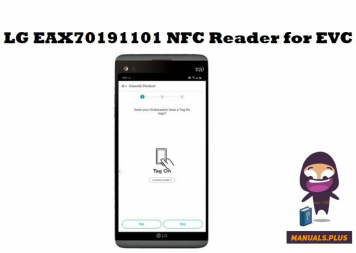


LG EAX70191101 NFC Reader for EVC User Manual

Contents

LG EAX70191101 NFC Reader for EVC

Product Information

Specifications

Parameter	Min	typ	Max	Unit
Ambient Temperature	-35	–	55	°C
Ambient Humidity (40)	–	–	95	%
Supply Voltage	3.0	3.3	3.6	Vdc

Product Usage Instructions

Features

The NFC Reader for EVC (Model Name: EAX70191101) by LG Electronics Inc. offers the following features:

- **Supply Voltage:** 3.0V to 3.6Vdc
- **Ambient Temperature:** -35°C to 55°C
- **Ambient Humidity:** Up to 95%

Block Diagram

The block diagram of the NFC Reader for EVC is not provided in the user manual.

Absolute Maximum Ratings

The absolute maximum ratings for the NFC Reader for EVC are as follows:

- **Storage Temperature:** -40°C to 70°C
- **Storage Humidity:** Up to 95%

Operating Conditions

The operating conditions for the NFC Reader for EVC are as follows:

- **Ambient Temperature:** -35°C to 55°C
- **Ambient Humidity:** Up to 95%
- **Supply Voltage:** 3.0V to 3.6Vdc

Outline Drawing

No outline drawing is provided in the user manual.

FAQ

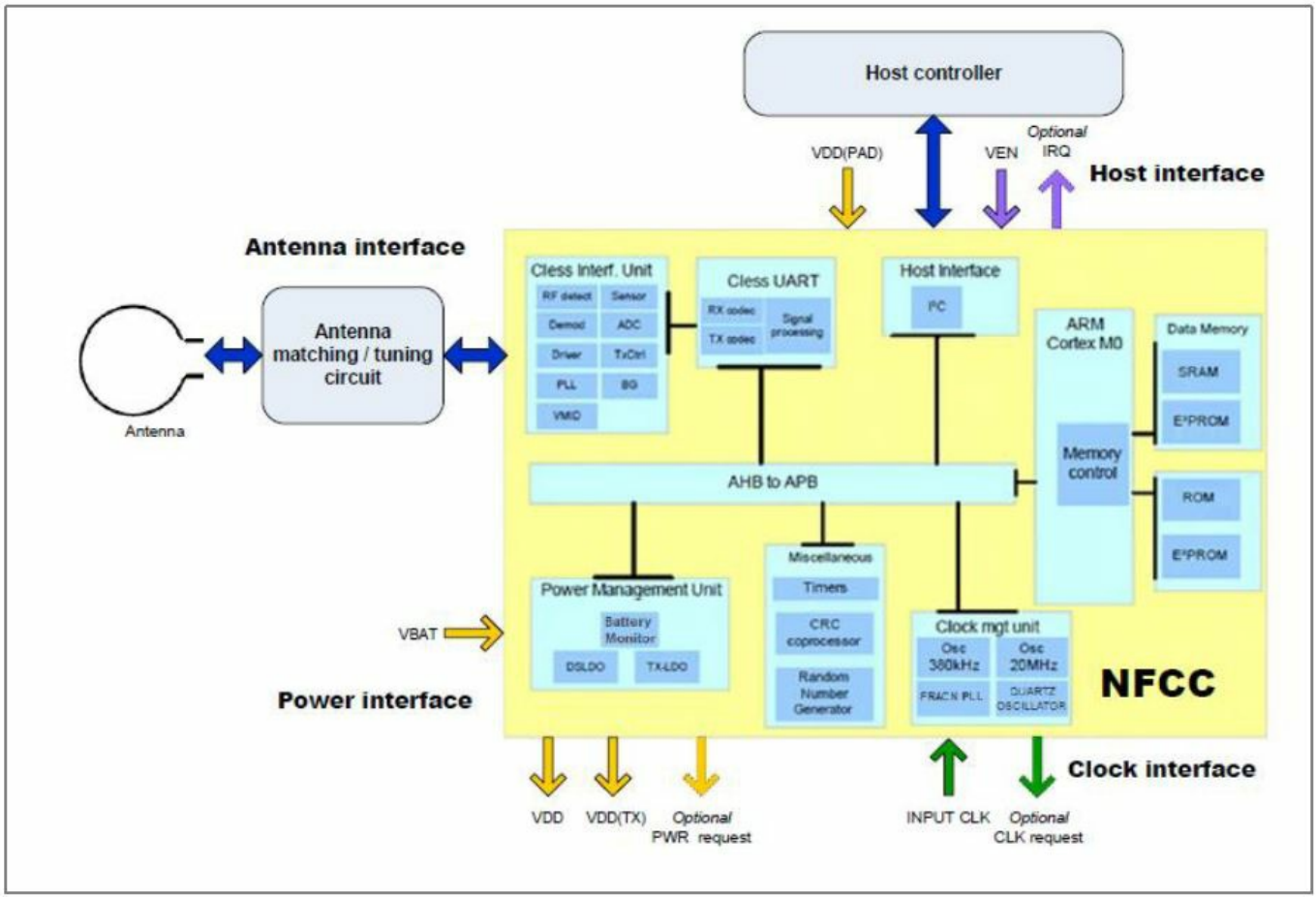
- **Q:** What are the operating temperature limits for the NFC Reader for EVC?
- **A:** The operating temperature range is -35°C to 55°C.
- **Q:** What is the supply voltage range for the NFC Reader for EVC?
- **A:** The supply voltage range is 3.0V to 3.6Vdc.
- **Q:** What is the purpose of the IRQ pin?
- **A:** The IRQ pin is an interrupt request output.
- **Q:** How should the device be reset?
- **A:** The device can be reset by setting the VEN pin to Hard Power Down mode.
- **Q:** What is the ground pin used for?
- **A:** The GND pin is used as the ground connection for the NFC Reader for EVC.

Features

- Includes NXP ISO/IEC14443-A intellectual property licensing rights
- RF protocols supported
  - NFCIP-1, NFCIP-2 protocol
  - ISO/IEC 14443A, NFC Forum T4T modes via host interface
  - NFC Forum T3T via host interface
  - ISO/IEC 14443A, designed according to NFC Forum digital protocol T4T platform and ISO-DEP
  - FeliCaPCD mode

    - MIFARE Classic PCD encryption mechanism (MIFARE Classic 1K/4K)
    - NFC Forum tag 1 to 5 (MIFARE Ultralight, Jewel, Open FeliCatag, MIFARE DESFire)
    - ISO/IEC 15693/ICODE VCD mode
- Supported host interfaces
    - NCI protocol interface according to NFC Forum standardization
    - I2C-bus High-speed mode
- Integrated power management unit
    - 3.0 V to 3.6 V voltage supply range
    - Support different Hard Power-Down/Standby states activated by firmware
    - Autonomous mode when the host is shut down
- Automatic wake-up via RF field, internal timer and I2C-bus interface
- Integrated non-volatile memory to store data and executable code for customization

Block Diagram



Absolute Maximum Ratings

Parameter	Min	Max	Unit
Storage Temperature	-40	70	°C
Storage Humidity		95	%

Operating Conditions

Parameter	Min	typ	Max	Unit
Ambient Temperature	-35	–	55	℃
Ambient Humidity (40℃)	–	–	95	%
Supply Voltage	3.0	3.3	3.6	Vdc

Pin Description

no	Pin Name	I/O	Pin Description
1	+33VD	–	supply voltage
2	SDA	I/O	I2C-bus data line
3	SCL	I	I2C-bus clock line
4	IRQ	O	interrupt request output
5	VEN	I	reset pin. Set the device in Hard Power Down
6	GND	–	ground

Pin Characteristics

VEN

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{IH}	HIGH-level input voltage			1.1	-	V_{BAT}	V
V_{IL}	LOW-level input voltage			0	-	0.4	V
I_{IH}	HIGH-level input current	VEN voltage = V_{BAT}		-1	-	+1	µA
I_{IL}	LOW-level input current	VEN voltage = 0 V		-1	-	+1	µA
C_i	input capacitance			-	5	-	pF

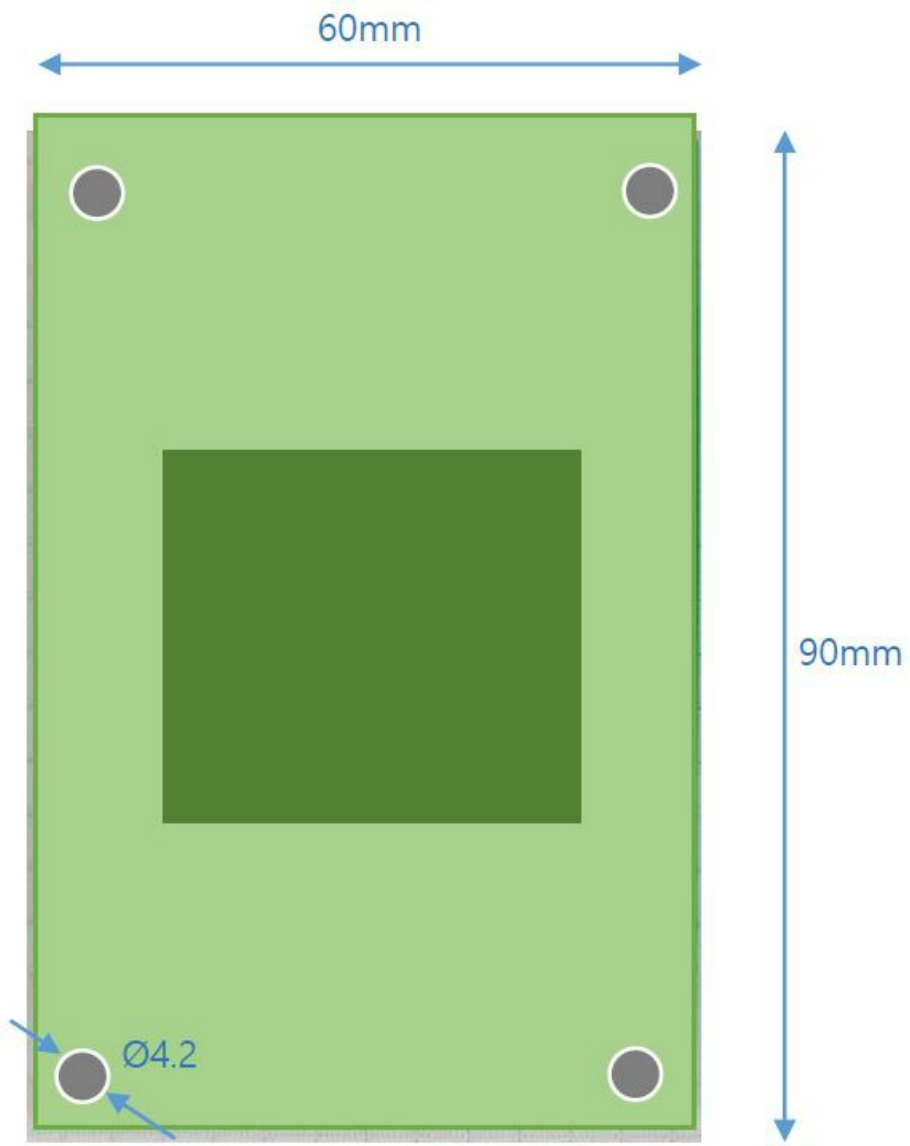
IRQ

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{OH}	HIGH-level output voltage	I_{OH} < 3 mA		$V_{DD(PAD)}$ - 0.4	-	$V_{DD(PAD)}$	V
V_{OL}	LOW-level output voltage	I_{OL} < 3 mA		0	-	0.4	V
C_L	load capacitance			-	-	20	pF
t_f	fall time	C_L = 12 pF max					
		• high speed		1	-	3.5	ns
		• slow speed		2	-	10	ns
t_r	rise time	C_L = 12 pF max					
		• high speed		1	-	3.5	ns
		• slow speed		2	-	10	ns
R_{pd}	pull-down resistance		[1]	0.35	-	0.85	MΩ

I2C SCL, SDA

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{OL}	LOW-level output voltage	I_{OL} < 3 mA	[1]	0	-	0.4	V
C_L	load capacitance			-	-	10	pF
t_f	fall time	C_L = 100 pF;Rpull-up = 2 kΩ;Standard and Fast mode	[1]	30	-	250	ns
t_f	fall time	C_L = 100 pF;Rpull-up = 1 kΩ;High-speed mode	[1]	80	-	110	ns
t_r	rise time	C_L = 100 pF;Rpull-up = 2 kΩ;Standard and Fast mode	[1]	30	-	250	ns

Outline Drawing



FCC STATEMENT

FCC Part 15.19 StatementsThis 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.

FCC Part 15.105 statement(Class B)

This equipment has been tested and found to comply with the limits for a Class B digital device, according 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 under 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 the receiver.
- Connect the equipment to 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 Part 15.21 statement
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device must not be co-located or operating in conjunction with any other antenna or transmitter.
RF Exposure Statement (MPE)
The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.
Responsible Party Information (Supplier's Declaration of Conformity)

- Supplier's Declaration of Conformity
- 47 CFR § 2.1077 Compliance Information
- Responsible Party – U.S. Contact Information
- LG Electronics USA
- 1000 Sylvan Avenue Englewood Cliffs New Jersey, United States, 07632
- Phone: 201-470-2696

End Product Labeling

- The module is labelled with its own FCC ID and IC Certification Number. If the FCC ID and IC Certification Number are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the end product must be labelled in a visible area with the following:
- "Contains FCC ID: BEJEAX70191101
- "Contains IC: 2703H-EAX70191101
- Regulatory notice to host manufacturer according to KDB 996369 D03 OEM Manual
- This module has been granted modular approval as below listed FCC rule parts.
- FCC Rule parts 15C(15.225)

Summarize the specific operational use conditions

- The OEM integrator should use equivalent antennas that are the same type and have equal or less gain than an antenna listed below this instruction manual.

RF exposure considerations

- The module has been certified for integration into products only by OEM integrators under the following conditions: -The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.
- The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except under FCC multi-transmitter product procedures. -Mobile use
- As long as the three conditions above are met, further transmitter testing will not be required. OEM integrators should provide the minimum separation distance to end users in their end-product manuals.

Antennas list

- This module is certified with the following integrated antenna.
- Internal PCB Antenna
- Any new antenna type, with a higher gain than the listed antenna should meet the requirements of
- FCC rule 15.203 and 2.1043 as permissive change procedures.

Information on test modes and additional testing requirements

- OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, additional transmitter in the host, etc.).

Additional testing, Part 15 Subpart B disclaimer

- The final host product also requires Part 15 subpart B compliance testing with the modular transmitter installed to be properly authorized for operation as a Part 15 digital device.
- The final host product also requires Part 15 subpart B compliance testing with the modular transmitter installed to be properly authorized for operation as a Part 15 digital device.

ISED Regulatory Statement

Licensed-exempt Statement
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.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

RF Exposure Statement (MPE)
The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.

CONTACT

- Responsible Party – U.S. Contact Information
- LG Electronics USA
- 1000 Sylvan Avenue Englewood Cliffs New Jersey, United States, 07632
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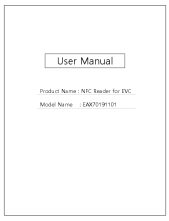
Documents / Resources

	**LG EAX70191101 NFC Reader for EVC** [pdf] User Manual EAX70191101 NFC Reader for EVC, EAX70191101, NFC Reader for EVC, Reader for EVC

References

- **User Manual**