

RN00309

PN7220/PN7221 Firmware release v03.02.02

Rev. 1.0 — 5 June 2025

Release notes

Document information

Information	Content
Keywords	PN7220, PN7221, FW, NFC
Abstract	PN7220/PN7221 release note



1 Introduction

This document provides information on the content of the FW delivery v03.02.02 for PN7220/PN7221. It includes the following sections:

- FW release content list
- FW Revision history
- Known firmware issues and limitations

Note: For more information, refer to the PN7220 product page on [nxp.com](#) [ref.\[1\]](#).

2 Scope of the release

This release package is an official release of the PN7220/PN7221 firmware v03.02.02 in secure binary format.

The release is tested with PN7220/PN7221 customer evaluation board consisting of PN7220/PN7221 IC and reference host controller with 45 mm x 45 mm RF antenna (see [ref.\[2\]](#) and [ref.\[3\]](#)).

The PN7221 chip type is based on the PN7220 and supports all features of PN7220 plus "Enhanced Contactless Polling" (ECP) by Apple - this description is not part of this document. Note that the ECP feature is available after formal authorization only.

3 Test environment used for the release

3.1 Default SW/HW configuration

The table below details the default configuration about some important parameters:

For PN7220/PN7221:

Parameters	Values
Board used	PN7220/PN7221 Customer evaluation board with PN7220/PN7221 IC
Antenna	45 * 45
Clock configuration	XTAL
Firmware version	03.02.02

4 Features released

Table 1. RF features list

Mode	Protocol	Techno	NFCEE	Other	Completeness
R/W – NFC Forum	ISO-DEP	NFC-A	DH	Frame RF IF 106 kb/s	Functional verified
				ISO-DEP RF IF 106 kb/s	Functional verified
				ISO-DEP RF IF 212, 424, 848 kb/s	Functional verified
		NFC-B	DH	Frame RF IF 106 kb/s	Functional verified
				ISO-DEP RF IF 106 kb/s	Functional verified
				ISO-DEP RF IF 212, 424, 848 kb/s	Functional verified
	MIFARE Cl.	NFC-A	DH	TAG-CMD IF 106 kb/s	Functional verified
	T2T	NFC-A	DH	Frame RF IF 106 kb/s	Functional verified
				TAG-CMD IF 106 kb/s	Functional verified
	FeliCa / T3T	NFC-F	DH	Frame RF IF 212, 424 kb/s	Functional verified
	ISO 15693	ISO 15693	DH	Frame RF IF 26, 53 kb/s	Functional verified
R/W – EMVCo Mode	ISO-DEP	NFC-A	DH	ISO-DEP RF IF 106 kb/s	Functional verified
		NFC-B	DH	ISO-DEP RF IF 106 kb/s	Functional verified
	FeliCa / T3T	NFC-F	DH	Frame RF IF 212, 424 kb/s	Functional verified
Card Emulation	ISO-DEP	NFC-A	HCE	ISO-DEP RF IF 106 kb/s	Functional verified
				ISO-DEP RF IF 212, 424, 848 kb/s	Functional verified

Table 2. Other FW features released

Sl.no	Feature	Completeness
1	Secure FW download	Functional verified
2	Mode Switch GPIO	Functional verified
3	Standby mode	Functional verified
4	PRBS	Functional verified
5	Contact Interface support using ISO7816 Interface	Functional verified
6	Dynamic Power Control (DPC)	Functional verified
7	External DC-DC support	Functional verified
9	Automatic Waveshape Control	Functional verified
10	LPCD - Tag detector	Functional verified
11	Clock management (PLL / XTAL)	Functional verified

Table 3. Certifications

Sl.no	Feature	Completeness
1	NFC Forum CR13 - Digital Compliance (Internal)	Functional verified
2	NFC Forum CR13 - Analog Compliance (Internal)	Functional verified

Table 3. Certifications...continued

Sl.no	Feature	Completeness
3	EMVCo 3.1a L1 Digital Compliance (Internal)	Functional verified
4	EMVCo 3.1a L1 analog Compliance (Internal)	Functional verified
5	EMVCo 4.3d L1 CT Compliance (Internal)	Functional verified

5 Firmware release content

The release contains a firmware subpackage, intended for use with PN722x IC.

The zip file of this release contains:

- FW (code and data) in secure format *PN7220.sfwu* to perform firmware update on the PN7220 IC, part of the customer evaluation board (see [ref.\[2\]](#) and [ref.\[3\]](#)).
- C file *phDnldNfc_UpdateSeq.c* containing secure firmware image sequence of the above binary in C programing format.
- *pn7220_64bits.so* file which is an android compliant file of the secure firmware image used for downloading the PN7220 firmware on Android integrations.
- SCR and license file.

Table 4. FW version corresponding to this release note

FW version	Antenna type	IC revision	ROM version	Flash version	Build number
03.02.02	45 mm x 45 mm	PN722x HW 0x53	03	02.02	NA

6 Firmware release history

Table 5. PN722x FW release history

FW version	Link to release content
03.02.02	Section 6.1

6.1 v03.02.02

Table 6. V03.02.02

SI no.	Description
1	PN7220 First major release with full feature set.

The following features are supported by FW v03.02.02.

- HOST Interface
 - Single CPU Configuration (HIF_SEL0 pulled to '0')
 - HIF1-I2C Interface
 - Dual CPU Configuration (HIF_SEL0 pulled to '1')
 - HIF2-I2C Interface in PN722X NFC Forum Mode (Mode Select pulled to '0')
 - HIF1-SPI Interface in PN722X EMVCo Mode (Mode Select pulled to '1')
- Mode Switch GPIO Handling to either start in NFC Forum mode or EMVCo mode in both Single and Dual CPU configuration.
- EMVCo Polling for Type A, Type B, Type F and VAS.
- NFC Forum Polling for Type A, Type B, Type F, Type V and VAS in Reader Mode.
- NFC Forum Polling for Type A (T4AT) in Listen Mode.
- CT Support for a maximum of 3 slots. One slot can be configured as a Dynamic EMVCo slot.
- Proprietary Commands
 - NCI_PROPRIETARY_ACT_CMD/RSP
 - WTX_NTF
 - EMVCo Collision Error NTF
 - TEST_PRBS_CMD/RSP
 - REG_TEST_API_CMD/RSP
 - CTS Support
 - SWITCH_RF_FIELD_CMD/RSP
 - EEPROM_ACCESS_CMD/RSP
 - LOAD_PROTOCOL_CMD/RSP
 - RAW_EXCHANGE_CMD/RSP

7 Known issues and limitations

7.1 PN722x NFCC

- Limitation:
 - Incompliance to Digital CT EMVCo 4.3d specs – 4 test failures related to handling of CWT and EGT where both values are same (i.e. min = max) – TC_1800.DTS112, TC_1800.DTS113, TC_1800.DTS212 and TC_1800.DTS213 test cases fail.
- Cautions/Recommendations:
 - It is advisable not to disable the DPC. The TX drivers may be damaged due to overcurrent.
 - Firmware update shall only be performed in a stable power supply condition, otherwise a full firmware download could be required once again. Therefore, it is recommended not to interrupt the FW update procedure.

8 Precautionary notes

Table 7. Precautions and recommendations

Limitation	Recommendation
TX driver may be damaged due to overcurrent.	Do not disable DPC on PN7220.

9 Abbreviations

Table 8. Abbreviations

Abbreviation	Reference
DH	device host
FW	firmware
HIF-1	Host Interface 1
HIF-2	Host Interface 2
MW	middleware
NCI	NFC controller interface
NFC	near-field communication
NFCC	NFC controller
NFCEE	NFC execution environment
LPCD	low power card detection
PRBS	pseudo random binary sequence
RF	radio frequency
R/W	NFC reader/writer mode

10 References

- [1] Webpage - PN7220: High-Performance, One-Chip NFC Controller for EMVCo 3.1 and NFC Forum Operation ([link](#))
- [2] Webpage - PNEV7220BP1 - Development Board for PN7220 NFC Controller for EMVCo and NFC Forum Operation ([link](#))
- [3] Webpage - PNEV7220BP2 - Development Board for PN7220 NFC Controller with Two Host Configuration ([link](#))

11 Revision history

Table 9. Revision history

Document ID	Release date	Description
RN00309 v.1.0	5 June 2025	PN7220/PN7221 FW documentation previously covered in RN00082. <ul style="list-style-type: none">• Initial version

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