

UM10707

NVT4555 evaluation board OM13480

Rev. 1 — 10 July 2013

User manual

Document information

Info	Content
Keywords	NVT4555UK, OM13480, SIM card, voltage translator, level translator, ETSI, IMT-2000, ISO7816, evaluation board, demonstration board
Abstract	The NVT4555 is used in SIM card voltage level translation applications for SIM I/O buses with incompatible logic levels to the host processor.



Revision history

Rev	Date	Description
v.1	20130710	user manual; initial release

Contact information

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1. Introduction

The NVT4555UK evaluation board (OM13480) is built for interfacing a SIM card socket to a single-voltage host-side interface. The NVT4555 contains one voltage select pin (CTRL) to select either 1.8 V or 2.95 V for SIM card power supply, and one active HIGH enable pin (EN) to enable normal operation. The data, clock and reset paths can operate beyond 5 MHz. The I/O channel is bidirectional, while the reset and clock are unidirectional. The NVT4555 is compliant with all ETSI, IMT-2000 and ISO-7816 SIM/Smart card interface requirements.

Refer to NVT4555 data sheet ([Ref. 1](#)) for more detailed information.

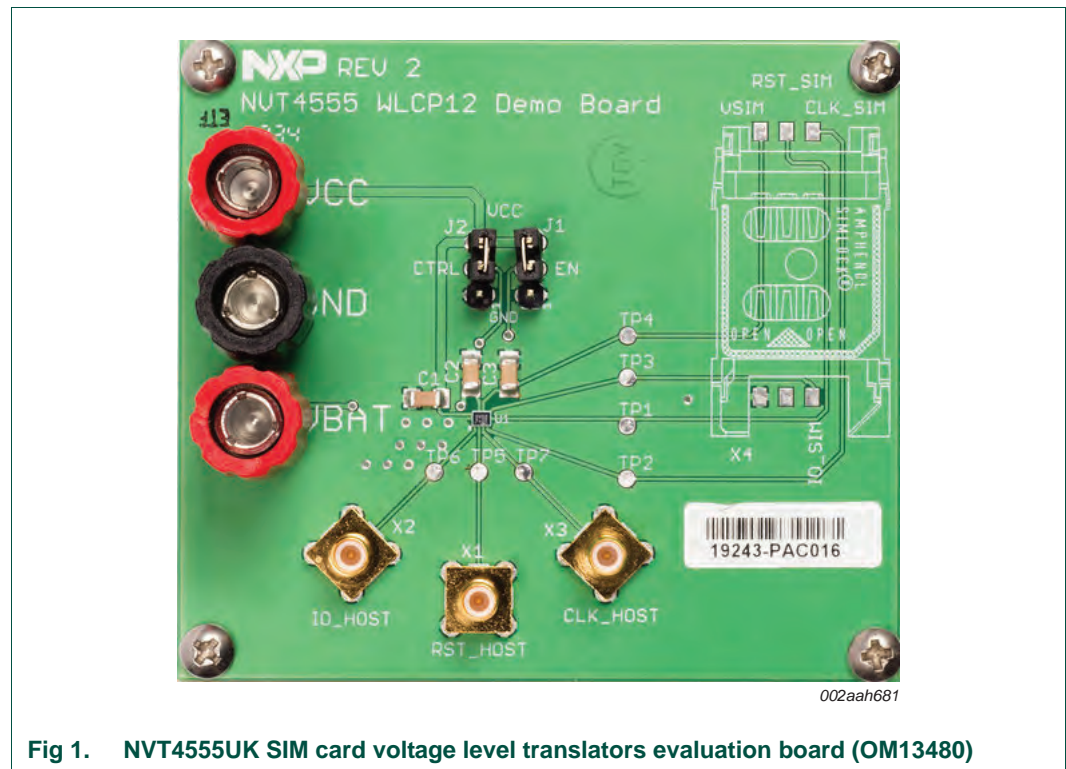


Fig 1. NVT4555UK SIM card voltage level translators evaluation board (OM13480)

2. Hardware description

2.1 Schematic

The NVT4555UK evaluation board was intended for operation as a stand-alone part or as part of the system. Proper voltages must be supplied at the connectors for V_{CC} , V_{BAT} and GND. The following notes are comments generated so that a better understanding of the evaluation board can be achieved.

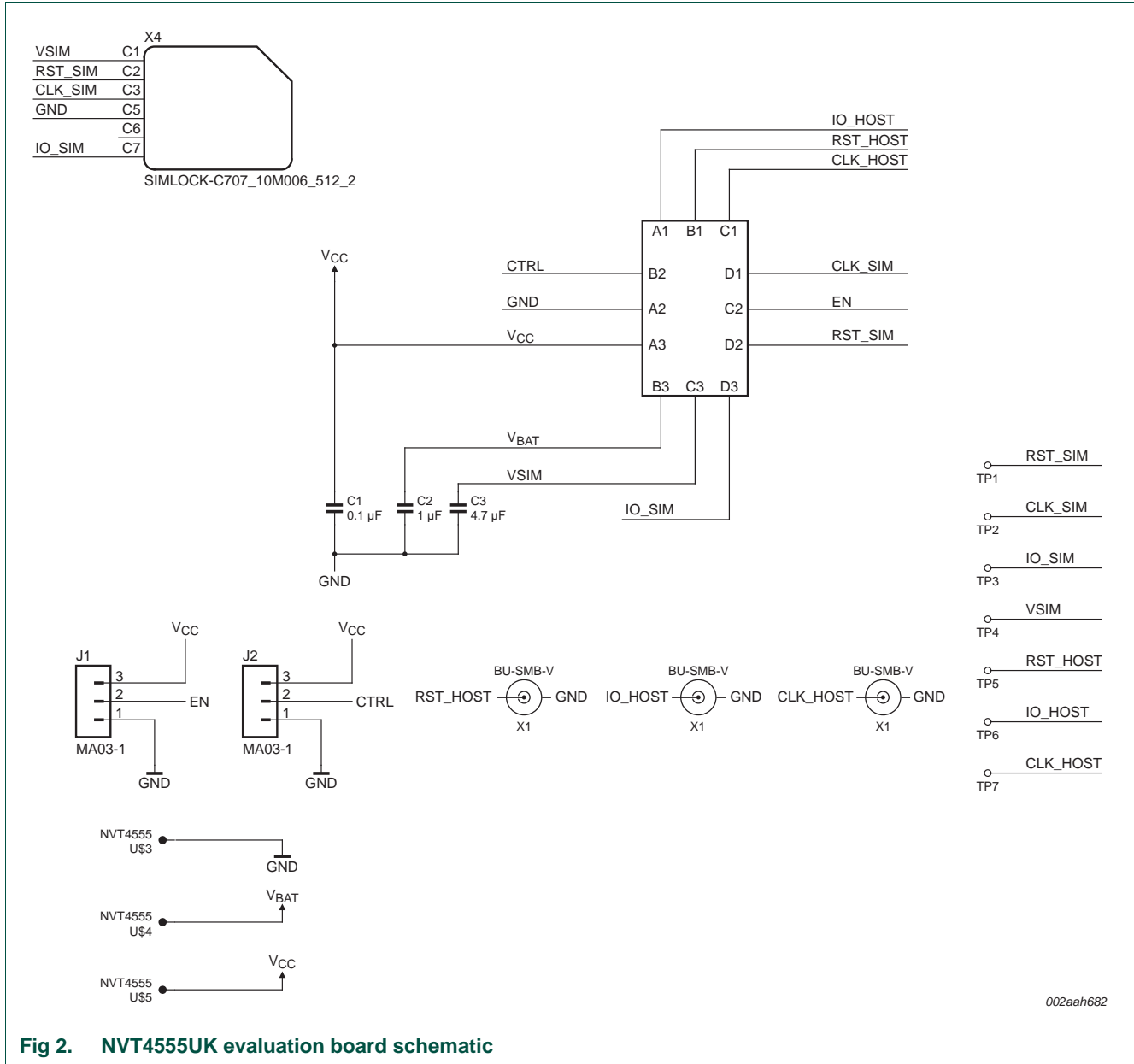


Fig 2. NVT4555UK evaluation board schematic

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2.2 Bill of materials

Table 1. NVT4555UK (OM13480) evaluation board bill of materials

Device	Component	Manufacturer	Notes
U1	NVT4555UK	NXP	Supply voltage for the host controller side input/output pins (CLK_HOST, RST_HOST, IO_HOST). This pin is bypassed with a 0.1 μ F ceramic capacitor.
C1	GRM155R70J104KAO1D	Murata	Host voltage supply bypass capacitor, 0.1 μ F ceramic capacitor.
C2	GRM155R70J105KA12D	Murata	Battery voltage supply bypass capacitor, 1.0 μ F ceramic capacitor.
C3	GRM155R60J475ME47	Murata	SIM voltage supply bypass capacitor, 4.7 μ F ceramic capacitor.

2.3 Jumper and header functions

The functions of the jumpers and headers on these evaluation boards are shown in [Table 2](#).

Table 2. Header descriptions for NVT4555UK (OM13480) evaluation board

Jumper/header	Function	Notes
VCC	Host processor I/O supply voltage input	Supply voltage for the host controller side input/output pins (CLK_HOST, RST_HOST, IO_HOST). This pin is bypassed with a 0.1 μ F ceramic capacitor.
GND	System GND	Ground for the SIM card and host controller.
VBAT	Battery input	Battery voltage supply for internal LDO. This pin is bypassed with a 1.0 μ F ceramic capacitor.
J1 (3-pin)	Device switch enable or disable control	Pins 2-3 shorted: enables NVT4555 device (default). Pins 1-2 shorted: disables the device
J2 (2-pin)	Device switch 1.8 V or 2.95 V LDO output voltage control	Pins 2-3 shorted: 2.95 V to VSIM (default). Pins 1-2 shorted: 1.8 V to VSIM.
X1	SMC connector for RST_HOST	This connector can be used to connect a host processor to the evaluation board for use in translating the RST signal to the SIM card. This I/O can support speeds greater than 5 MHz.
X2	SMC connector for IO_HOST	This connector can be used to connect a host processor to the evaluation board for use in translating the I/O signal to and from the SIM card. This I/O can support speeds greater than 5 MHz.
X3	SMC connector for SIM_HOST	This connector can be used to connect a host processor to the evaluation board for use in translating the SIM signal to the SIM card. This I/O can support speeds greater than 5 MHz.
X4	SIM card slot	This adapter socket can be populated for a SIM card on the board for user evaluation.

3. Abbreviations

Table 3. Abbreviations

Acronym	Description
I/O	Input/Output
LDO	Low-DropOut regulator

4. References

- [1] **NVT4555**, “SIM card interface level translator and supply voltage LDO” — Product data sheet; NXP Semiconductors

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Date of release: 10 July 2013

Document identifier: UM10707