InfoThink Technology CO., LTD.
5F., No.133, Xinhu 1st Rd., Neihu Dist., Taipei City 114-94, Taiwan (R.O.C.)
TEL：(02)2790-1790 FAX：(02)2790-1770

規格承認書

SPECIFICATION FOR APPROVAL

Customer:	Getac Technology Corp.
Brand Name:	Getac
Description:	K120G2 PN7462 NFC Module
Version:	
Our Parts Number:	179-90010526A0-6
Customer Parts Number:	442144600001
Made by:	InfoThink Technology
Date:	1 Dec, 2020
Prepared：	Robert Yang
Approved：	Roman Chang
Customer’s Checked：	
Customer’s Approved：	

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Index

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1. General Description

The K120G2 NFC module is a highly integrated transceiver module for contactless reader/writer communication at 13.56 MHz.

A dedicated Flash code is implemented to handle different RF protocols by an integrated microcontroller. The system host controller communicates with the K120G2 NFC module by using the USB link.

The protocol between the host controller and the K120G2 NFC module, on top of this physical link is the CCID protocol

2. Features

- High RF output power frontend IC for transfer speed up to 848 kbit/s
- NFC IP1 and NFC IP2 support
- Full NFC tag support (type 1, type 2, type 3, type 4A and type 4B, type 5)
- P2P active and passive, target and initiator
- Card emulation ISO14443 type A
- ISO/IEC 14443 type A and type B
- MIFARE classic card
- ISO/IEC 15693, and ISO/IEC 18000-3 mode 3
- Low power card detection
- Dynamic Power Control (DPC) support
- Compliance with EMV contactless protocol specification
- Compliance with NFC standards

3. Support the following operating modes:

- ISO/IEC 14443-A and B, MIFARE
- JIS X 6319-4 (comparable with FeliCa scheme)
- ISO/IEC 15693, ICODE, ISO/IEC 18000-3 mode 3
- NFC protocols - tag reader/writer, P2P
- ISO/IEC 14443- type A card emulation
- EMVCo compliance

4. System Requirements

- Desktop or notebook computer with a working USB port
- One of the following Operating Systems：
  - Windows® 2000
  - Windows® 2003 Server x32/x64
  - Windows® 2008 Server x32/x64
  - Windows Vista™ x32/x64
  - Windows® 7 x32/x64
  - Windows® 10 x32/x64

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- Support by the following OS through the PCSC-Lite driver：
  - GNU/Linux using libusb 1.0.x and later
  - Mac OS Leopard (1.5.6 and newer)
  - Mac OS Snow Leopard (1.6.X)
  - Solaris
  - FreeBSD

5. General Specifications

- Bus-powered - +5V +/- 5%, 500mA

- Average Power Consumption
  - Standby Mode: 0.12Watt
  - Active/Read Card Mode: 0.24 Watt

- Operational environment
  - Operating Temperature: -10°~60°
  - Operating Humidity: 10%~90%
  - Storage Temperature: -20°~70°
  - Storage Humidity: 10%~90%

6. Connector Pin List

CN2 - Mainly USB Signals		
Pin No.	Pin Name	Input/Output
1	+V5S	POWER INPUT
2	+V5S	POWER INPUT
3	USB-	USB SIGNAL
4	USB+	USB SIGNAL
5	GND	
6	GND	
7	GND	
8	RFID_PWRON	INPUT
9	EXTENSION _BAYID_0	I/O
10	EXTENSION_IN#	I/O
11	+V3.3S	POWER INPUT
12	+V3.3S	POWER INPUT

	Normal Mode	Flash / Download Mode
RFID_PWRON	LOW	LOW
EXTENSION _BAYID_0	HIGH	LOW

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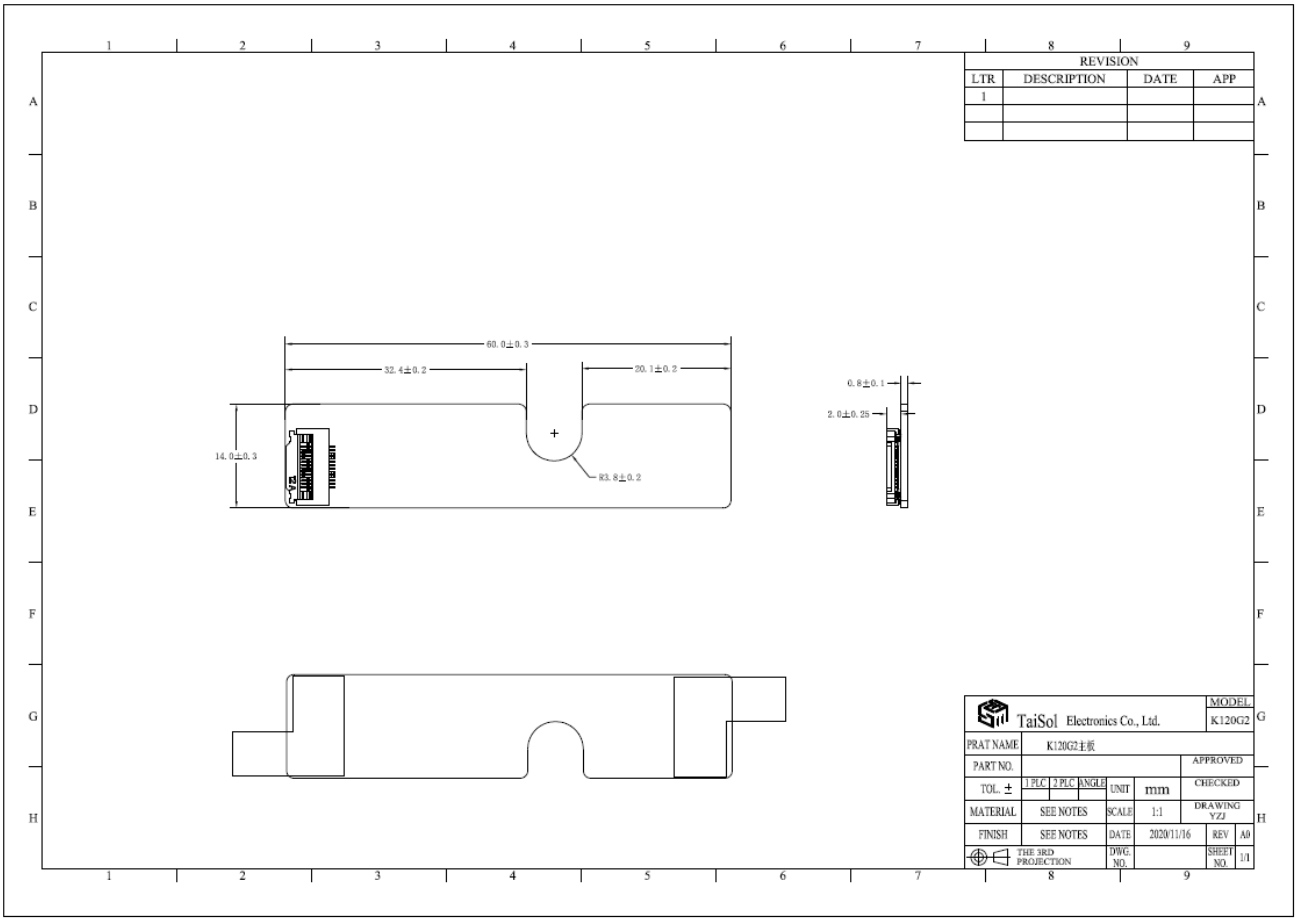
7. PCBA Dimension



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8. USB Device VID/PID and Firmware Version

VID/PID: 0x1FC9/0x0117
F/W Ver.: R0.51.070520A

9. Block Diagram

This module is powered by 5V from USB interface. Main supply voltage for internal analog modules, digital logic and memories. The 27.12 MHz crystal oscillator is used as a reference for all operations requiring high stability of the clock frequency.

TX1 TX2 transmitter is able to drive an antenna circuit connected to outputs TX1 and TX2 with a 13.56 MHz carrier signal. The signal delivered on pins TX1 and pin TX2 is a 13.56 MHz carrier, modulated by an envelope signal for energy and data transmission to archive the standards ISO/IEC14443 A and B, FeliCa, and ISO/IEC18092 define the protocols.

In reader mode, the response from the antenna to the differential input RXP/RXN. The reader mode receiver extracts this signal by first removing the carrier in passive mixers. It then filters and amplifies the baseband signal before converting to digital values.

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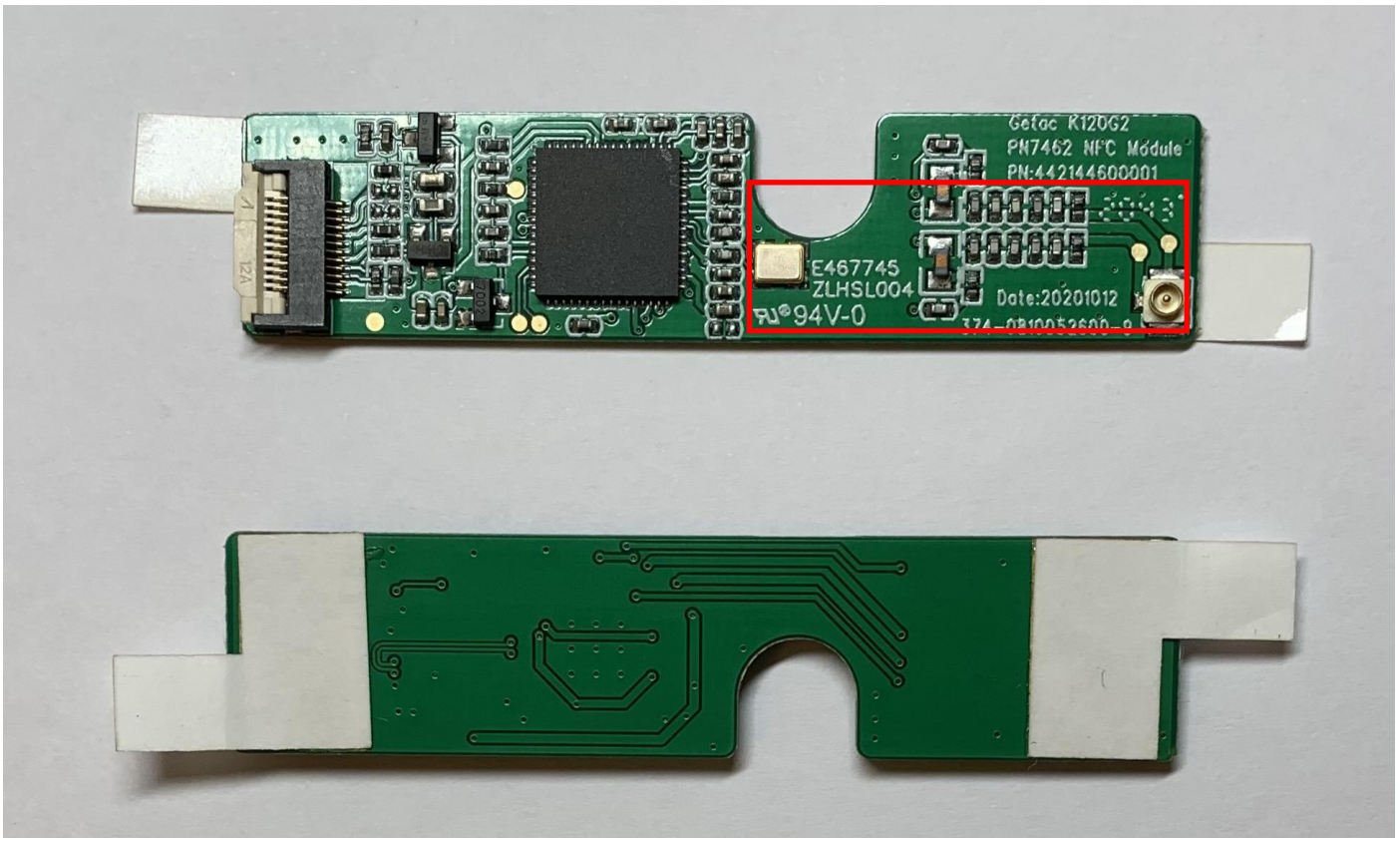
10. K120G2 NFC module Photograph

Highlights in red square are production information including UL file number, anti-flame level, batch information, manufacturing date and part number. These information varies with production.



Federal Communication Commission Interference Statement

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 operation.

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 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 help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This module has been tested for compliance to FCC Part 15

The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) or being used in a portable condition will need a separate reassessment through a class II permissive change application or new certification.

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) or portable use will require a separate class II permissive change re-evaluation or new certification.

2.4 Limited module procedures

Please addressed (same as module request letter)

2.5 Trace antenna designs

Not applicable.

2.7 Antennas

The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module. The antenna must be installed such that 20 cm can be maintained between the antenna and users.

Antenna Type	Loop Antenna
Antenna connector	N/A

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IMPORTANT NOTE:
This NFC devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations. Modifications not expressly approved by Getac could void your authority to operate the equipment.
This module apply limit module approval, and just only install in end product (Brand:Getac / Model: K120G2).

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Radiation Exposure Statement:
The product comply with the FCC portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

End Product Labeling:
The final end product must be labeled in a visible area with the following: "Contains FCC ID: QYLPN7462". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

Manual Information To the End User
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 show in this manual.

OEM/Host manufacturer responsibilities
OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment

This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.
As long as all conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

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Industry Canada statement:

This device complies with ISED's licence-exempt RSSs. 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 operation.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Radiation Exposure Statement:
The product comply with the Canada portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

Déclaration d'exposition aux radiations:

Le produit est conforme aux limites d'exposition pour les appareils portables RF pour les Etats-Unis et le Canada établies pour un environnement non contrôlé.

Le produit est sûr pour un fonctionnement tel que décrit dans ce manuel. La réduction aux expositions RF peut être augmentée si l'appareil peut être conservé aussi loin que possible du corps de l'utilisateur ou que le dispositif est réglé sur la puissance de sortie la plus faible si une telle fonction est disponible.

This device is intended only for OEM integrators under the following conditions:

1) The antenna must be installed and operated with greater than 20cm between the antenna and users
2) The transmitter module may not be co-located with any other transmitter or antenna.
3) Module approval valid only when the module is installed in the tested host or compatible series of host which have similar RF exposure characteristic with equal or larger antenna separation distance.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes:

1) L'antenne doit être installé et exploité avec plus de 20 cm entre l'antenne et les utilisateurs.
2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.
3) Approbation du Module valable que lorsque le module est installé dans l'hôte testé ou de la série de l'hôte compatible qui ont même caractéristique de l'exposition aux RF avec la distance égale ou supérieure séparation antenne.

Tant que les 3 conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

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IMPORTANT NOTE:
In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

NOTE IMPORTANTE:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

End Product Labeling

The product can be kept as far as possible from the user body or set the device to lower output power if such function is available. The final end product must be labeled in a visible area with the following: “Contains IC: 10301A-PN7462K”.

Plaque signalétique du produit final

L'appareil peut être conservé aussi loin que possible du corps de l'utilisateur ou que le dispositif est réglé sur la puissance de sortie la plus faible si une telle fonction est disponible. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 10301A-PN7462K ".

Manual Information To the End User
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 show in this manual.

Manuel d'information à l'utilisateur final
L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module. Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.