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- ORGANISMO NOTIFICATO IN CONFORMITÀ A REGOLAMENTO PRODOTTI DA COSTRUZIONE 305/2011/EU
- ORGANISMO NOTIFICATO IN CONFORMITÀ A DISPOSITIVI DI PROTEZIONE INDIVIDUALE DIR. 89/686/CEE
- ORGANISMO NOTIFICATO DIRETTIVA EQUIPAGGIAMENTI MARITTIMI 2014/90/EU
- MEMBRO EGOLF e UNIFER
- RICONOSCIUTO USCG ADMINISTRATION
- RICONOSCIUTO CERTIFER
- RICONOSCIUTO ITALCERTIFER
- CERTIFICATO REGISTRO AERONAUTICO ENAC CIT 1013/L
- AUTORIZZAZIONE MINISTERO INTERNO D.M. 26/03/85
- ACCREDITATO ACCREDIA N.0086 - EN 17025
- RICONOSCIUTO DIR. 2014/90/EU MARINE EQUIPMENT - BUREAU VERITAS - DNV-GL - LLOYD'S REGISTER
- PROVE SU AUTOVEICOLI AI SENSI DELLA DIRETTIVA 95/28 CE E REG. 118
- AUTORIZZATO BHF CALIFORNIA, CARB CALIFORNIA, CPSC USA
- AUTORIZZATO VKF SVIZZERA E EBA GERMANIA

Spettabile  
**NetModule AG**  
Meriedweg 11  
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Prato, 04/06/2018



**RICHIEDENTE / SPONSOR**

**NetModule AG**

Meriedweg 11 - 3172 Niederwangen (Switzerland)

**DENOMINAZIONE DEL MATERIALE / DENOMINATION OF THE MATERIAL**

**NetModule Router NB3711 – L2Wac-G-AE**

- Compliance document N° 089/VIT/18 - **UNI EN 45545-2 : 2015**
- A documentation annexed:
- N° 1 - Declaration of conformity of the Sponsor.
- N° 2 - Description of the new router variants.
- N° 3 - Photos of the apparatus.

Best regards

**LAPI S.p.A.**







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Compliance document N° 089/VIT/18



**VALUTAZIONE IDONEITÀ TECNICA**  
*Evaluation of technical worthiness*

**RICHIEDENTE / SPONSOR**

**NetModule AG**

Meriedweg 11 - 3172 Niederwangen (Switzerland)

**DENOMINAZIONE DEL MATERIALE / DENOMINATION OF THE MATERIAL**

**NetModule Router NB3711 – L2Wac-G-AE**

**Norma di riferimento ai sensi della / Reference standard according to**

**UNI EN 45545-2 : 2015**

**Metodi di prova come previsti da / Test methods as foreseen by : UNI EN 45545-2: 2015**

**PREMESSA / INTRODUCTION**

Il presente documento riporta l'esito complessivo delle verifiche documentali e sperimentali sui componenti rilevanti contenuti nei materiali di cui sopra. Esso è stato redatto tenendo in considerazione quanto segue:

- la presenza di materiali e prodotti considerabili come "non-listed"
- le regole di grouping per i materiali prescritte da UNI EN 45545-2: 2015 punto 4.3
- le prescrizioni per i NON LISTED PRODUCTS contenute nella stessa norma
- le prescrizioni per i LISTED PRODUCTS ove applicabili

La valutazione è stata effettuata su base documentale a seguito della verifica della presenza dei risultati di prova applicabili e della loro congruenza con la costruzione della apparecchiatura e con le informazioni tecniche fornite dal Richiedente.

Si deve notare che la presente valutazione si riferisce esclusivamente alle caratteristiche di reazione al fuoco di componenti dell'apparato e non prende in alcun modo in considerazione le caratteristiche di funzionalità dell'apparato stesso e/o la conformità a specifiche, norme, Regolamenti, Direttive al di fuori di quanto strettamente previsto dalla UNI EN 45545-2: 2015.

Inoltre, le valutazioni riportate si applicano solo all'apparato in oggetto e non considerano gli eventuali cablaggi verso altre apparecchiature.

*This document reports the cumulative outcome of the documental and experimental checks on the relevant components contained in the above materials. It has been issued considering the following:*

- the presence of materials and products that can be considered as "non-listed"
- the grouping rules for the materials prescribed by UNI EN 45545-2 : 2015 point 4.3
- the prescriptions for the NON LISTED PRODUCTS contained in the same standard
- the prescriptions for the LISTED PRODUCTS where applicable

*The evaluation has been effected on a documental basis after checking the presence of the applicable test results and of their coherence with the construction of the apparatus and with the technical information supplied by the Sponsor.*

*It has to be noticed that this evaluation refers solely to the characteristics of fire reaction of components extracted from the apparatus and it does not take into consideration the functionality characteristics of the apparatus itself and/or the compliance to specifications, standards, Regulations, Directives which are outside of what is strictly foreseen by UNI EN 45545-2: 2015.*

*Moreover, the evaluations reported apply only to the apparatus in object and they do not take into account any cabling connection towards other apparatuses.*

**FUNZIONI E DATI TECNICI DELLE APPARECCHIATURE / FUNCTIONS AND TECHNICAL DATA OF THE APPARATUSES**

L'oggetto della presente valutazione consiste in un router. L'apparato è contenuto in uno chassis metallico. Le dimensioni nominali di ingombro e i pesi dell'esemplare inviato dal Richiedente (modello NB3711 - L2Wac-G-AE) per l'esame fisico delle caratteristiche generali sono i seguenti: lunghezza 165mm – altezza 84.7 mm, profondità 104 mm (senza connettori) / 122 mm (inclusi i connettori, peso 1190 g.

Il Richiedente dichiara che l'apparecchiatura in oggetto non svolge alcuna funzione relativamente alla emergenza, alla sicurezza o in relazione alle TSI applicabili o alla running capability (EN 50553) in caso di incendio.

*The object of this evaluation consists of a router. The apparatus is contained in a metallic chassis. The nominal hindrance dimensions and the weight of the apparatus sent by the Sponsor (model NB3711 - L2Wac-G-AE) for the physical examination of the general characteristics are the following ones:*

*length 165 mm – height 84.7 mm – deepness 104 mm (without connectors) / 122 mm (including connectors), weight 1190 g.*

*The Sponsor declares that the apparatus in question does not performs any function relative to emergency, safety or in connection with applicable TSI or to the running capability (EN 50553) in case of fire.*

Prato, 04/06/2018

**Il Responsabile Certificazione**

*The Certification Manager*

Dr. Massimo Borsini

Valid until: 03/06/2021

**Il Direttore del Laboratorio**

*The Director of the Laboratory*

Dr. Luca Ermini

Questo documento deve essere letto congiuntamente al Rapporto di Prova, per la descrizione del prodotto e per ogni altra notizia di dettaglio.

Questo documento non costituisce approvazione di tipo né certificazione di prodotto né tantomeno dichiarazione di conformità, che spetta esclusivamente al Produttore / Sponsor.

*This document has to be read in conjunction with the Test Report, for the description of the product and for every other detail. This document does not represent type approval or certification of the product neither declaration of compliance, that is exclusively under the responsibility of the Manufacturer or Sponsor.*



## SVOLGIMENTO DELLA VALUTAZIONE / TREATMENT OF THE EVALUATION

Il Richiedente dichiara che l'apparecchiatura in oggetto consiste in una variante di apparecchiature già esaminate.

In particolare, l'apparecchiatura in oggetto impiega la componentistica elettronica standard delle varianti NB3711 (vedi documento di valutazione 057/VIT/16), ma in uno chassis più piccolo (cioè quello del NB3701).

Il Richiedente ha inviato una dichiarazione che elenca le differenze fra l'apparato NB3711 (057/VIT/16) e quello in esame.

Il Richiedente ha inviato inoltre la documentazione relativa ai componenti impiegati per l'apparecchiatura in esame e ha inviato un esemplare dell'apparecchiatura per l'esame visivo da parte del Laboratorio.

Dall'esame della dichiarazione e dei documenti si conclude quanto segue:

1. MC Board V4.2 è sostituita da MC Board V4.3 che a sua volta è già stata valutata nel documento 080/VIT/17
2. CP Module Armada 385 V1.3 è sostituito da CP Module Armada 385 V1.5 che a sua volta è già stata valutata nel documento 080/VIT/17.

Il Richiedente descrive le varianti apportate alle schede ai punti 1. e 2. Precedenti.

Tali varianti risultano influenti rispetto alle caratteristiche di reazione al fuoco delle schede in oggetto.

*The Sponsor declares that the apparatus in object consists of a variant of already examined apparatuses.*

*In particular, the apparatus in object uses the standard electronics of all NB3711 variants, but in a smaller case (that is the one of NB3701).*

*The Sponsor has sent a declaration listing the differences between the apparatus NB3711 (057/VIT/16) and the one under examination.*

*The Sponsor has sent moreover the documents relative to the components used for the apparatus under examination and it has sent an item of the apparatus for the visual examination by the Laboratory.*

*From the examination of the declaration and of the documents it is concluded the following:*

1. MC Board V4.2 is substituted by MC Board V4.3 which in turn has already been evaluated in document 080/VIT/17
2. CP Module Armada 385 V1.3 is substituted by CP Module Armada 385 V1.5 which in turn has already been evaluated in the document 080/VIT/17.

*The Sponsor describes the variants to the boards at points 1 and 2 above.*

*These variants are not influent with respect to the characteristics of reaction to fire of the boards in object.*

Quanto sopra è riassunto nella tabella seguente / This is summarized in the following table :

No.	Re. Lab.	Descrizione / Description	Rapporti di Prova / Test Reports
1	791/18	Apparato completo Complete apparatus	///
2	///	MC Board V4.2	no. 1687.0CI0030/16 emesso da / issued by LAPI S.p.A. il / on 04/10/2016 Classificazione / Classification : Conforme / Compliant : HL3 (R25)
Sostituita da / substituted by			
3	///	MC Board V4.3	no. 1687.0CI0030/16 emesso da / issued by LAPI S.p.A. il / on 04/10/2016 Classificazione / Classification : Conforme / Compliant : HL3 (R25)
4		CP Module Armada 385 V1.3	no. 1687.0CI0030/16 emesso da / issued by LAPI S.p.A. il / on 04/10/2016 Classificazione / Classification : Conforme / Compliant : HL3 (R25)
Sostituita da / substituted by			
5		CP Module Armada 385 V1.5	no. 1687.0CI0030/16 emesso da / issued by LAPI S.p.A. il / on 04/10/2016 Classificazione / Classification : Conforme / Compliant : HL3 (R25)

Il Laboratorio, sulla base delle informazioni fornite dal Richiedente ha concluso che l'apparato non contiene altri componenti da esaminare sperimentalmente o documentalmente.

*The Laboratory, on the base of the information supplied by the Sponsor has concluded that the apparatus does not contain other components to be examined either experimentally or on the base of the documents.*

## CONCLUSIONI / CONCLUSIONS

Per quanto sopra considerato, l'apparato **RISULTA ESSERE IDONEO** relativamente ai materiali sopraelencati rispetto ai requisiti di comportamento al fuoco applicabili previsti dalla norma **UNI EN 45545-2: 2015 per i livelli di rischio HL1 - HL2 - HL3**

*Therefore, following the above considerations, the appliance **OBTAIN THE WORTHINESS** with respect to the materials listed above to the applicable requirements of fire behaviour prescribed by the standard **UNI EN 45545-2: 2015 for Hazard Levels HL1 - HL2 - HL3***

**Nota:** questo documento è esclusivamente un parere tecnico di valutazione di ammissibilità e non costituisce in alcun modo approvazione di tipo né tantomeno certificazione di prodotto né tantomeno dichiarazione di conformità, che spetta esclusivamente al Produttore / Sponsor. Saranno poi gli enti o organismi deputati alla verifica e al controllo a definire la conformità di tale prodotto all'uso finale indicato e previsto.

**Note:** this document is only a technical assessment of worthiness and it is not to be considered in any way type approval neither product certification nor declaration of conformity which pertains exclusively to the Manufacturer / Sponsor. The Bodies charged of verification and control will define the compliance of this product for the indicated and intended end use.

Prato, 04/06/2018

Il Responsabile Certificazione

The Certification Manager

Dr. Massimo Borzini

Il Direttore del Laboratorio

The Director of the Laboratory

Dr. Luca Ermini

Valid until: 03/06/2021

Questo documento deve essere letto congiuntamente al Rapporto di Prova, per la descrizione del prodotto e per ogni altra notizia di dettaglio.

Questo documento non costituisce approvazione di tipo né certificazione di prodotto né tantomeno dichiarazione di conformità, che spetta esclusivamente al Produttore / Sponsor.

*This document has to be read in conjunction with the Test Report, for the description of the product and for every other detail. This document does not represent type approval or certification of the product neither declaration of compliance, that is exclusively under the responsibility of the Manufacturer or Sponsor.*



## **Annex n° 1**

# **Declaration of conformity of the Sponsor**



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CHE-105.711.468 MWST

## EVALUATION OF TECHNICAL WORTHINESS CONFORMITY DECLARATION

**LA.P.I. S.p.A.**

Att. To Dr. Luca Ermini, Certification Manager

The undersigned *Urs Grütter* in his capacity of legal representative of the Company *NetModule AG*, situated in *Niederwangen, Switzerland* with address *Meriedweg 11*

declare that the following elements:

#	Component denominated	Production batch	Date
1	CP-Module Armada 385 V1.5	NB3711-01807	20.03.2018
2	MC Board V4.3	NB3711-01807	20.03.2018
3	PSE Board 5xM12 V2.10 (used for NB3711 with 24 .. 48V power supply)	NB3711-01807	20.03.2018
4	PCB-AP-6HE V1.1	NB3711-01807	20.03.2018
5	Antenna cable	NB3711-01807	20.03.2018
6	Power & Data Cable	NB3711-01807	20.03.2018

used to manufacture the electric or electronic device denominated *NetModule Router NB3711-L2Wac-G-AE* and employed on board on trains for *ground-to-vehicle communication, passenger WiFi* and further communication applications verified on the basis of the Evaluation of Technical Worthiness requirements according to the standard/s *EN45545-2:2015*

**are being sampled** directly by the device or by batches destined to be used in the setting up of the device, and that they are in conformity to the components employed in the conventional production as sent manuals and documentation related to the evaluation activity (experimental and not).

In case of components' changes (raw materials, supplier, dimensions, ...and so on), the undersigned declares to suspend the production and to communicate immediately to LA.P.I. S.p.A. in order to arrange the possible substitutive and integrative checking activities necessary to restore the initial conditions, preceding the Evaluation of Technical Worthiness.

**Furthermore declares** that no modifications have been effected or will be, even on the components that have been not considered for testing in force of the derogation possibly applied considering the reference standard.

**Therefore,** is accepted that not abiding the mentioned conditions imply the invalidation of the verifications' validity carried out without Responsibility of LA.P.I. S.p.A.

June 5th, 2018

NetModule AG

*Urs Grütter*  
Urs Grütter

Director Engineering / Product Compliance Officer

**net**  
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CHE-105.711.468 MWST

## EVALUATION OF TECHNICAL WORTHINESS CONFORMITY DECLARATION

The undersigned, as legal representative of NetModule AG, declares that the *NetModule Router NB3711-L2Wac-G-AE* is not involved in any activity related to emergency or safety and is not considered part of the running capabilities (EN 50553) of the train in case of fire as prescribed by the TSI (Technical Specification of Interoperability).

June 5th, 2018

NetModule AG

Urs Grütter  
Director Engineering / Product Compliance Officer



## **Annex n° 2**

### **Description of the new router variants**

# Memo

Confidential

Author	Urs Gruetter	<input checked="" type="checkbox"/> for information <input type="checkbox"/> personally <input type="checkbox"/> to complete <input type="checkbox"/> to discuss <input type="checkbox"/> to the statement <input type="checkbox"/> to process <input type="checkbox"/> to the decision
Date	14.05.2018	
Subject	<b>Description of the new Router Variants NB3711-2LcWacPbHd-G and NB3711-L2Wac-G-AE</b>	

Recipient(s)	LAPI Laboratorio Prevenzione Incendi SpA Via della Quercia, 11 59100 Prato Italy	Cc	
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## 1 Introduction

This document describes the new NetModule AG router variants

- NB3711-2LcWacPbHd-G
- NB3711-L2Wac-G-AE

for the evaluation of technical worthiness according to EN45545-2. The focus of this document is on the differences to the previously issued LAPI SPA test reports N° 57/VIT/16 and N° 80/VIT/17.

## 2 NB3711-2LcWacPbHd-G

- This router variant is a new member of the NB3711 / NB3800 routers with IP65 Housing (Hardware Option "Hd") → see current compliance document N° 080/VIT/17
- The only difference between the previously tested variant and the new variant is the power supply board (PSE)
  - Previously tested variant (NB3711-2LcWacHd-G)
    - #1002 - **PSE Board 5xM12 V2.9**
    - Input voltage range of PSE = 24Vdc .. 60Vdc
  - New variant (NB3711-2LcWacPbHd-G)
    - #1016 - **PSE Board 5xM12, 72-110V Supply V1.5**
    - Input voltage range of PSE = 50Vdc .. 136Vdc
  - Both power supply boards share the same raw PCB specifications (manufacturer, material, conformal coating, size ...)
  - The electronic components are different for the two power supply board variants



### 3 NB3711-L2Wac-G-AE

- This customer specific NB3711 router variant uses the standard electronics of all NB3711 variants (see compliance document N° 057/VIT/16) but is assembled in the smaller case of the NB3701.
- Since the last evaluation a few minor changes have been applied to the assembly of the PCBs and therefore the PCB versions have been increased:
  - The MC Board V4.2 becomes **MC Board V4.3** (the new version V4.3 has already been introduced in the NB3800 with IP65 housing, compliance document N° 080/VIT/17); the following PCB BOM changes have been made (see as well "diffBOM-NBHW\_08\_MC\_Board(6\_Slots(A)) .xls"):
    - **Sx100** → We had to change the reset button type. The reset button is from the same manufacturer, from the same series and has a slightly different size (7x3.7x1.8mm instead of 7x3.7x1.1mm) and weight (2.5g instead of 2g).
  - The PSE Board 5xM12 V2.9 becomes **PSE Board 5xM12 V2.10**, the following PCB BOM changes have been made (see as well "diffBOM-Project\_PSE\_Board(5x\_M12\_front)(Standard).xls"):
    - **Qe100** → The quartz oscillator department of the company Fox Electronics has been acquired by the company IDT. The company IDT has changed the part numbers of the former Fox Electronics devices but they still sell them with the same specifications.
    - **Rs202** → The value this chip resistor had to be changed from 1k Ohms to 2.2k Ohms due to a design problem. The chip resistor comes from the same manufacturer, is from the same series, has physically the same size (~1mm x 0.5mm x 0.5mm) and about the same marginal weight, but have a different resistor value.
  - The CP Module Armada 385 V1.3 becomes **CP Module Armada 385 V1.5** (the new version V1.5 has already been introduced in the NB3800 with IP65 housing, compliance document N° 080/VIT/17); the following PCB BOM changes have been made (see as well "diffBOM-CP\_Module\_Armada385(Standard).xls"):
    - **U200, U201** → We had to use a faster speed grade of the same DDR3 RAM device, since the slower one we used before is end of life.
    - **U300** → Due to an end of life issue of the eMMC Flash memory device we had to introduce the recommended replacement part from the same manufacturer (approximately the same size and weight).
    - **X1101** → since the old connector ([http://www.molex.com/molex/products/datasheet.jsp?part=active/0528932495\\_FFC\\_FPC\\_CONNECTORS.xml](http://www.molex.com/molex/products/datasheet.jsp?part=active/0528932495_FFC_FPC_CONNECTORS.xml)) was end of life, we had to replace it with a similar one from the same manufacturer ([http://www.molex.com/molex/products/datasheet.jsp?part=active/0528922433\\_FFC\\_FPC\\_CONNECTORS.xml](http://www.molex.com/molex/products/datasheet.jsp?part=active/0528922433_FFC_FPC_CONNECTORS.xml)).
    - **Q1100** → The quartz oscillator department of the company Fox Electronics has been acquired by the company IDT. The company IDT has changed the part numbers of the former Fox Electronics devices but they still sell them with the same specifications.
    - **C603, C604, C605, C606, C607, C608** → The value of those 6 ceramic capacitors had to be changed from 100nF to 180nF due to a design problem. The capacitors come from the same manufacturer, from the same series, have physically the same size (~1mm x 0.5mm x 0.5mm) and about the same marginal weight, but have a different capacitance value.
- Additionally to the PCB BOM changes the #4002 (Dual Choke) of the Top Level BOM was replaced by #4025. The choke is still the same as before, but the manufacturer changed his naming scheme.



## 4 Conclusion

NetModule AG herewith declares that the chapters

2 - NB3711-2LcWacPbHd-G

3 - NB3711-L2Wac-G-AE

of this document list the differences of the 2 new NB3711 router variants (NB3711-2LcWacPbHd-G NB3711-L2Wac-G-AE) to the previously tested NB3711 variants (see compliance documents N° 57/VIT/16 and N° 80/VIT/17)

May 14th, 2018

NetModule AG

Urs Grütter

Director Engineering / Product Compliance Officer



## **Annex n° 3**

### **Photos of the apparatus**



**N° 89/VIT/18**



**Foto 1: apparato completo NetModule Router**  
**Photo 1: NetModule Router complete apparatus**



**Foto 2: fronte del NetModule Router**  
**Photo 2: front of NetModule Router**