

# RN00185

PN716x Firmware Release Notes v12.50.0E

Rev. 2.0 — 5 September 2024

Release notes

## Document information

Information	Content
Keywords	PN7160, PN7161, ECP, NCI 2.0, NFC Frontend controller
Abstract	Contains information about a specific release product and component information.



## 1 Document purpose

This document describes the tested functionality and limitations of the PN716x FW.

It also covers the release summary, release history, known issues, work-arounds, limitations, and recommendations.

The functionality and limitations of the hardware and product support material (for example, customer development board and support software) are described in separate documents.

[Table 1](#) shows the FW version data for the latest release.

**Table 1. FW version corresponding to this release note**

Parameter	Details
FW Version	12.50.0E
Antenna Type	Eval1_SLALM_CFG2_EFM_40x20
IC	PN7160 (HW Id: 0x61) PN7161 (HW Id: 0x71)
ROM code	12
Flash code	50.0E

**Note:** *This firmware shall also be used for PN7160 and PN7161.*

## 2 Features supported in this release

### 2.1 RF features

Table 2. RF feature List

Mode	Protocol	Technology	NFCEE	Details	Validation Status	
Card Emulation	ISODEP		DH	ISO-DEP RF IF 106 kB/s	Functional verified	
				ISO-DEP RF IF 212, 424, 848 kB/s	Functional verified	
	T4T NDEF			NDEF read/write from DH, read/write from RF	Functional verified	
Read/write	ISODEP	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 CI	NFC-A	DH	Frame RF IF 106 kB/s	Functional verified	
				TAG-CMD IF 106 kB/s	Functional verified	
	T1T	NFC-A	DH	Frame RF IF 106 kB/s	Functional verified	
				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 kB/s	Functional verified

### 2.2 Other system features

Table 3. Other system features

Feature	System SW	Validation status
FW download	Available	Functional verified
Antenna self-test	Available	Functional verified
PRBS (HW on Type-A, Type-B, Type-F, and ISO15693)	Available	Functional verified
PRBS (SW on Type-A, Type-B)	Available	Functional verified
EMVCo profile PCD	Available	Functional verified
Clock management (PLL/XTAL)	Available	Functional verified
Dynamic LMA	Available	Functional verified
Dynamic Power Control (DPC)	Available	Functional verified
External DC-DC support ("Cfg 2")	Available	Functional verified
LPCD - Tag detector	Available	Functional verified
Standby mode	Available	Functional verified
SL-ALM Antenna support	Available	Functional verified

## 2.3 Certification runs (in-house)

Table 4. Compliance

Feature	Validation Status
NFC Forum CR11 (analog)	Compliance run on FW v12.50.05.
NFC Forum CR12 (Digital Test Cases)	Compliance run on FW v12.50.0B internally qualified.
NFC Forum CR13 (Digital Test Cases)	Compliance run on FW v12.50.0E internally qualified.

### 3 PN7160 FW Version history

The below table provides the firmware version history including feature updates and issues fixes.

**Table 5. Firmware updates from v12.50.0D to v12.50.0E**

SI No.	Function/feature update
1	<ul style="list-style-type: none"> <li>Fixed stability issues during handling of RF_DEACTIVATE_CMD (to IDLE) and RF_DEACTIVATE_RSP.</li> </ul>

**Table 6. Firmware updates from v12.50.0C to v12.50.0D**

SI No.	Function/feature update
1	<ul style="list-style-type: none"> <li>Added support for custom cards with specific SAK value. API added is: 0xA0 0x6E.</li> </ul>

**Table 7. Firmware updates from v12.50.0B to v12.50.0C**

SI No.	Function/feature update
1	<ul style="list-style-type: none"> <li>Added support for dynamic ECP configuration.</li> </ul>

**Table 8. Firmware updates from v12.50.0A to v12.50.0B**

SI No.	Function/feature update
1	<p>Optimized the flash contents to remove not required features for longer serviceability of PN7160 (for future issue fixes/feature addons).</p> <ul style="list-style-type: none"> <li>Type-F card mode support removed</li> <li>Support for P2P not claimed.</li> </ul>

**Table 9. Firmware updates from v12.50.09 to v12.50.0A**

SI No.	Function/feature update
1	<ul style="list-style-type: none"> <li>T4T Card emulation (NFCEE_NDEF). (allowing NDEF WRITE from RF side, now working with Tag Writer application on Android)</li> </ul>

**Table 10. Firmware updates from v12.50.08 to v12.50.09**

SI No.	Function/feature update
1	<ul style="list-style-type: none"> <li>Resolved an issue with IC is hung with RF ON when typeB card is placed during discovery process when ECP is enabled for NFC Forum profile</li> </ul>

**Table 11. Firmware updates from v12.50.07 to v12.50.08**

SI No.	Function/feature update
1	<ul style="list-style-type: none"> <li>EMVCo card removal procedure implemented for NFC Forum profile for TypeA and TypeB cards.</li> <li>PRBS (HW - PRBS9, PRBS15) supported for ISO15693.</li> </ul>

Table 12. Firmware updates from v12.50.06 to v12.50.07

SI No.	Function/feature update
1	<ul style="list-style-type: none"><li>ECP is supported in the EMVCo profile</li></ul>

Table 13. Firmware updates from v12.50.05 to v12.50.06

SI No.	Function/feature update
1	<ul style="list-style-type: none"><li>Support added for DPC helper command.</li><li>Support added for NFC Forum CR12 specific changes.</li><li>Updated the configuration of PMU_CFG (@A00E) to disable them (byte 0 = 0x11 instead of 0x31 and byte 1 = 0x00 instead of 0x01).</li></ul>

Table 14. Firmware updates in v12.50.05

SI No.	Function/feature update
1	<ul style="list-style-type: none"><li>First public release for PN7160/PN7161 FW. All factory-produced ICs contain this version of FW.</li></ul>

## 4 Revision history

Table 15. Revision history

Document ID	Release date	Description
RN00185 v.2.0	05 September 2024	Document security status changed to <b>public</b> . <a href="#">Section 3 "PN7160 FW Version history": Table "Firmware updates from v12.50.0D to v12.50.0E"</a> added.
RN00185 v.1.0	14 February 2024	Initial version. Internal use only.

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