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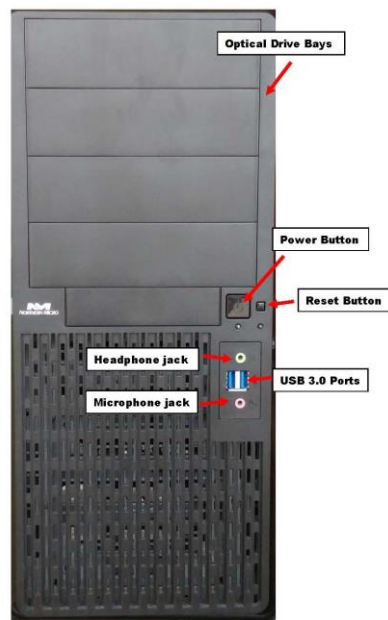
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Northern Micro Spirit X399-AS



Chassis – In Win PE689T2

Dimensions (D x W x H):	465 x 200 x 430 mm (18.3" x 7.9" x 16.9")
Drive Bays:	External 5.25" x4, External 3.5" x1, Internal 3.5" / 2.5" x5
Indicators:	Power Status, HDD Activity
Front Buttons:	Power On / Off, System Reset, USB 3.0 x2, Headphone Jack, MIC Phone Jack
System Security:	Padlock Loop, Kensington Slot Lock
Expansion Slots:	7
Metal Thickness:	1.0mm



Power Supply – EVGA 850w GQ

Total Continuous Power:	850W
Certification:	80Plus Gold Certification
Connectors:	EPS Cable x2, PCIe Cable x4, SATA x4, Peripheral x1

Motherboard – Asus Prime X399-A

CPU Compatibility:	AMD SocketTR4 for 1st and 2nd Gen AMD Ryzen™ Threadripper™ Processors
Chipset:	AMD X399
Memory:	8 x DIMM, Max. 128GB, DDR4 3600(O.C.)/3466(O.C.)/3333(O.C.)/3200(O.C.)/3000(O.C.)/2800(O.C.)/2666/2400/2133 MHz ECC and non-ECC, Un-buffered Memory
Graphic:	Supports NVIDIA® Quad-GPU SLI™ Technology Supports NVIDIA® 3-Way SLI™ Technology Supports NVIDIA® 2-Way SLI™ Technology Supports AMD Quad-GPU CrossFireX™ Technology Supports AMD 3-Way CrossFireX™ Technology
Expansion Slots:	AMD Ryzen™ Threadripper™ Processors 4 x PCIe 3.0 x16 (single@x16, dual@x16/x16, triple@x16/x16/x8 mode) AMD X399 chipset 1 x PCIe 2.0 x4 (max at x4 mode) 1 x PCIe 2.0 x1
Storage:	AMD Ryzen™ Threadripper™ Processors : 1 x M.2 Socket 3, with M key, type 2242/2260/2280 storage devices support (SATA & PCIE 3.0 x 4 mode) 1 x M.2 Socket 3, with M key, type 2242/2260/2280/22110 storage devices support (SATA & PCIE 3.0 x 4 mode) 1 x U.2 port AMD X399 chipset : 6 x SATA 6Gb/s port(s), Support Raid 0, 1, 10
LAN:	Intel® I211-AT
Audio:	Realtek® S1220A 8-Channel High Definition Audio CODEC - Supports: Jack-detection, Front Panel Jack-retasking

USB Ports:	<p>AMD Ryzen™ Threadripper™ Processors : 8 x USB 3.1 Gen 1 port(s) (8 at back panel, , Type-A)</p> <p>AMD X399 chipset : 1 x USB 3.1 Gen 2 port(s) (1 at mid-board)</p> <p>AMD X399 chipset : 4 x USB 3.1 Gen 1 port(s) (4 at mid-board)</p> <p>AMD X399 chipset : 4 x USB 2.0 port(s) (4 at mid-board)</p>
Back I/O Ports:	<p>1 x LAN (RJ45) port(s) 2 x USB 3.1 Gen 2 (teal blue)Type-A + USB Type-CTM 8 x USB 3.1 Gen 1 (blue) , 1 x Optical S/PDIF out 5 x Audio jack(s) 1 x USB BIOS Flashback Button(s)</p>
Internal I/O Ports	<p>1 x 3-pin Cover fan (COV_FAN) connector 1 x Q_Code 1 x U.2 port 2 x Aura RGB Strip Header(s) 2 x USB 3.1 Gen 1(up to 5Gbps) connector(s) support(s) additional 4 USB 3.1 Gen 1 port(s) 2 x USB 2.0 connector(s) support(s) additional 4 USB 2.0 port(s) 1 x M.2 Socket 3 with M key, type 2242/2260/2280 storage devices support (SATA & PCIE 3.0 x 4 mode) 1 x M.2 Socket 3 with M key, type 2242/2260/2280/22110 storage devices support (SATA & PCIE 3.0 x 4 mode) 6 x SATA 6Gb/s connector(s) 1 x M.2_FAN connector 1 x CPU Fan connector(s) 1 x CPU OPT Fan connector(s) 3 x Chassis Fan connector(s) 1 x AIO_PUMP connector 1 x W_PUMP+ connector 1 x 24-pin EATX Power connector(s) 1 x 8-pin ATX 12V Power connector(s) 1 x 4-pin ATX 12V Power connector(s) 1 x Front panel audio connector(s) (AAFP) 1 x System panel(s) 1 x 5-pin EXT_FAN(Extension Fan) connector 1 x Thermal sensor connector(s) 1 x Power-on button(s)</p>

1 x Clear CMOS button(s)
1 x USB 3.1 Gen 2 front panel connector

Security: TPM 2.0



Processor – AMD Ryzen Threadripper 1920X

Processor Number:	1920X
Lithography:	14nm
# of Cores:	12
# of Threads:	24
Processor Base Frequency:	3.50 GHz
Max Turbo Frequency:	4.00GHz
Cache:	32MB L3
TDP:	180W
Max Memory Size:	128GB
Memory Types:	DDR4-2666
ECC Memory Supported:	Yes
Socket Supported:	sTR4
Cooling:	Liquid Cooling Solution

Memory – Crucial 8GB DDR4 – 2666

Total Capacity:	32GB (8GB x 4)
Speed:	2666 MT/s
Spec:	DDR4 PC4-21300, CL-19, Single Ranked, x8 Based, Unbuffered, Non-ECC, 1.2V, 1024Meg x 64

Storage – Intel 760P Series, 512GB

Capacity:	512GB
Form Factor:	M.2 2280
Interface:	PCIe NVMe 3.1 x4
Hardware Encryption:	AES 256 bit

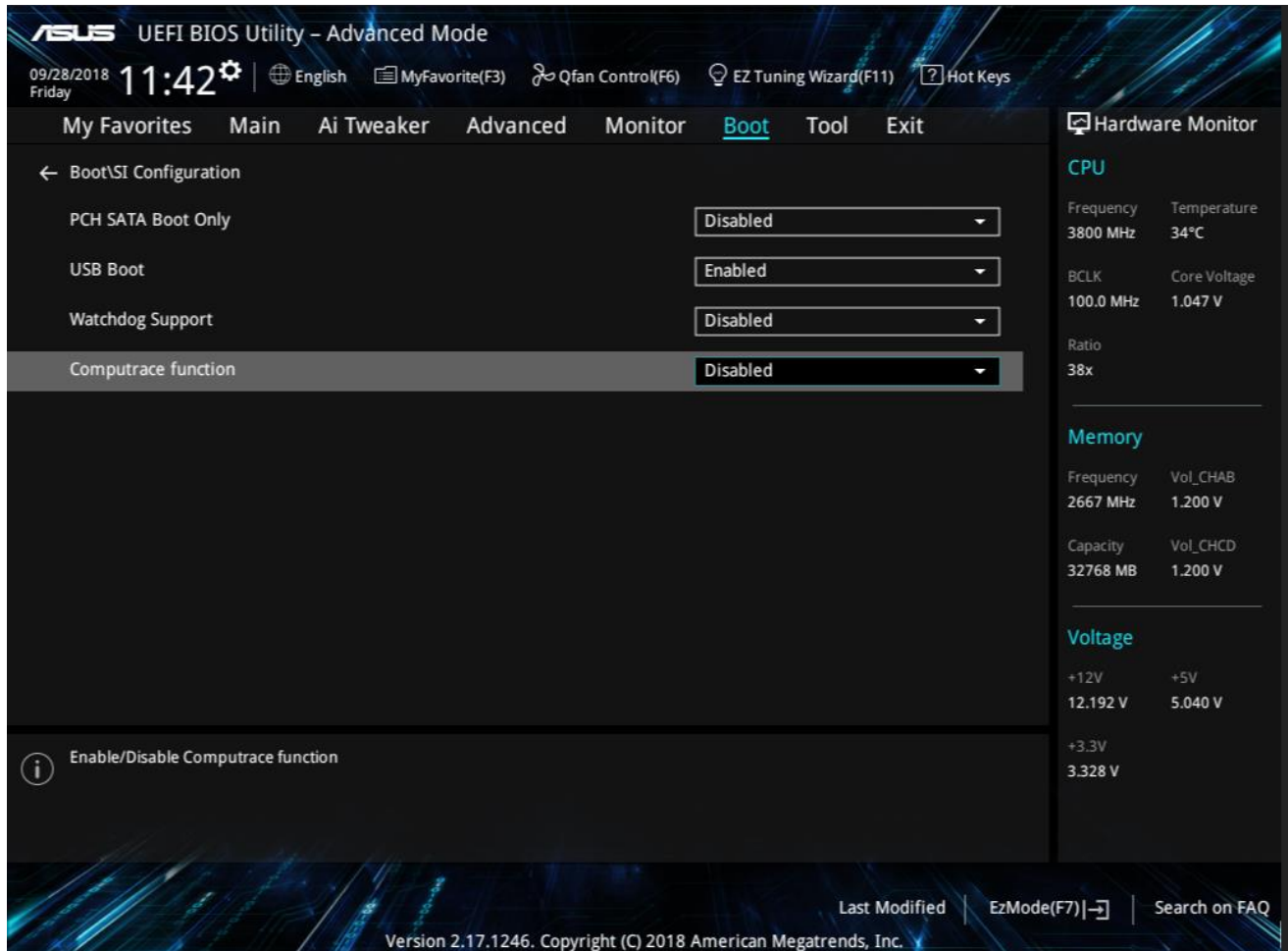
Video – MSI GeForce GTX 1080

Interface:	PCI Express x16 3.0
Memory Type:	GDDR5X
Memory Size:	8192MB
Core Clock Speed:	1733MHz / 1607MHz
Memory Clock Speed:	10010MHz
Maximum Displays:	4
Multi-GPU Technology:	SLI, 2-way
Output:	DisplayPort x3 (1.4), HDMI, DVI-D
Maximum Resolution:	7680 x 4320
DirectX Version Support:	12.0
OpenGL Version Support:	4.5

Operating System

Installed OS:	Windows 10 Professional, 64 bit
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Computrace Ready



ASUS UEFI BIOS Utility - Advanced Mode

09/28/2018 11:42 Friday | English | MyFavorite(F3) | Qfan Control(F6) | EZ Tuning Wizard(F11) | Hot Keys

My Favorites | Main | Ai Tweaker | Advanced | Monitor | **Boot** | Tool | Exit

← Boot\SI Configuration

PCH SATA Boot Only	Disabled
USB Boot	Enabled
Watchdog Support	Disabled
Computrace function	Disabled

Hardware Monitor

CPU

Frequency	Temperature
3800 MHz	34°C
BCLK	Core Voltage
100.0 MHz	1.047 V
Ratio	
38x	

Memory

Frequency	Vol_CHAB
2667 MHz	1.200 V
Capacity	Vol_CHCD
32768 MB	1.200 V

Voltage

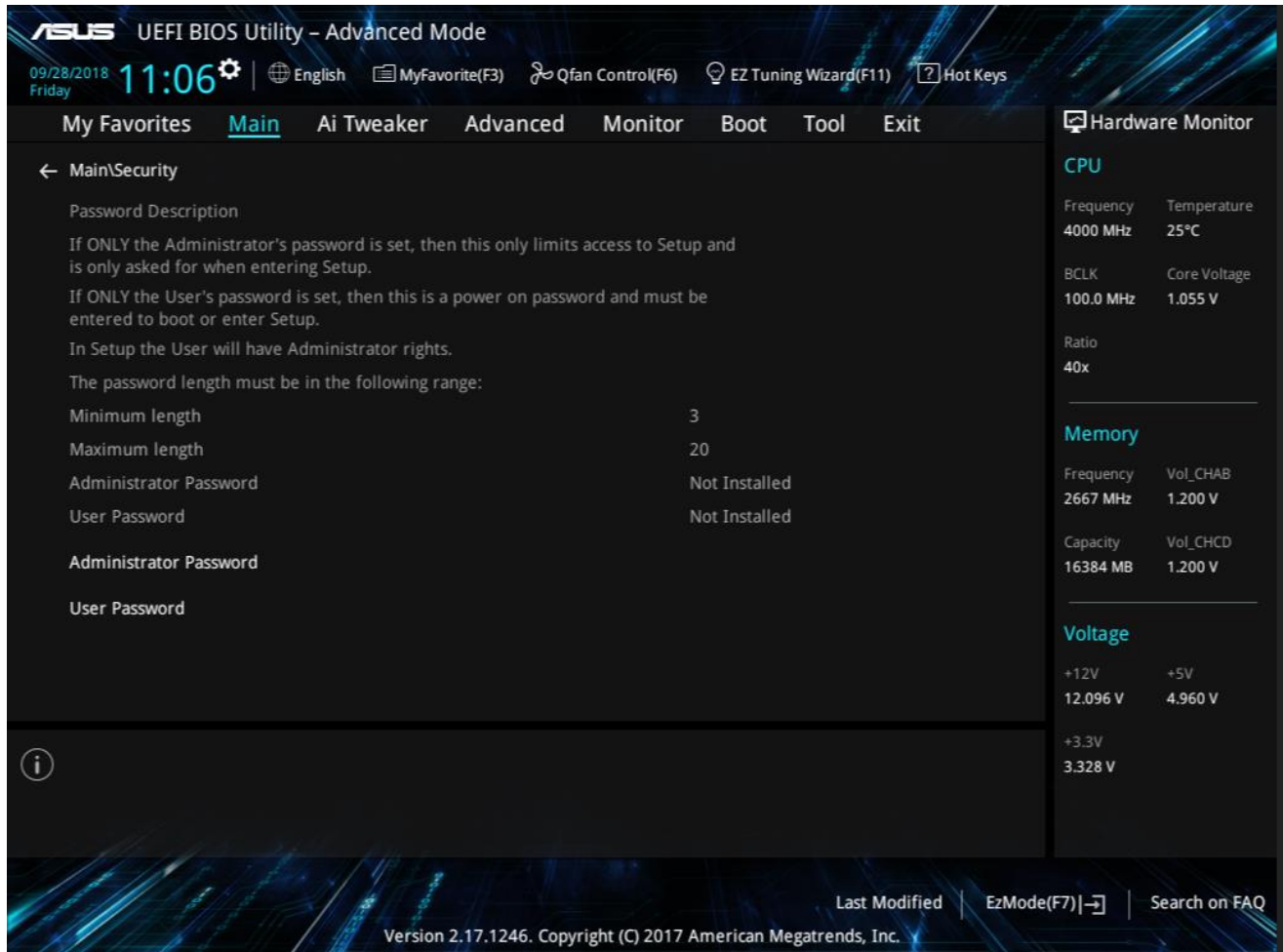
+12V	+5V
12.192 V	5.040 V
+3.3V	
3.328 V	

Enable/Disable Computrace function

Last Modified | EzMode(F7) | Search on FAQ

Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.

BIOS Security



The screenshot displays the ASUS UEFI BIOS Utility in Advanced Mode. The interface is dark-themed with blue accents. At the top, the date and time are shown as 09/28/2018 Friday 11:06. Navigation tabs include My Favorites, Main (selected), Ai Tweaker, Advanced, Monitor, Boot, Tool, and Exit. The left sidebar shows the Main\Security menu. The main area contains the Password Description, which explains the difference between Administrator and User passwords and lists the password length requirements (3-20 characters). The right sidebar shows the Hardware Monitor section with CPU, Memory, and Voltage readings. The bottom status bar includes 'Last Modified', 'EzMode(F7)', and 'Search on FAQ'.

ASUS UEFI BIOS Utility – Advanced Mode

09/28/2018 Friday 11:06 | English | MyFavorite(F3) | Qfan Control(F6) | EZ Tuning Wizard(F11) | Hot Keys

My Favorites **Main** Ai Tweaker Advanced Monitor Boot Tool Exit

← Main\Security

Password Description

If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.

If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup.

In Setup the User will have Administrator rights.

The password length must be in the following range:

Minimum length	3
Maximum length	20
Administrator Password	Not Installed
User Password	Not Installed

Administrator Password

User Password

Hardware Monitor

CPU

Frequency	Temperature
4000 MHz	25°C
BCLK	Core Voltage
100.0 MHz	1.055 V
Ratio	
40x	

Memory

Frequency	Vol_CHAB
2667 MHz	1.200 V
Capacity	Vol_CHCD
16384 MB	1.200 V

Voltage

+12V	+5V
12.096 V	4.960 V
+3.3V	
3.328 V	

Information icon (i)

Last Modified | EzMode(F7) | Search on FAQ

Version 2.17.1246. Copyright (C) 2017 American Megatrends, Inc.

OPTION ITEMS

Communications

Wireless & Bluetooth Adapter:	N4G85AA (Intel 7265)
Wireless Protocol:	802.11 a/g, 802.11n, 802.11ac
Wi-Fi Supported Frequency:	2.4G & 5G
Transmission Rate:	1300Mbps
Bluetooth:	4.2
Adapter Socket:	PCE-E x1

Keyboard – Bilingual

Part Number:	KBS225FE-USB-BL
Manufacturer:	Solidus
Keyboard Layout:	QWERTY - 105 Keys, English and French Function keys
Connectivity:	USB

Keyboard – TBITS 5

Part Number:	KBS225T5-USB-BL
Manufacturer:	Solidus
Keyboard Layout:	QWERTY - Symbol Function keys
Connectivity:	USB

Keyboard - English

Part Number:	ANB-00002
Manufacturer:	Microsoft
Keyboard Layout:	QWERTY - English Function keys
Connectivity:	USB

Mouse – Basic Scroll Mouse

Part Number:	4YH-00005
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Manufacturer: Microsoft

Connectivity: USB

Buttons: 2-Buttons, 1-Scroll Wheel & Button

Technology: Optical

Northern Micro ISO 9001-2015 Certification



CERTIFICATE OF REGISTRATION

This is to certify that the Quality Management System of

Northern Micro Inc.

3155 Swansea Crescent
Ottawa, Ontario K1G 3J3
CANADA

has been assessed by TRC, Inc. and found to be in conformance to the following standard(s):

ISO 9001:2015

This Registration is for the following scope:

Northern Micro is a consulting manufacturer and integrator of high-performance, value-oriented personal computers, servers and peripherals.

Original Issue Date: October 8, 2013

Current Term Issue Date: December 4, 2017

Expiry Date: December 6, 2020



President, The Registrar Company, Inc.



Certificate Number: TRC 00759

1400 Preston Road, Suite 400, Plano, TX 75093 USA
335 Laird Road, Unit 9, Guelph, ON N1G 4P7 CANADA



Northern Micro ISO 14001:2015 Certification



CERTIFICATE OF REGISTRATION

This is to certify that the Environmental Management System of

Northern Micro Inc.

3155 Swansea Crescent
Ottawa, Ontario K1G 3J3
CANADA

has been assessed by TRC, Inc. and found to be in conformance to the following standard(s):

ISO 14001:2015

This Registration is for the following scope:

Northern Micro is a consulting manufacturer and integrator of high-performance, value-oriented personal computers, servers and peripherals.

Original Issue Date: October 8, 2013

Current Term Issue Date: December 4, 2015

Date of Revision: December 2, 2016

Expiry Date: December 20, 2018



President, The Registrar Company, Inc.



Certificate Number: TRC 00760

1400 Preston Road, Suite 400, Plano, TX 75093 USA
335 Laird Road, Unit 9, Guelph, ON N1G 4P7 CANADA



Asus NIST SP800-147 Compliance



ASUSTek COMPUTER INC.

No.15, Li-De Road, Beitou District,
Taipei City 112, Taiwan (R.O.C.)
TEL. 886-2-2894-3447
<http://asus.com.tw>

September 19, 2018

Attn:
Northern Micro
3155 Swansea Cres.
Ottawa, ON K1G 3J3

Re: NIST SP 800-147 Compliance Declaration

Dear Customer,

We acknowledge the motherboard products specifically listed below ("Products") are provided by us, however the BIOS in the Products are provided by American Megatrends, Inc. ("AMI"). It is our policy to strictly follow and obey all applicable laws and regulations regarding the Products in order to maintain our reputation and goodwill. Furthermore, we have required our manufacturers and vendors as well to perform the compliance obligations with the same degree of care. We hereby declare that AMI has certified with written records that the BIOS in the Products are fully complied with the standards under NIST SP 800-147 stipulated by the government of Canada.

Products:

Model	ASUS 90 Part Number
PRIME Q370M-C	90MB0W70*
PRIME Q270M-C	90MB0SZ0*
PRIME X299-A	90MB0U40*
PRIME X399-A	90MB0V80*

Your faithfully,

ASUSTek Computer Inc.

Motherboard Business Unit
Office: +886-2-2894-3447
15, Li-Te Rd., Beitou, Taipei 112, Taiwan

Copyright 2017 ASUSTeK Computer Inc.

Northern Micro Spirit X399-AS Electrical Certification



Certificate of Compliance

Certificate: NA201811000

Date Issued: December 5, 2018

Project: 359992-3.1

Issued to: Northern Micro
3155 Swansea Cres.
Ottawa, ON, K1G 3J3
Canada

The products listed below have been certified as being compliant with all applicable requirements of the specifications listed and are eligible to bear the following certification mark



Authorized by:

S.C Beck, Director of Certification

PRODUCTS

INFORMATION TECHNOLOGY EQUIPMENT – Certified to Canadian Standards

Product: Desktop Computer

Model: Spirit X399-AS

Ratings: 12A, 120V, 60Hz

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 60950-1-07 incl. Amendment 1 (2011) and Amendment 2 (2014) - Information Technology Equipment – Safety – Part 1: General Requirements

This certificate is issued on condition that the holder complies and will continue to comply with the requirements of the above mentioned specifications and pursuant to the terms and conditions specified in the Certification Agreement.



Northern Micro Spirit X399-AS ICES-003 Certification



ONE WORLD • OUR APPROVAL

EMC TEST REPORT – 359992-1TRFEMC

Applicant:

Northern Micro

Product name:

Desktop PC

Model:

Spirit X399-AS

Specifications:

- ◆ FCC 47 CFR Part 15, Subpart B – Verification
- ◆ ICES-003 Issue 6 January 2016

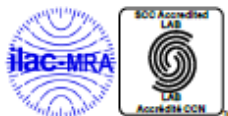
Date of issue: **September 12, 2018**

Test engineer(s): **Shawn He, Senior EMC Specialist**

Signature:

Reviewed by: **David Duchesne, Senior EMC/Wireless Specialist**

Signature:



Nemko Canada Inc., a testing laboratory, is accredited by the Standards Council of Canada.
The tests included in this report are within the scope of this accreditation

www.nemko.com

EN 55032-AS/NZS-FCC-ICES-AS-EN6100032-EN6100033.docx; Date: June 13, 2017

Northern Micro System Serial Label



Northern Micro Spirit X399-AS WHQL Certification



Microsoft

Hardware certification report **Approved**

Private product ID: **14603344678359392**
Shared product ID: **1152921504607580432**
Submission ID: **1152921504627813937**
Submission date: **10/11/2018**
Completion date: **10/11/2018**
Company: **Northern Micro**
Product name: **Northern Micro Spirit X399-AS**
Category: **System**
Product type: **Desktop**
Qualification level: **Certified for Microsoft Windows 10 Client family version 1709, x64**
Marketing name: **N/A**

Micron Technology ISO 9001 Certification



CERTIFICATE

Certificate Number: 110006.00

The Quality System of:

Micron Technology, Inc.
8000 S. Federal Way
Boise, ID 83707-0006
USA

Including its implementation, meets the requirements of the standard:

ISO 9001:2008

Scope:

Micron's semiconductor business – including the marketing, development, manufacturing, electrical and environmental testing, and sale of memory component, module products and memory systems; the development and manufacture of board level products; the development and manufacture of photomasks that are used in manufacturing leading edge next generation semiconductors.

This Certificate is valid until:	September 15, 2018
This Certificate is valid as of:	April 14, 2016
Certified for the first time:	February 1, 1994

A blue ink signature of Dr. Cem O. Onus, Managing Director of Business Assurance at DEKRA Certification, Inc.

Dr. Cem O. Onus
Managing Director, Business Assurance
DEKRA Certification, Inc.

The method of operation for quality certification is defined in the DEKRA Master Services Agreement. Integral publication of this certificate is allowed.

DEKRA Certification, Inc.
1120 Welsh Road, Suite 210
North Wales, PA 19454
USA

Ph: (215)997-4519
Fax: (215)997-3810

ISO 9001 Cert (2008) Rev 0

Accredited By:
ANAB



Northern Micro Spirit X399-AS Course Outline

Course # - NM101-X399

Northern Micro Spirit X399 Series

Course Outline

Setup

- Introduction
- Safety Precautions
- Electrostatic Discharge (ESD)
- Setup & Configuration
- Care & Maintenance

General Specifications

- Motherboard
- CPU
- Memory
- Rear Panel Connectors
- Audio Configuration
- Hard Drive (SATA, M.2, SSD)
- Optical Drive
- Power Supply
- Keyboard & Mouse
- Optional Features
- Internal & External Connections

Installation and Removal

- Accessing the inside components
- Removal and Replacement of components

BIOS

- Understanding the BIOS
- BIOS settings and Options

Troubleshooting

- Troubleshooting Tips and Tricks
- Approved Diagnostic Tools

Platform Security

- What is TPM
- Safety Precautions

Environmental

- Environmental policy
- Environmental initiatives

Contacts

- Support contact resources