Getac K120G2 NFC Module Instructions

Contents

Getac K120G2 NFC Module

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

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

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

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
- 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

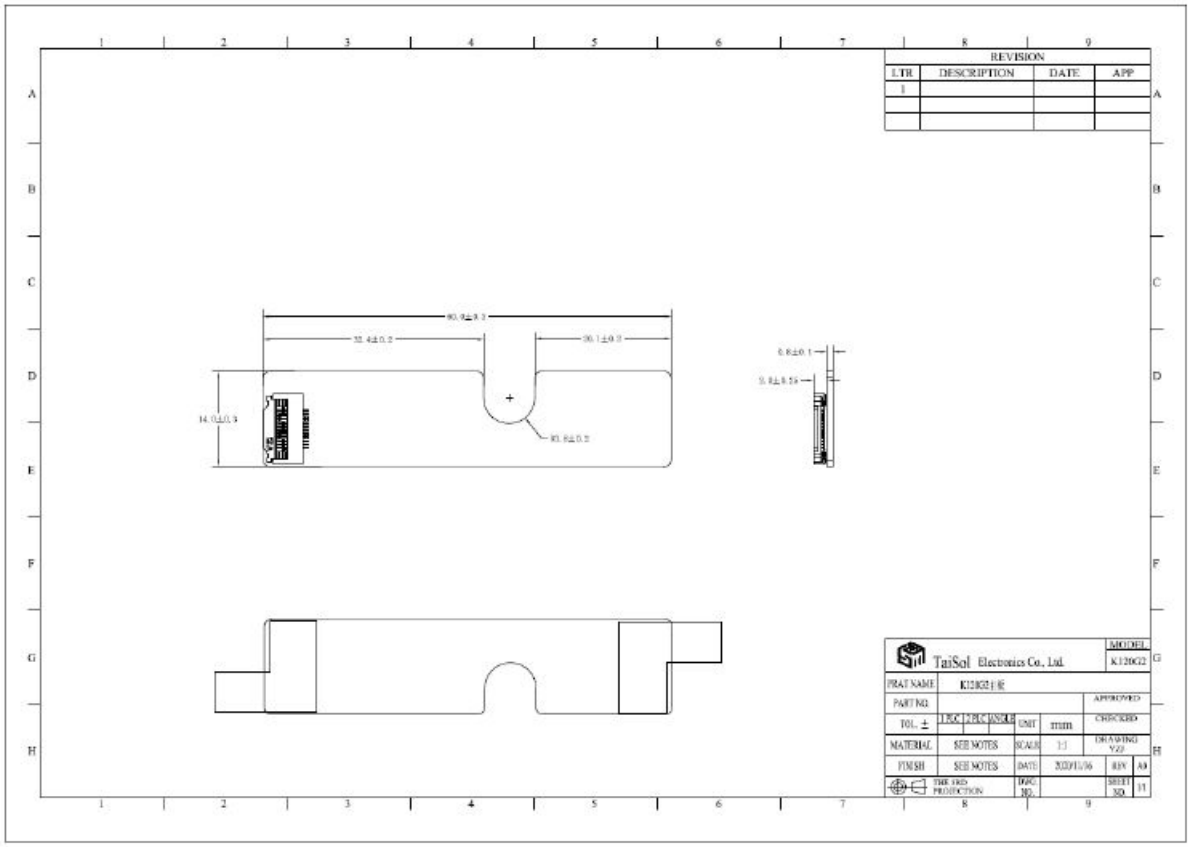
General Specifications

- 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%

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

PCBA Dimension



USB Device VID/PID and Firmware Version

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

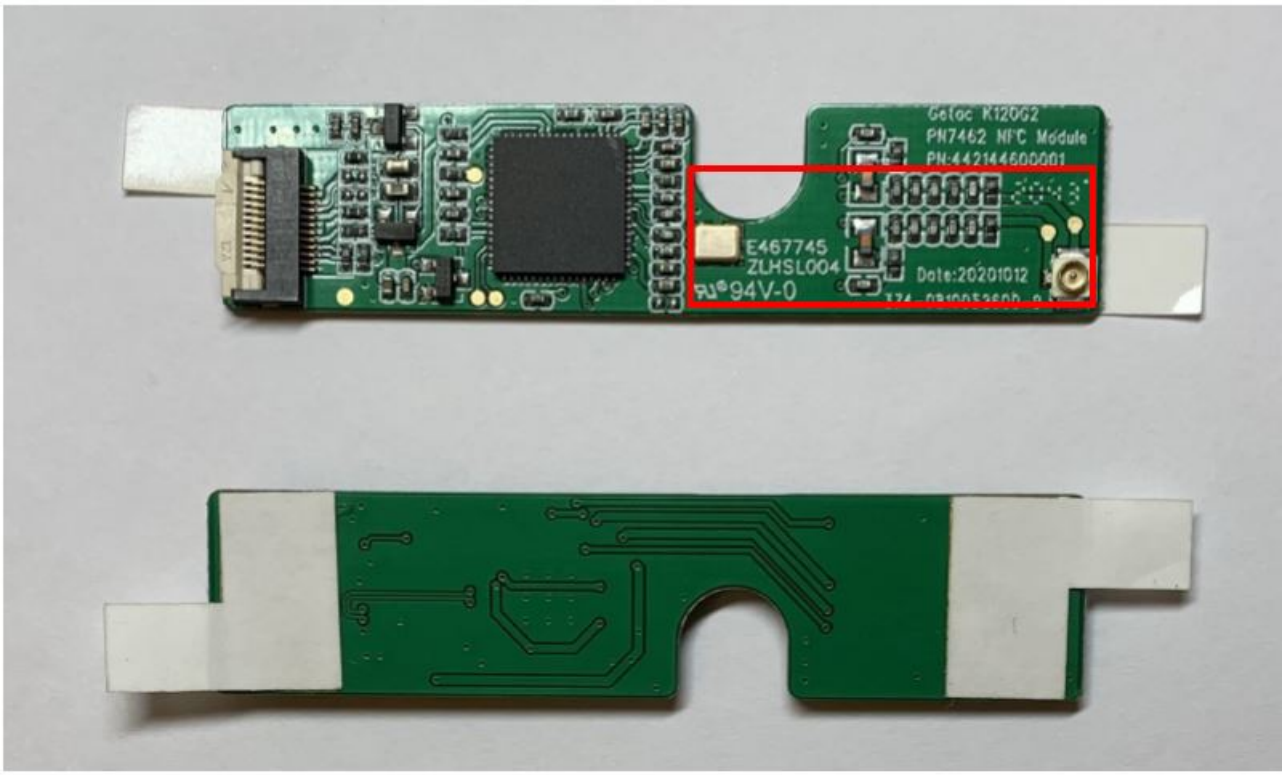
Block Diagram

This module is powered by 5V from a 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 it to digital values.

K120G2 NFC module Photograph

Highlights in the red square are production information including UL file number, anti-flame level, batch information, manufacturing date, and part number. This 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 conditions. Any other usage conditions such as co-location with another 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 another transmitter (s) or portable use will require a separate class II permissive change re-evaluation or new certification.

- **Limited module procedures** Please addressed (same as module request letter)
- **Trace antenna designs** Not applicable.
- **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

IMPORTANT NOTE:

This NFC device 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 applies to limit module approval, and just only install in the 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 complies with the FCC portable RF exposure limit set forth for an uncontrolled environment and is 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 shown 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 tests 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.

Documents / Resources

	Getac K120G2 NFC Module [pdf] Instructions PN7462K, QYLPN7462K, K120G2, PN7462, K120G2 NFC Module, K120G2, NFC Module