.: CISPR 16-2-3 max 30-1000MHz

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	MaxPeak	120 kHz	0,2 s	ESU 26 [ESU 26]

Adjustment:

Template for Single Meas.: CISPR 16-2-3 pre 30-1000MHz

Final Measurements:

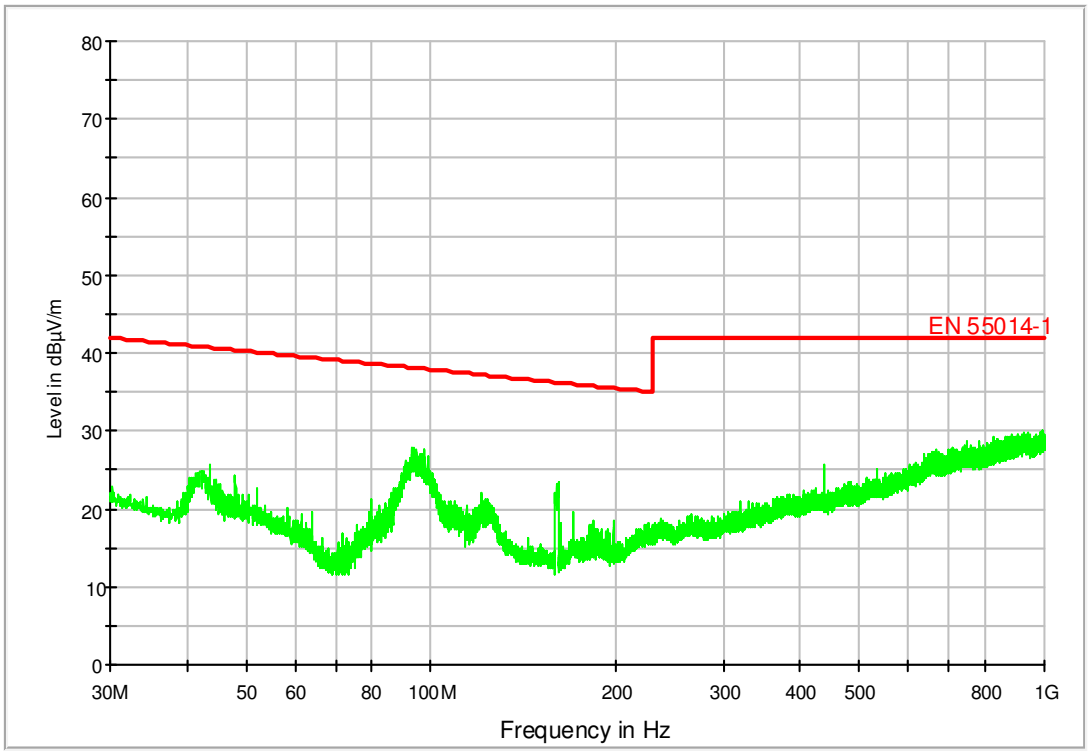
Template for Single Meas.: CISPR 16-2-3 fin 30-1000 MHz

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	1 s	ESU 26 [ESU 26]

Report Settings:

Report Template: CISPR 16-2-3 Field 30-1000 MHz

CISPR 16-2-3 Field 30-1000 MHz



tecnodal s.n.c.
di Tranquillo Dal Zotto & C.

20048 Carate B.za (Mi)
Via Mascherpa, 14
Tel. 0362/91641
Fax 0362/9164300

Lista Componenti scheda BIOCLEANER_A

Riga	Pos.	Componente	
1	BZ	BZPKLCS12XSMD	BUZZER PIEZO MURATA
2	C1	CD06104PXMSMD	COND 104PF MLS 0603
3	C2	ZZZZZZZZZZZZZ	NON MONTARE
4	C3	CD06104PXMSMD	COND 104PF MLS 0603
5	C4	CD221MX680SMD	COND 220MF 16V EL. 6.3X8
6	C5	ZZZZZZZZZZZZZ	NON MONTARE
7	C6	CD221MX680SMD	COND 220MF 16V EL. 6.3X8
8	C7	ZZZZZZZZZZZZZ	NON MONTARE
9	C8	CD06104PXMSMD	COND 104PF MLS 0603
10	C9	CD06150PXMSMD	COND 15PF MLS 0603
11	C10	CD06104PXMSMD	COND 104PF MLS 0603
12	C11	CD06150PXMSMD	COND 15PF MLS 0603
13	C12	CD06104PXMSMD	COND 104PF MLS 0603
14	C13	CD06104PXMSMD	COND 104PF MLS 0603
15	C14	CD06104PXMSMD	COND 104PF MLS 0603
16	C15	CD06104PXMSMD	COND 104PF MLS 0603
17	C16	CD06223PXMSMD	COND 223PF MLS 0603
18	C17	CD06104PXMSMD	COND 104PF MLS 0603
19	C18	CD06104PXMSMD	COND 104PF MLS 0603
20	C19	CD06104PXMSMD	COND 104PF MLS 0603
21	C20	CD06104PXMSMD	COND 104PF MLS 0603
22	C21	CD06104PXMSMD	COND 104PF MLS 0603
23	C22	CD06224PXMSMD	COND 224PF MLS 0603
24	C23	CD06223PXMSMD	COND 223PF MLS 0603
25	D1	DD04148XXXSMD	NON MONTARE
26	D2	DD04148XXXSMD	NON MONTARE
27	D3	DD04148XXXSMD	DIODO LL4148
28	D4	DD04148XXXSMD	DIODO LL4148
29	D5	DD04148XXXSMD	DIODO LL4148
30	LD1	LD1206GNRVSMD	LED GOALLO NORM. REVERSE 1206 SMD
31	LD2	LD1206VNRVSMD	LED VERDE NORM. REVERSE 1206 SMD
32	LD3	LD1206RNRVSMD	LED ROSSO NORM. REVERSE 1206 SMD
33	J3	CN00006MVXSMD	CONNET. 6V. M. VERT. SMD
34	J4	CN008X2MVFSMD	CONNETT. 8X2 MASCHIO STRIPE SMD
35	Q1	TR04435FDSSMD	TRANSISTOR FDS4435 NL S0P8
36	Q2	TR04435FDSSMD	TRANSISTOR FDS4435 NL S0P8
37	Q3	TR04850XXXSMD	TRANSISTOR 4850 SO8
38	Q4	TR04850XXXSMD	TRANSISTOR 4850 SO8
39	R1	RS06332AXXSMD	RES 3,3K 0603 1%

40	R2	RS25330BXXSMD	RES 33R 1W 2512 5%
41	R3	RS06332AXXSMD	RES 3,3K 0603 1%
42	R4	RS06102AXXSMD	RES 1K 0603 1%
43	R5	RS06103AXXSMD	RES 10K 0603 1%
44	R6	RS06102AXXSMD	RES 1K 0603 1%
45	R7	RS06332AXXSMD	RES 3,3K 0603 1%
46	R8	RS06103AXXSMD	RES 10K 0603 1%
47	R9	RS06332AXXSMD	RES 3,3K 0603 1%
48	R10	RS06332AXXSMD	RES 3,3K 0603 1%
49	R11	RS06332AXXSMD	RES 3,3K 0603 1%
50	R12	RS06332AXXSMD	RES 3,3K 0603 1%
51	R13	RS06271AXXSMD	RES 270R 0603 1%
52	R14	RS06271AXXSMD	RES 270R 0603 1%
53	R15	RS06102AXXSMD	RES 1K 0603 1%
54	R16	RS06102AXXSMD	RES 1K 0603 1%
55	R17	RS06332AXXSMD	RES 3,3K 0603 1%
56	R18	RS06271AXXSMD	RES 270R 0603 1%
57	R19	RS06271AXXSMD	RES 270R 0603 1%
58	R20	RS06821AXXSMD	RES 820R 0603 1%
59	R21	RS06105AXXSMD	RES 1M 0603 1%
60	R22	RS06472AXXSMD	RES 4,7K 0603 1%
61	R23	RS06681AXXSMD	RES 680R 0603 1%
62	R24	RS06000AXXSMD	RES 0R 0603 -%
63	R25	RS25//3AXXSMD	RES 0,033R 1W 2512 1%
64	R26	RS25//3AXXSMD	RES 0,033R 1W 2512 1%
65	R27	RS06104AXXSMD	RES 100K 0603 1%
66	R28	RS06155AXXSMD	RES 1,5M 0603 1%
67	R29	RS06103AXXSMD	RES 10K 0603 1%
68	R30	RS06155AXXSMD	RES 1,5M 0603 1%
69	R31	RS06104AXXSMD	RES 100K 0603 1%
70	R32	RS06103AXXSMD	RES 10K 0603 1%
71	R33	RS06104AXXSMD	RES 100K 0603 1%
72	R34	RS06104AXXSMD	RES 100K 0603 1%
73	R35	RS06335AXXSMD	RES 3,3M 0603 1%
74	R36	RS06394AXXSMD	RES 390K 0603 1%
75	R37	RS06103AXXSMD	RES 10K 0603 1%
76	R38	RS06104AXXSMD	RES 100K 0603 1%
77	R39	RS06503AXXSMD	RES 50K 0603 1%
78	R40	RS06103AXXSMD	RES 10K 0603 1%
79	R41	ZZZZZZZZZZZZZ	NON MONTARE
80	R42	RS06104AXXSMD	RES 100K 0603 1%
81	RN1	RR06103AAXSMD	RETE RESIST. 10Kx4 A
82	RN2	RR06220AAXSMD	RETE RESIST. 22Rx4 A
83	RN3	RR06220AAXSMD	RETE RESIST. 22Rx4 A
84	RN4	RR06220AAXSMD	RETE RESIST. 22Rx4 A
85	RN5	RR06220AAXSMD	RETE RESIST. 22Rx4 A
86	RN6	RR06220AAXSMD	RETE RESIST. 22Rx4 A
87	RN7	RR06103AAXSMD	RETE RESIST. 10Kx4 A
88	RN8	RR06220AAXSMD	RETE RESIST. 22Rx4 A
89	U1	CI02004ULNSMD	C.I. ULN2004 SOP16
90	U2	RT01117/50SMD	REGOL. TENS. NCP 1117 5V
91	U3	CI07421HCXSMD	C.I. 74HC21 SO14

92	U4	CI9S08AC16SMD	C.I. uP PC9S08AC16MFGE
93	U5	CI07414HCXSMD	C.I. 74HC14 SO14
94	U6	CI00602MCPSMD	C.I. MCP602 SOP8 SMD
95	U7	CI00602MCPSMD	C.I. MCP602 SOP8 SMD
96	X1	QR16000KQSSMD	QUARZO 16MHZ 2 PAD
97	C24	CD06104PXMSMD	COND 104PF MLS 0603