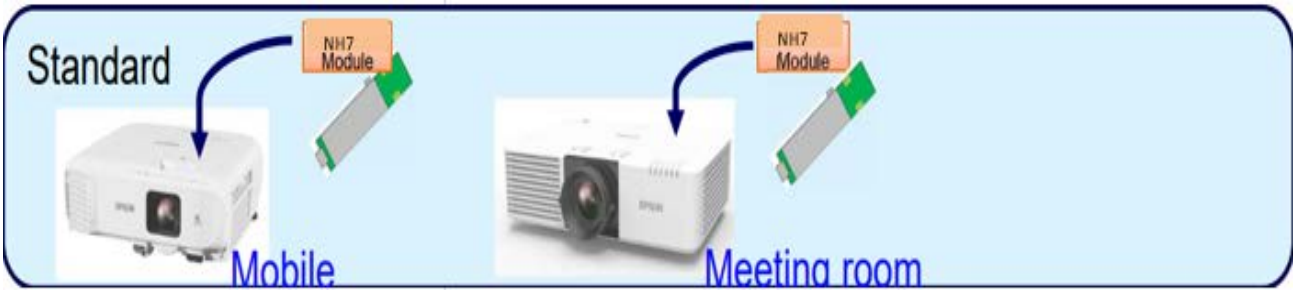
NH7 User Manual

Product Features

Hardware configurations:

Item	Spec
SoC	MediaTek MT8696
PCBA Size	105 [mm] x 26 [mm] x 10 [mm]
OS	AOSP14 (Android Open Source Project)
eMMC	8GB
DRAM	LPDDR4 32bit 2GB
USB OTG	1 port USB Host: Internal communicates with the projector. USB Device: Debug
HDMI max resolution	4K 60fps (HDCP 2.3)
Connector	HDMI type-A USB Micro-B (Power supply and USB OTG)
Power Supply	5V / MAX 2A supplied from the projector
Wi-Fi	MT7921AS It supports to Wi-Fi 6E.
Bluetooth	Available
Temperature and Humidity	- -Operating temperature Ambient (in Non-Air flow) temperature : 0 ~ 45 degrees *Wi-Fi bands condition is 6GHz 80MHz. -Storage temperature: -20 ~ 85℃ -Humidity: 0 ~ 95%

The module works together with projectors. Fig. 1example.



Regulatory Information

Regulatory information, certification, and compliance marks can be found on the label of module.

Manufacturer:

Seiko Epson Corporation
6925 Tazawa, Toyoshina, Azumino-shi, (Toyoshina Branch), Nagano, 399-8285 Japan
Trademark: EPSON

EMC COMPLIANCE STATEMENT

Important: This device, power adapter and other in-box accessories have demonstrated Electromagnetic Compatibility (EMC) compliance under conditions that included the use of compliant peripheral devices and shielded cables between system components. It is important that you use compliant peripheral devices and shielded cables between system components to reduce the possibility of causing interference to radios, televisions and other electronic devices.

RADIO FREQUENCY EXPOSURE

Maintain a distance of 20 cm (8 in) from your body to be consistent with how the device is tested for compliance with RF exposure requirements.

European Conformity (CE)/United Kingdom(UK) –Radio Equipment Compliance

Hereby, [Seiko Epson Corporation] declares that the radio equipment type Bluetooth Sound Bar is in compliance with Directive 2014/53/EU, as well as UK Regulation SI 2017 No.1206.

EU Company:
Name: EPSON EUROPE B.V.
Address: Atlas Arena, Asia Building, Hoogoorddreef 5,1101 BA, Amsterdam Zuidoost The Netherlands
Trademark: EPSON

UK Company:
Name: Epson (U.K.) Limited
Address: Westside, London Road, Hemel Hempstead, Hertfordshire, HP3 9TD, United Kingdom
Trademark: EPSON

The full text of the EU declaration of conformity is available at the following internet address:

The device is restricted to indoor use only when operating in the 5150 to 5350 MHz frequency range for member states: AT, BE, BG, CZ, DK, EE, FR, DE, IS, IE, IT, EL, ES, CY, LV, LI, LT, LU, HU, MT, NL, NO, PL, PT, RO, SI, SK, TR, FI, SE, CH, UK(NI), HR

Operation in 5945~6425 MHz is restricted to indoor use only.

INFORMATION ON FREQUENCY BANDS AND POWER

Data given here is the maximum radio-frequency power transmitted in the frequency band(s) in which the radio equipment operates

Radio Type / Description	Frequency	Maximum Output Power
Bluetooth	2400 ~ 2483.5 MHz	20 dBm
WLAN 2.4G	2400 ~ 2483.5 MHz	20 dBm

WLAN 5G	5150 ~ 5725 MHz	23 dBm
	5725 ~ 5875 MHz	13.98 dBm
WLAN 6G	5945-6425 MHz	23 dBm

FCC statements
Federal Communications Commission (FCC) Statement

FCC

This module has been tested and found to comply with the following requirements for Modular Approval.

- Part 15.247 - Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
- Part 15.407 – General technical requirements.

RF exposure considerations

In the end product, the antenna(s) used with this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operation in conjunction with any other antenna or transmitter except in accordance with multi-transmitter product procedures. User and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying the RF exposure compliance.

Antennas

This radio transmitter has been approved by the FCC and ISED to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antennas

Cet émetteur radio a été approuvé par la FCC et ISED pour fonctionner avec les types d'antennes répertoriés ci-dessous avec le gain maximal autorisé indiqué. Les types d'antennes non inclus dans cette liste, ayant un gain supérieur au gain maximum indiqué pour ce type, sont strictement interdits pour une utilisation avec cet appareil.

Radio	Antenna Type	Freq. (MHz)	Max. Peak Antenna Gain (dBi)
Bluetooth	**PIFA**	2402-2480	**-3.76**
WiFi 2.4GHz	**PIFA**	2412-2462	0.31

Radio	Antenna Type	Freq. (MHz)	Max. Peak Antenna Gain (dBi)
WiFi 5GHz	**PIFA**	5150~5250	3.24
		5250~5350	3.24
		5470~5725	1.79
		5725~5850	1.69
		5850~5895	1.69

Radio	Antenna Type	Freq. (MHz)	Max. Peak Antenna Gain (dBi)
WiFi 6GHz	**PIFA**	5925~6425	**3.07**
		6425~6525	**1.78**
		6555~6875	**1.78**
		6895~7125	**1.71**

Required End Product Labeling

Any device incorporating this module must display an external, visible, permanently affixed label with the FCC ID and the ISED certification number preceded by the term as follows.
“ **Contains FCC ID:** BKMAE-NH7”
“ **Contains IC:** 1052D-NH7 ”

Obligation d'étiquetage du produit final:

Tout appareil intégrant ce module doit afficher une étiquette externe, visible et apposée en permanence avec le numéro de certification ISDE précédé du terme comme suit.

« **Contient IC :** 1052D-NH7»

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in User manual.

Test Modes

This device uses various test mode programs for test set up which operate separate from production firmware. Host integrators should contact the grantee for assistance with test modes needed for module/host compliance test requirements.

Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Note EMI Considerations

Note that a host manufacture is recommended to use KDB996369 D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate

additional non-compliant limits due to module placement to host components or properties

For standalone mode, reference the guidance in KDB996369 D04 Module Integration Guide and for simultaneous mode; see KDB996369 D02 Module Q&A Question 12, which permits the host manufacturer to confirm compliance.

How to make changes

Only Grantees are permitted to make permissive changes, if the module will be used differently than granted conditions, please contact us to ensure modifications will not affect compliance.

15.105(b)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for

15.19
This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
1) this device may not cause harmful interference and
2) this device must accept any interference received, including interference that may cause undesired.

15.21
You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user’s authority to operate the equipment.

FCC RF Radiation Exposure Statement:
1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated, keeping the radiator at least 20cm or more away from the person's body.

Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

ISED statements

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada’s licence-exempt RSS(s).
Operation is subject to the following two conditions:
1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Caution: Exposure to Radio Frequency Radiation
1. To comply with the Canadian RF exposure compliance requirements, this device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.
2. To comply with RSS 102 RF exposure compliance requirements, this equipment should be installed and operated, keeping the radiator at least 20cm or more away from the person's body.

for indoor use only
Devices shall not be used for control of or communications with unmanned aircraft systems.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

Attention: exposition au rayonnement radiofréquence
1. Pour se conformer aux exigences de conformité RF canadienne l'exposition, cet appareil et son antenne ne doivent pas être co-localisés ou fonctionnant en conjonction avec une autre antenne ou transmetteur.
2. Pour se conformer aux exigences de conformité CNR 102 RF exposition, cet équipement doit être installé et utilisé en maintenant le radiateur à au moins 20cm ou plus du corps de la personne.

Pour usage intérieur seulement
Les dispositifs ne doivent pas être utilisés pour commander des systèmes d'aéronef sans pilote ni pour communiquer avec de tels systèmes.

Japan
5GHz band (W52,W53): Indoor use only
5GHz 帯の使用は屋内に限る

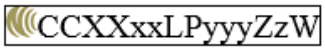
The transmission of radio equipment is indoor use only
当該無線設備の送信は、屋内においてのみ可能である旨

NCC 警語
廠牌: EPSON 型號: NH7

根據 NCC LP0002 低功率射頻器材技術規範_章節 3.8.2：

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前述合法通信，指依電信管理法規定作業之無線電通信。
低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

應避免影響附近雷達系統之操作。

此模組於取得認證後將依規定於模組本體標示審驗合格標籤，並要求平台廠商於平台上標示
『內含發射器模組：  』
或相似含意的標示.

Brazil ANATEL

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.