

## List of Important Customers/Projects

System	Air Traffic Control	PANSA EUROCONTROL
Time server	Telecom	ORANGE
Time server	Science	NPL London
Time server	Science	VSL
Time server	Power Distribution	Emerson
Time server	Industry Automation	IASE
Time server	Finance	BRE Bank
System	Stock exchange	GPW
Time server	IT	NGE
Time server	Finance	Credit Agricole Bank
Time server	IT	MACSOFT
Time server	Data centre	Integrated Solution
Time server	Finance	Bank Spoldzielczy
Time server	Gas & Oil	GAZ-SYSTEM
Time server	Train Traffic control	Kapsch
Time server	Media monitoring	Argus de la Presse
Time server	Telecom	Vodafone
Time server	IT	Infotech Associates
Time server	Industry	Eneregotest
Time server	IT	CRIF
Time server	Finance	Bank Krakowski
Time server	IT	CRIF
Time server	IT	LIREX
Time server	IT	Comarch
Time server	Data centre	INFOMEX
Time server	Science	Warsaw University of Technology
Time server	Military	PIT-RADWAR
Time server	Air Traffic Control	ROMATSA
Time server	Finance	Bank Pekao
Time server	Government	METROSERT
Time server	Finance	ING Bank
Time server	Logistic	REBOUND ELECTRONICS
Time server	Data centre	MACSOFT
Time server	Telecom	NOKIA
Time server	Data centre	IBM

Time server	Air Traffic Control	PAZP
Time server	Smart metering	ATENDE
Time server	Railways	LOGIN
Time Server	Gas & Oil	PERN
Time server	Telecom	Orange
Time server	Industry	Fujitsu
Time server	Energy	IPESOFT
Time server	Finance	Santander Bank
Time server	Finance	Bank Millennium
Time server	Security	ENIGMA
Time server	Energy	PGE Dystrybucja
Time server	Security	CRYPTOTECH
Time server	IT	Indra
Time server	Gas & Oil	PGNiG
Time server	IT	NIVER
Time server	Military Marine	Centrum Techniki Morskiej
Time server	Industry	Yokogawa
Time server	Military	Ministry of Defense
Time server	IT	Gravizz Management
Time server	IT	SUNNET
Time server	Gas & Oil	ORLEN
Time server	Finance	mBank
Time server	Data centre	COMARCH
Time server	Gas & Oil	PGNiG
Time server	Science and measurement	Federale Overheidsdienst Financien
Time server	Energy	IASE
Time server	Stock exchange	GPW
Time server	Industry	MACRO-SYSTEM
Time server	IT	ATEA SIA
Time server	IT	COMPAREX
Time server	Finance	EURO Bank
Time server	Data centre	ZETO
Time server	Government	The Ministry of Justice
Time server	Energy	PGE
Time server	Telecom	Solidex
Time server	Industry	KMP Projekt
Time server	Medical	COMP DATA
Time server	Defence	Milens İletişim İnşaat A.Ş

Time server	Finance	mBank
Time server	IT	PRAGMA
Time server	Industry	ABB
Time server	Energy	ATENDE
Time server	Telecom	VODAFONE
Time server	Finance	RAIFFEISEN BANK
Time server	Industry	J.T.C.
Time server	Air & Space Traffic	INDRA Sistemas
Time server	Industry	ABB
Time server	Industry	ABB
Time server	IT	COMP
Time server	Data centre	DECISOFT
Time server	Energy	ANSALDO
Time server	Gas & Oil	Commtel
Time server	IT	M&S INFORMATIKAI ZRT
Time server	Energy	TAURON
Time server	Finance	Bank Millennium
Time server	Mountain Railways	PKL
Time server	Science	Instytut Lotnictwa
Time server	Finance	TRECOM
Time server	Railway	CP TRADE
Time server	Finance	Bank Pocztowy
Time server	IT	Radionov
Time server	Finance	BIK
Time server	Industry	FUJITSU
Time server	Finance	NBP Bank
Time server	Digital trust	EUROPEAN AGENCY OF DIGITAL TRUST
Time server	Finance	BANK BGZ Paribas
Time server	Security	ENIGMA
Time server	Defence	SILTEC
Time server	Finance	PWPW
Time server	Air Traffic	Poznan Airport
Time server	Industry	Computer & Controls
Time server	Energy	Elmess
Time server	Telecom	T-Mobile
Time server	Science	GUM

Time server	Finance	Alior Bank
Time server	IT	CENTRONIX D.O.O.
Time server	Radio	Radio Opole
System	Energy Smart- Grids	ONE COMMERCE
Time server	Science	MEASUREMENT Callaghan Innovation
Time server	Railway	Eltornika
Time server	Radio	Radio Rzeszow
Time server	Energy	Controltec
Time server	Telecom	Solidex
Time server	Broadcasting	TVP
Time server	Energy	INNOGY
Time server	Marine	Gdynia seaport
Time server	Energy	TAURON
Time server	IT	CRIF
Time server	Telecom	UPC
Time server	Energy	TAMEH
Time server	Finance	Bank PekaO
Time server	IT	ATEA AS
Time server	Media	WP Wirtualna Polska
Time server	Railway	PKP ENERGETYKA
Time server	Industry	VALMET AUTOMATON OY
Time server	IT	ARPOL
Telemetry	Smart metering	ITRON
Time server	Government	Sopra Steria
Time server	Government	Council of the EU.
Time server	Telecom	ASCOMP
Time server	Energy	OTTON
Time server	Data centre	NTT Poland
Time server	IT	MCF GROUP
Time server	Insurance	ERGO Hestia
Time server	Data centre	SPACENET ZRT.
Time server	Defence	Policja Polska
Time server	Railway	KZL Bydgoszcz
Time server	Insurance	Nationale- Nederlanden
Time server	Defence	VISIONCUBE
Time server	Government	EUROPEAN COMMISSION

Time server	IT	INTEL
Time server	Defence	VORTEX
Time server	Finance	NBP Bank
Time server	Finance	MONOLIT IT
Time server	Air Traffic Control	PANSA
Time server	Data centre	SOPRA Steria
System	Energy	Giza Systems
Time server	Data centre	Computex
Time server	Telecom	Orange
Time server	Finance	Toyota Bank
Time server	Industry	Emerson
Time server	NATO Defence	Ministry of Defense
Time server	NATO Defence	Milsoft
Time server	Energy	SOLTEC
Time server	IT	Hellenic Technical Ent.
Time server	Industry	HITACHITI Rail
Time server	Energy	One Commerce
Time server	Radio	Radio PIK
Time server	Finance	PWPW
Time server	IT	SIA "BERKOM"
Time server	Autonomous cars	MAN
Time server	Data centre	KOMBIT
Time server	Railway	Bombardier
Time server	Government	CRIF – Centrum Informatyki Resortu Finansów
Time server	Defence	ESKOM IT
Time server	Defence	Border Guards
Time server	IT	S&T
Time server	Security	BIT S.A.

## 3.5 ISO9001 / IQNet

 <b>qualityaustria</b> Succeed with Quality	
<h1>CERTIFICATE</h1>	
Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH awards this <b>qualityaustria</b> certificate to the following organisation:	This <b>qualityaustria</b> certificate confirms the application and further development of an effective
 <b>Elproma Elektronika Sp. z o.o.</b> ul. Duńska 2a, 05-152 Czoszów, Poland	<b>QUALITY MANAGEMENT SYSTEM</b> complying with the requirements of standard <b>ISO 9001:2015</b>
Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH is accredited according to the Austrian Accreditation Act by the BMWFW (Federal Ministry of Science, Research and Economy). Quality Austria is accredited as an organization for environmental verification by the BMLFUW (Federal Ministry of Agriculture, Forestry, Environment and Water Management). Quality Austria is authorized by the VDA (Association of the Automotive Industry). For accreditation registration details please refer to the applicable decisions or recognition documents. Quality Austria is the Austrian member of IQNet (International Certification Network). Dok. Nr. FO_24_028 3b72051-d31-410d-a260-419a7dacc83e	Registration No.: 11895/1 Date of initial issue: 06 March 2012 Valid until: 06 April 2024    
Design, production and distribution of electronic systems and its components	Vienna, 06 April 2021
The validity of the <b>qualityaustria</b> certificate will be maintained by annual surveillance audits and one renewal audit after three years.	Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH, AT-1010 Vienna, Zelinkagasse 10/3
	<b>Signatures removed for security reasons</b>
The current validity of the certificate is documented exclusively on the Internet under <a href="http://www.qualityaustria.com/en/cert">http://www.qualityaustria.com/en/cert</a> EAC: 19; 29	Konrad Scheiber General Manager Dr. Mag. Anni Koubek Specialist representative



THE INTERNATIONAL CERTIFICATION NETWORK

# CERTIFICATE

Quality Austria  
has issued an IQNet recognized certificate that the organization:

**Elproma Elektronika Sp. z o.o.**  
ul. Duńska 2a, 05-152 Czosnów, Poland

for the following scope:

Design, production and distribution of electronic systems and its components  
EAC: 19; 29

has implemented and maintains a

## QUALITY MANAGEMENT SYSTEM

which fulfils the requirements of the following standard

## ISO 9001:2015

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

Issued on:	2021-04-06
Validity date:	2024-04-06
Quality Austria certified since:	2012-03-06

*Registration Number:* AT-11895/1

### Signatures removed for security reasons



*Alex Stoichitoiu*  
*President of IQNet*

*Mag. Friedrich Khuen-Belasi*  
*Authorised Representative*  
*of Quality Austria*



IQNet Partners\*:

AENOR Spain AFNOR Certification France APCER Portugal CCC Cyprus CISQ Italy  
CQC China CQM China CQS Czech Republic Cro Cert Croatia DQS Holding GmbH Germany EAGLE Certification Group USA  
FCAV Brazil FONDONORMA Venezuela ICONTEC Colombia Inspecta Sertifiointi Oy Finland INTECO Costa Rica  
IRAM Argentina JQA Japan KFO Korea MIRTEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland  
NYCE-SIGE Mexico PCBC Poland Quality Austria Austria RR Russia SII Israel SIQ Slovenia  
SIRIM QAS International Malaysia SQS Switzerland SRAC Romania TEST St Petersburg Russia TSE Turkey YUQS Serbia

\* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under [www.iqnet-certification.com](http://www.iqnet-certification.com)

## 3.6 NATO Certificate

Elproma products are registered also in NATO system under No: **NSN 6645-17-125631**



**WOJSKOWE CENTRUM NORMALIZACJI, JAKOŚCI I KODYFIKACJI**  
*Military Centre for Standardization, Quality and Codification*  
43 KRAJOWE BIURO KODYFIKACYJNE  
*43 National Codification Bureau*

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**ZAŚWIADCZENIE**  
*CERTIFICATE*

Zaświadcza się, że na podstawie złożonego wniosku podmiot o nazwie:  
*This is to certify that:*

**ELPROMA ELEKTRONIKA**  
**Sp. z o.o.**

z siedzibą w:  
*located in:*

05-152 CZOSNÓW UL. DUŃSKA 2A

otrzymał  
*was given*

**Kod NATO Podmiotu Gospodarczego:**  
*NATO Commercial and Government Entity Code – NCAGE Code:*

**9ATKH**

*m.p.*

**DYREKTOR**  
*dr inż. Mariusz SOCZYŃSKI*

Warszawa, dnia 21 czerwca 2022 r.

---

Wojskowe Centrum Normalizacji, Jakości i Kodyfikacji – 43 Krajowe Biuro Kodyfikacyjne  
00-909 Warszawa ♦ ul. Nowowiejska 28a ♦ tel. 261845708, fax 261845891 ♦ wenjk@ron.mil.pl

### ELPROMA Elektronika Sp. z o.o.

Dunska 2A Str. Czosnow PL 05-192  
Poland (EU)

Tel. +48 227517680  
Fax. +48 227517681

Internet: <http://www.elpromatime.com>  
e-mail: [info@elpromatime.com](mailto:info@elpromatime.com)





WOJSKOWE CENTRUM NORMALIZACJI,  
JAKOŚCI I KODYFIKACJI  
00-909 Warszawa, ul. Nowowiejska 28A  
(tel. 261 845 700/fax 261 845 891)



Warszawa, 21 czerwca 2022 r.



WOJSKOWE CENTRUM  
NORMALIZACJI, JAKOŚCI I KODYFIKACJI  
Nr. 1589/22  
22 CZE. 2022  
03 00-909 Warszawa 03

Pan Krzysztof BORGULSKI

WICEPREZES ZARZĄDU  
ELPROMA ELEKTRONIKA SP. Z O.O.

ul. Duńska 2a  
05-152 Czosnów

Nr sprawy: WCNJiK-OKWO.WZ.703.310.2022

*Dotyczy: kodu NATO podmiotu gospodarczego (NCAGE Code – NATO Commercial and Government Entity Code)*

informuję, że na podstawie wniosku z dnia 10.06.2022 r. został przydzielony dla firmy **ELPROMA ELEKTRONIKA SP. Z O.O.** kod NCAGE **9ATKH** – zaświadczenie w załączeniu. Kod identyfikuje firmę w Systemie Kodyfikacyjnym NATO (NCS – NATO Codification System).


Dane firmy zostały wprowadzone do:

- Bazy Podmiotów Gospodarczych prowadzonej przez Wojskowe Centrum Normalizacji, Jakości i Kodyfikacji (WCNjK),
- Bazy NATO Podmiotów Gospodarczych prowadzonej przez Agencję Wsparcia i Zamówień NATO (NSPA – NATO Support and Procurement Agency),
- Głównego Katalogu NATO Referencji dla Logistyki (NMCRL – NATO Master Catalogue of References for Logistics) prowadzonej przez NSPA,
- Bazy Podmiotów Gospodarczych prowadzonej przez Agencję Logistyki Departamentu Obrony Stanów Zjednoczonych (DLA – Defence Logistics Agency).

Jednocześnie proszę o powiadomienie WCNjK w przypadku zmiany danych, które zostały podane we wniosku. Dodatkowe informacje o kodzie NCAGE dostępne są na stronie internetowej [www.wcnjk.wp.mil.pl](http://www.wcnjk.wp.mil.pl) w zakładce O Nas> Kodyfikacja>Kod NCAGE.


Załączniki: 1 na 1 str. - tylko adresat

Dorota Mirecka, 261-845-345  
21.06.2022 r. T703

Z upoważnienia  
DYREKTORA  
WOJSKOWEGO CENTRUM NORMALIZACJI,  
JAKOŚCI I KODYFIKACJI  
  
ppłk Stanisław HABUDA  
Szef Wydziału Zarządzania  
Oddziału Kodyfikacji Wyrobów Obronnych

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Link to verify: <https://cage.dla.mil/> (Enter number 9ATKH)

**Details**  Back

**9ATKH** **ELPROMA ELEKTRONIKA SP. Z O.O.**

CAGE Information		Contact Information	
CAGE	9ATKH	POC	
UEI		Phone	
Status	Active	Fax	48 227517681
Type	Non-US Manufacturer	International	48 227517680
Established	06/15/2022	Address	DUNSKA 2A
CAGE Update Date	06/15/2022	P.O. Box	
CAGE Expiration		City	CZOSNOW
SAM Expiration		County	
		State/Province	MAZOWIECKIE
		Country	POLAND
		Zip/Postal	05-152
		Corporate URL	WWW.ELPROMAELECTRONICS.COM

Ownership of Offeror Information	
<b>Highest Level Owner</b>	<b>List of Offerors (0)</b>
Information not Available	Information not Available
<b>Immediate Level Owner</b>	
Information not Available	

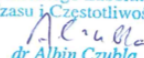
  

Additional Information
CAO-PAY

### 3.7 National Metrology Certification for NTS-5000

 PREZES GŁÓWNEGO URZĘDU MIAR					
<h1>ŚWIADECTWO</h1> <h2>W Z O R C O W A N I A</h2> <p>CERTIFICATE OF CALIBRATION</p>					
Data wydania: Date of issue:	30-11-2021	Nr świadectwa: Certificate No.:	L2.4180.76.2021.3846.1	Strona: Page:	1 / 5
PRZEDMIOT WZORCOWANIA	Serwer NTP/PTP typu NTS-5000 w trybie holdover, nr fabr.: 15513230, produkcji firmy Elproma Elektronika Sp. z o.o. – wprowadzony w tryb holdover przez fizyczne odłączenie sygnałów synchronizujących, po okresie wstępnej synchronizacji lokalnym sygnałem sekundowym UTC(PL) i informacją o czasie pobraną z sygnału GPS, sygnał wyjściowy: 1 pps				
CALIBRATED OBJECT	NTP/PTP server of the type NTS-5000 in the holdover mode, sn.: 15513230, manufactured by Elproma Elektronika Sp. z o.o. – put into holdover mode by physical disconnection of all input synchronisation signals, after the initial period of disciplining by the local 1 pps signal of UTC(PL) with time of day information received from GPS signal, output signal: 1 pps				
ZLECENIODAWCA CUSTOMER	Elproma Elektronika Sp. z o.o. ul. Duńska 2A, 01-152 Czosnów				
				z up. Prezesa GUM on behalf of President of GUM	
				KIEROWNIK Samodzielnego Laboratorium Czasu i Częstotliwości <i>Albin Czuba</i> dr Albin Czuba	
<small>Niniejsze świadectwo może być okazywane lub kopiowane tylko w całości. Nie jest ważne bez podpisów i pieczęci. This certificate should be used or reproduced only in its entirety. It is not valid without signatures and stamps.</small>					
					

<b>ŚWIADECTWO WZORCOWANIA</b> wykonanego przez:	Samodzielne Laboratorium Czasu i Częstotliwości w Głównym Urzędzie Miar				
<b>CERTIFICATE OF CALIBRATION</b> performed by:	Time and Frequency Laboratory, Central Office of Measures ul. Elektoralna 2, 00-139 Warszawa POLAND tel.: +48 22 581 9156 fax: +48 22 581 9392, e-mail: time@gum.gov.pl				
Data wydania: Date of issue:	30-11-2021	Nr świadectwa: Certificate No.:	L2.4180.76.2021.3846.1	Strona: Page:	2 / 5
<b>METODA WZORCOWANIA</b>	Porównanie czasu fazowego sygnału wyjściowego 1 pps wzorcowanego serwera PTP/NTP względem sygnału sekundowego UTC(PL) za pomocą częstotliciemierza-czasomierza kontrolnego - wg instrukcji wzorcowania zegarów, numer systemowy IW6-TF wyd. 8 z 23.04.2021 r.				
<b>METHOD OF CALIBRATION</b>	Comparison of phase time of a 1 pps output signal of a server NTP/PTP under tests with reference to the UTC(PL) 1 pps signals using as a control device a time and frequency counter – instruction of clocks calibration, No. IW6-TF, issue 8, April 23, 2021				
<b>WARUNKI ŚRODOWISKOWE</b>	Temperatura otoczenia w czasie wykonywania wzorcowania wynosiła: (20,5 ÷ 22,5) °C.				
<b>ENVIRONMENTAL CONDITIONS</b>	During calibration ambient temperature amounted to: (20,5 + 22,5) °C				
<b>DATA WYKONANIA POMIARÓW</b> DATE OF CALIBRATION	October 8, 2021 – November 9, 2021				
<b>SPÓJNOŚĆ POMIAROWA</b>	Wyniki wzorcowania serwera NTP/PTP zostały odniesione do utrzymywanego w GUM państwowego wzorca jednostek miar czasu i częstotliwości przez zastosowanie jako przyrządu kontrolnego: częstotliciemierza czasomierza typu SR620, nr fabr. 4423, synchronizowanego sygnałem wzorcowym częstotliwości pobieranym z państwowego wzorca jednostek miar czasu i częstotliwości oraz pomiary czasu fazowego względem sygnału UTC(PL)				
<b>TRACEABILITY</b>	Calibration results of the NTP/PTP server have been referred to the national time and frequency standard maintained at the Central Office of Measures through application of following control device: SR620 type universal counter, sn 4423, synchronized by standard frequency taken from the national time and frequency standard as well as phase time measurement performed with reference to the UTC(PL).				

<p><b>ŚWIADCTWO WZORCOWANIA</b> wykonanego przez:</p> <p><b>CERTIFICATE OF CALIBRATION</b> performed by:</p> <p>Data wydania: Date of issue: 30-11-2021</p> <p><b>NIEPEWNOŚĆ POMIARU</b></p> <p><b>UNCERTAINTY OF MEASUREMENT</b></p> <p><b>WYNIKI WZORCOWANIA RESULTS OF CALIBRATION</b></p>	<p style="text-align: center;">Samodzielne Laboratorium Czasu i Częstotliwości w Głównym Urzędzie Miar</p> <p style="text-align: center;">Time and Frequency Laboratory, Central Office of Measures</p> <p style="text-align: right;">ul. Elektoralna 2, 00-139 Warszawa POLAND tel.: +48 22 581 9156 fax: +48 22 581 9392, e-mail: time@gum.gov.pl</p> <hr/> <p>Nr świadectwa: L2.4180.76.2021.3846.1      Strona: 3 / 5      Certificate No.:      Page:</p> <p>Niepewność pomiaru została wyznaczona zgodnie z zaleceniami zawartymi w dokumencie EA-4/02 M: 2013. Podane wartości niepewności stanowią niepewność rozszerzoną przy prawdopodobieństwie rozszerzenia ok. 95 % i współczynnika rozszerzenia <math>k = 2</math></p> <p>The measurement uncertainty has been determined in accordance with EA-4/02 M: 2013 Document. The reported expanded uncertainty is stated as the standard uncertainty multiplied by the coverage factor <math>k = 2</math>, which corresponds to a coverage probability of approximately 95 %.</p> <p>Przedstawione poniżej wyniki wzorcowania odnoszą się wyłącznie do przedmiotu wzorcowania.      Results presented below relate only to the object of calibration.</p> <p>1. Błąd pomiaru zegara/ serwera NTP/PTP (dla sygnału wyjściowego 1 pps z tyłu urządzenia wynosi) w trybie Rb Holdover:</p> <p style="margin-left: 20px;">a) przed przejściem w tryb Rb Holdover        (w trybie synchronizacji sygnałem UTC(PL) i z podłączoną anteną GNSS):</p> <p style="text-align: center;"><math>(0,0 \pm 0,1) \mu s</math>,</p> <p style="margin-left: 20px;">b) w trybie Rb Holdover (w zależności od czasu po odłączeniu sygnału UTC(PL) i anteny GNSS):</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;">Czas pracy bez synchronizacji</th> <th>1 d</th> <th>2 d</th> <th>3 d</th> <th>4 d</th> <th>5 d</th> <th>6 d</th> <th>7 d</th> </tr> </thead> <tbody> <tr> <td>Błąd pomiaru zegara, <math>\mu s</math></td> <td><math>-0,5 \pm 0,1</math></td> <td><math>-1,2 \pm 0,1</math></td> <td><math>-1,8 \pm 0,1</math></td> <td><math>-2,4 \pm 0,1</math></td> <td><math>-2,9 \pm 0,1</math></td> <td><math>-3,3 \pm 0,1</math></td> <td><math>-3,7 \pm 0,1</math></td> </tr> </tbody> </table> <p>1. The measurement error of the clock/ NTP/PTP server (for the 1 pps output signal in the back of the device) in Rb Holdover mode amounts to:</p> <p style="margin-left: 20px;">a) before switching into Rb Holdover mode (disciplined by 1 pps of UTC(PL) and with connected GNSS antenna):</p> <p style="text-align: center;"><math>(0,0 \pm 0,1) \mu s</math>,</p> <p style="margin-left: 20px;">b) in Rb Holdover mode (against time after disconnection of the 1 pps of UTC(PL) and GPS antenna):</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 15%;">Time of work with no disciplining</th> <th>1 d</th> <th>2 d</th> <th>3 d</th> <th>4 d</th> <th>5 d</th> <th>6 d</th> <th>7 d</th> </tr> </thead> <tbody> <tr> <td>Measurement error of the clock, <math>\mu s</math></td> <td><math>-0,5 \pm 0,1</math></td> <td><math>-1,2 \pm 0,1</math></td> <td><math>-1,8 \pm 0,1</math></td> <td><math>-2,4 \pm 0,1</math></td> <td><math>-2,9 \pm 0,1</math></td> <td><math>-3,3 \pm 0,1</math></td> <td><math>-3,7 \pm 0,1</math></td> </tr> </tbody> </table> <p style="text-align: right; margin-top: 20px;">Sprawdził(a):        Checked by:  <b>KIEROWNIK</b>        Samodzielnego Laboratorium        Czasu i Częstotliwości          dr Albin Czubla</p>	Czas pracy bez synchronizacji	1 d	2 d	3 d	4 d	5 d	6 d	7 d	Błąd pomiaru zegara, $\mu s$	$-0,5 \pm 0,1$	$-1,2 \pm 0,1$	$-1,8 \pm 0,1$	$-2,4 \pm 0,1$	$-2,9 \pm 0,1$	$-3,3 \pm 0,1$	$-3,7 \pm 0,1$	Time of work with no disciplining	1 d	2 d	3 d	4 d	5 d	6 d	7 d	Measurement error of the clock, $\mu s$	$-0,5 \pm 0,1$	$-1,2 \pm 0,1$	$-1,8 \pm 0,1$	$-2,4 \pm 0,1$	$-2,9 \pm 0,1$	$-3,3 \pm 0,1$	$-3,7 \pm 0,1$
Czas pracy bez synchronizacji	1 d	2 d	3 d	4 d	5 d	6 d	7 d																										
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**ŚWIADECTWO  
 WZORCOWANIA**  
 wykonanego przez:

Samodzielne Laboratorium Czasu i Częstotliwości w Głównym Urzędzie Miar

**CERTIFICATE OF  
 CALIBRATION**  
 performed by:

Time and Frequency Laboratory, Central Office of Measures

ul. Elektoralna 2, 00-139 Warszawa POLAND

tel.: +48 22 581 9156 fax: +48 22 581 9392, e-mail: time@gum.gov.pl

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2. Błąd pomiaru zegara/ serwera NTP/PTP (dla sygnału wyjściowego 1 pps z tyłu urządzenia wynosi) w trybie OCXO Holdover:

a) przed przejściem w tryb OCXO Holdover  
 (w trybie synchronizacji sygnałem UTC(PL) i z podłączoną anteną GNSS):

(0,0 ± 0,1) μs,

b) w trybie OCXO Holdover (w zależności od czasu po odłączeniu sygnału UTC(PL) i anteny GNSS):

Czas pracy bez synchronizacji	1 d	2 d	3 d	4 d	5 d	6 d	7 d	14 d
Błąd pomiaru zegara, μs	-0,6 ± 0,1	-2,8 ± 0,1	-7,2 ± 0,1	-13,7 ± 0,1	-22,1 ± 0,1	-32,9 ± 0,1	-45,9 ± 0,1	-184,1 ± 0,1

2. The measurement error of the clock/ NTP/PTP server (for the 1 pps output signal in the back of the device) in OCXO Holdover mode amounts to:

a) before switching into OCXO Holdover mode (disciplined by 1 pps of UTC(PL) and with connected GNSS antenna):

(0,0 ± 0,1) μs,

b) in OCXO Holdover mode (against time after disconnection of the 1 pps of UTC(PL) and GPS antenna):

Time of work with no disciplining	1 d	2 d	3 d	4 d	5 d	6 d	7 d	14 d
Measurement error of the clock, μs	-0,6 ± 0,1	-2,8 ± 0,1	-7,2 ± 0,1	-13,7 ± 0,1	-22,1 ± 0,1	-32,9 ± 0,1	-45,9 ± 0,1	-184,1 ± 0,1

Błąd pomiaru jest różnicą między wskazaniem przyrządu wzorcowanego a wartością (umownie) prawdziwą wielkości mierzonej. Błąd pomiaru zegara odniesiono do momentu pojawienia się zbocza narastającego sygnału wyjściowego 1 pps z wzorcowanego serwera względem sygnału UTC(PL).

Measurement error is a difference between an indication of the device under test and a (conventionally) true value of the measured quantity. Measurement error of the clock was referred to the moment of appearing the rising slopes of 1 pps output signal from the server under test in relation to UTC(PL) signal.

Sprawdził(a):  
 Checked by:

KIEROWNIK  
 Samodzielnego Laboratorium  
 Czasu i Częstotliwości  
*Albin Czuba*  
 dr Albin Czuba

ŚWIADECTWO  
WZORCOWANIA  
wykonanego przez:

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*The Central Office of Measures (GUM) fulfils its responsibilities assigned by the Act of 11 of May 2001 – Law on Measures. GUM is the National Metrology Institute (NMI) for the Republic of Poland.*

*The Central Office of Measures is responsible for ensuring uniformity of measures and required accuracy of the results of measurements carried out in the Republic of Poland as well as their traceability to the International System of Units (SI).*

*The Central Office of Measures as the NMI is the source from which the accredited calibration laboratories obtain their measurement traceability. The primary role of the national metrology institute is confirmed in the international document ILAC P10:01/2013, ILAC Policy on the Traceability of Measurement Results and the document DA-06 issued by the Polish Centre for Accreditation entitled "PCA policy on providing traceability for measurement". GUM standards, which are referred to in the results of calibration (information on the traceability posted on the front page of certificate) are linked to the standards of European and worldwide laboratories of National Metrology Institutes through participation in mutual comparisons of standards and / or calibration performed by these laboratories.*

*GUM calibration laboratories have implemented a quality assurance system based on standard PN-EN ISO/IEC 17025:2018-02 "General requirements for the competence of testing and calibration laboratories".*

*GUM is a signatory of a Mutual Recognition Arrangement (CIPM MRA) for national measurement standards and for calibration and measurement certificates issued by national metrology institutes.*

*The information with regard to the Calibration and Measurement Capabilities (CMCs) is specified in Appendix C of the CIPM MRA. This certificate is consistent with the CMCs that are included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures (CIPM). Under the MRA, all participating institutes recognize the validity of each other's calibration and measurement certificates for the quantities, ranges and measurement uncertainties specified in Appendix C (for details see <http://www.bipm.org>).*



Project DEMETRA – a Horizon 2020 Project  
GALILEO NEXT GENERATION SPACE TECHNOLOGY  
PROVIDING IMPROVEMENTS TO BUSINESS OPERATIONS



Torino April 18<sup>th</sup> , 2017

**Letter of recommendation**

To whom it may concern

In 2015-16 I had the pleasure to coordinate a European project named DEMETRA, aiming to develop and test a demonstrator of European time services, based on GALILEO ([www.demetratime.eu](http://www.demetratime.eu)). This project was supervised by GSA (Global Navigation Satellite Systems Agency) and brought together 15 partners from 8 different EU countries.

One of the partner was the Polish company ELPROMA and I have no hesitation in saying that ELPROMA gave an exceptionally high contribution to the project.

Within 2 years ELPROMA successfully designed, developed and implemented, a new cryptographic time transfer technology named:

***"NTP Trusted Time Distribution with Auditing and Verification Facilities"***

Its performance was successfully tested at INRiM Time & Frequency laboratory in Torino/IT and confirmed later in cooperation with European NMI in United Kingdom and Poland, namely:

**NPL** National Physical Laboratory in London/UK,

**GUM** Central Office of Measures in Warsaw/PL.

The DEMETRA Project, including the ELPROMA Service, were presented at leading international scientific conferences including: ION Precise Time and Time Interval, IEEE Metrology in Aerospace and Frequency control symposium, European Frequency and Time Forum, International Time and Synchronization Forum.

In addition we can confirm that ELPROMA's special low-noise version of NTP/PTP Time Server model NTS-3000 was successfully tested as part of the DEMETRA Core Infrastructure developed by Thales Alenia Space and, by courtesy of ELPROMA, it is still currently in operation in INRiM powering the Time Laboratory devoted to INRiM institutional duties.

The ELPROMA team was supervised by Mr. Tomasz Widomski, who provided his team with state of the art technology and professional support proving ELPROMA's skills in the Time & Frequency business. Not only, ELPROMA has always been very proactive in finding possible users of the DEMETRA time services, in actively participating to the discussion with the users and stakeholders, attending meeting with the European Commission and the GSA to explore possible timing needs in the different applications like energy, telecom, finance, and quantum cryptography.

**I'm very happy to recommend the company ELPROMA as a trustworthy and reliable business partner and a professional Time & Frequency solution supplier.**



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SUB-CONTRACTORS TECHNICAL PROPOSAL  
Clock Synchronization System (CSS)  
for all Airport Authority

Document: ELP/IL/220723  
Author: Eli Rosenblit  
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