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TEST REPORT Shielding Effectiveness (SE) measurements	
Report Reference No. : Contract..... : Contract Date of issue..... : Total number of pages..... :	RP000123 CO024822 18/10/2022 13
Testing Laboratory : Address..... :	Tecnolab Del Lago Maggiore S.r.l. Via dell'Industria, 20 28924 Verbania Fondotoce (VB) - Italy
Applicant's name : Address..... :	NATURAL VIBRATIONAL ENERGY S.R.L. MUN. CLUJ-NAPOCA STR. GORUNULUI Nr. 2 bl. C6, sc. Jud. Cluj
Test specification : Standard : Test procedure : Non-standard test method :	IEEE 299: 2013 EN 50147-1: 1996 NA NA
Test item description :	Medal + Tissue
Manufacturer :	NATURAL VIBRATIONAL ENERGY S.R.L
Model/Type reference :	Tissue: OVEP, Medal: OVEP OVEP (As declared by Customer)
Acceptance code :	AC082522/1

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1. Testing procedure and testing location	
☒	Testing Laboratory: Tecnolab Del Lago Maggiore S.r.l. Testing location/ address..... : Via dell'Industria, 20 28924 Verbania Fondotoce (VB) - Italy Tested by (Laboratory Technician).....: <i>Andrea Cadei</i> Verified by (Manager).....: <i>Martino Pizzoglio</i> Approved by (Laboratory Manager).....: <i>Roberto Martinotti</i>
This document is signed electronically; signatures are certified by InfoCert S.p.a.	
2. Summary of testing	
2.1 Tests performed (name of test and test clause) All applicable tests.	2.2 Testing location Tecnolab Del Lago Maggiore S.r.l. Via dell'Industria, 20 28924 Verbania Fondotoce (VB) - Italy

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3. General description of test item

Isotropic sample.....:	☒					
Polarizationz.....:	Vertical					
Dimensions (W x H x D)	40x60 cm					
Operating modes	EUT was a Medal and Tissue for electromagnetic shielding. The medal is made of aluminum with a graphic, the fabric contains metallic filaments; both were treated with O.V.E.P. technology. (Original Vibrational Energy Products) in order to protect exposure from electromagnetic waves and at the same time enhance the individual's resistance, activating microcirculation and counteracting external disturbances.					
Auxiliary appliance (not part of the test item).....:	Number of auxiliary Appliance (AE)	Acceptation code	Identification of auxiliary appliance (AE)	Manufacturer	Model	Serial Number
	EUT does not require auxiliary appliance					

3.1 Photos of the EUT



Picture 1



Picture 2

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4. Possible test case verdicts and definitions	
test case does not apply to the test object.....:	NA
test case does no information available	NIA
test object does meet the requirement.....:	P (Pass)
test object does not meet the requirement.....:	F (Fail)
no requirements.....:	-
EUT.....:	Equipment Under Test
AE.....:	Auxiliary Equipment
EMC.....:	Electromagnetic Compatibility
Shield (electromagnetic).....:	A shield, made of conductive or semi conductive material, is any obstacle to the propagation of the electromagnetic energy
Attenuation.....:	The ratio, expressed in dB, between the electromagnetic field levels on the two sides of a shield when one side is exposed to an electromagnetic wave Attenuation [dB] = $20 \log E_2 / E_1$ for electric field and plane wave Attenuation [dB] = $20 \log H_2 / H_1$ for magnetic field - E_2 and H_2 are the levels measured without the shield - E_1 and H_1 are the levels measured with the shield interposed <i>Herein after the term "Shielding Effectiveness or SE" will be used instead of "Attenuation"</i>
Shielding effectiveness.....:	SE = R + A + B [dB] dove: - R = Reflection losses - A = Absorbing losses - B = Multipath reflection losses
V:	Vertical polarization
H:	Horizontal polarization
5. SCOPE	Test and measurements scope is to provide to the Customer useful indications in order to evaluate EUT compliance with reference standards; the test plan has been requested by Customer.
6. APPLICABLE DOCUMENTS	
6.1 Reference Standards and Documents	
IEEE 299: 2013	IEEE Standard Method for measuring the Effectiveness of electromagnetic shielding enclosures
EN 50147-1: 1996	Camere anecoiche – Parte 1: Misura dell'attenuazione dello schermo antimagnetico

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7. Testing:

Date of receipt of test item :	05/12/2022		
Date (s) of performance of tests :	16/12/2022		
7.1 Sampling	All test results refers only to the samples tested by the test laboratory as received. Manufacturer is responsible for sampling. The extension of test results to the entire production is responsibility of manufacturer/importer.		
7.2 Measurement uncertainties	The measurement uncertainties stated in this document are expressed as expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor $k = 2$ corresponds to a confidence level of about 95%.		
7.3 Decision Rule for the attribution of Conformity	The Laboratory reports the compliance in accordance with the value of the test result without considering the associated uncertainty values for tests performed in accordance with specifications that identifies the conditions of acceptability and any related tolerances for the result		
7.4 Technical Competence	Technicians, assigned to execute the tests described in this Test Report, have been qualified as required by Quality System of Tecnolab del Lago Maggiore s.r.l.		
7.5 Environmental reference conditions	The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:		
	Temperature	Humidity (RH)	Atmospheric pressure
	15 °C – 35 °C	30 % – 60 %	860 mbar – 1060 mbar

8. List and description of tests

EUT nr.	Type of test	Frequency points	Results graph
AC082522/1	Shielding effectiveness measurements for electric field (Vertical and Horizontal polarization)	300-400-500-600-700-800-900 MHz	Graph 1
AC082522/1	Shielding effectiveness measurements for Plane wave (Vertical and Horizontal polarization)	1.8 – 2.1 – 2.4 – 2.6 – 3.7 – 5.0 – 18.0 GHz	Graph 2

9. TEST METHOD

9.1 EUT configuration during the tests

P_{out} = power level of the transmitting antenna = constant

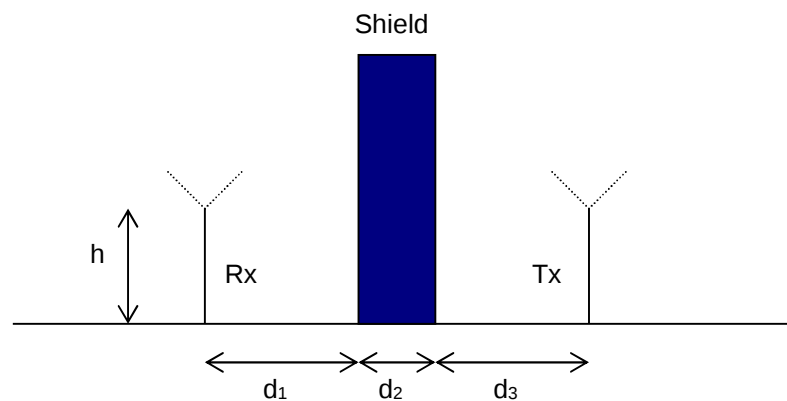
d_1 = distance between transmitting antenna and shield

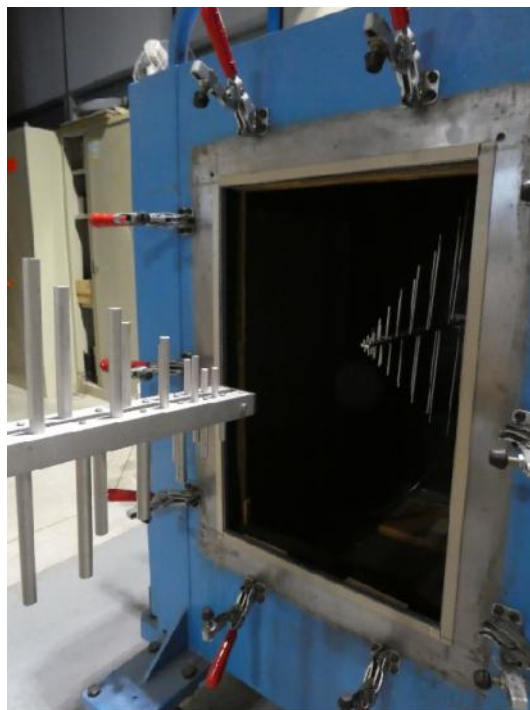
d_2 = shield thickness

d_3 = distance between receiving antenna and shield

$d = d_1 + d_2 + d_3$ = constant

h = height of the transmitting and receiving antennas = constant





Picture 3: Electric field (300 MHz – 900 MHz) reference measurement test set-up



Picture 4: Electric field (300 MHz – 900 MHz) measurement test set-up on AC082522/1



Picture 5: Electric field (1.6 GHz – 18 GHz) reference measurement test set-up



Picture 6: Electric field (1.6 GHz – 18 GHz) measurement test set-up on AC082522/1

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10. TEST RESULTS

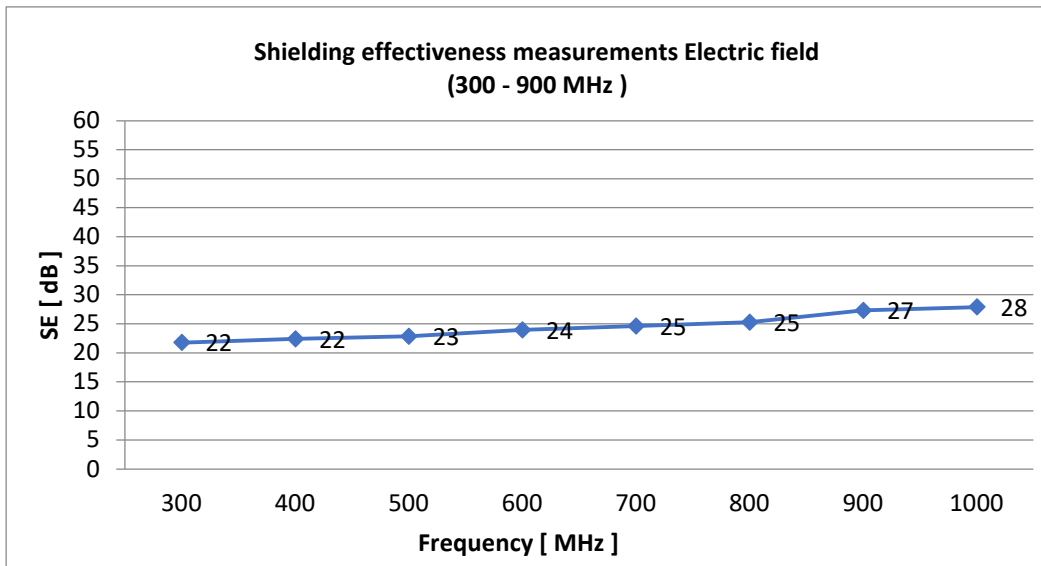
10.1 Shielding Effectiveness measurements

Measurement uncertainty of measurement system is ± 3 dB for SE test.

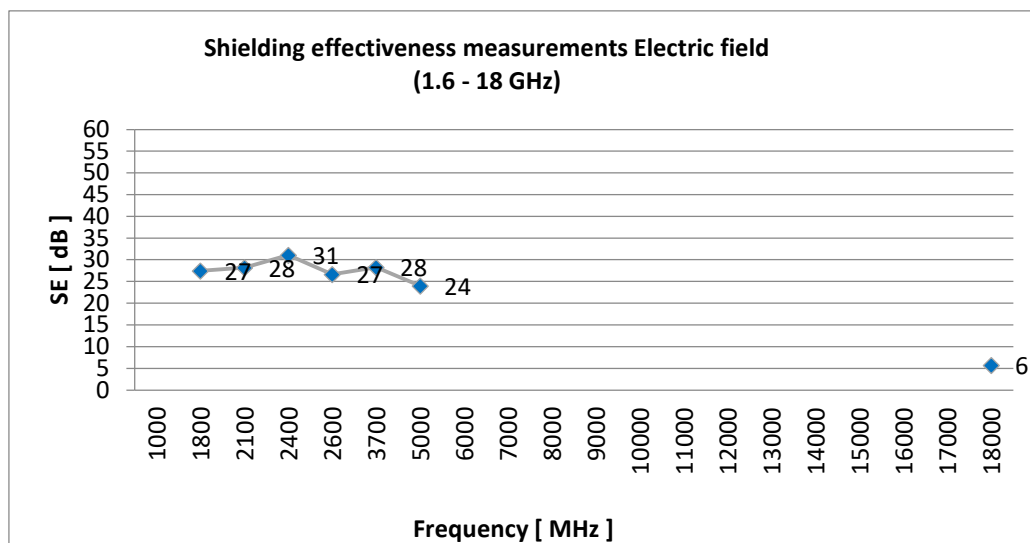
Test results are shown in Table 1 and Graphs n. 1-2 of this Test Report.

Frequency [MHz]	Shielding Effectiveness [dB]
300	22
400	22
500	23
600	24
700	25
800	25
900	27
1000	28
1800	27
2100	28
2400	31
2600	27
3700	28
5000	24
18000	6

Table 1



Graph 1: Shielded panel model SI (AC082522/1)



Graph 2: Shielded panel model SI (AC082522/1)

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10. List of test equipment

Tecnolab Code	Instrument Description	Manufacturer	Model	Serial Number
STCAM004	SEMS	Attrezzature Zeta	-	-
STRIC026	EMI Test Receiver 10 Hz - 26.5 GHz with EMC32 control software (version 10.60.15)	Rohde & Schwarz	ESR26	101292
STFOR024	Fixed torque wrench 1 Nm	Huber+Suhner	74 Z-0-0-21	20773
STDIM071	Tape measure 5 m	SEB	SEB-PRO	-
STANT020	Biconical antenna	Emco	3110B	9903-3266
STANT003	Log-periodic antenna	Emco	93146	9506-4096
STANT022	Horn Antenna	SCHAFFNER	BBHA9120D	114
STANT023	Horn Antenna	SCHAFFNER	BBHA9120D	113
STSCA028	Humidity / Barometer / Temperature data recorder	PCE Group	PCE-THB 40	060494
STSOR013	0,1-20000 MHz RF generator	AGILENT TECHNOLOGIES	N5183A	MY47420326
STCOX113	Coaxial cable	Huber+Suhner	SF126EA/11S MA/11SMA/2 000MM	506034/126EA
STCOX114	Coaxial cable		SF126EA/11S MA/11SMA/2 000MM	506033/126EA
STCOX115	Coaxial cable		SF126EA/11S MA/11SMA/3 000MM	506031/126EA

----- END OF TEST REPORT NR. RP000123 -----