

1. OVERVIEW

NT1066_EVK is intended for prototyping of navigation receivers based on NT1066: 4-Channel RF Front End (3 wideband IQ and 1 narrowband IQ) that covers all GNSS (GLONASS, GPS, Galileo, BeiDou, QZSS, IRNSS) signals at all frequency bands (L1, L2, L3, L5, E1, E5a, E5b, E6, B1, B2, B3 and S) and can be 'on a fly' software-reconfigured to receive real-time corrections data transmitted over FM, VHF and UHF bands. NT1066_EVK can be also used as evaluation platform for performance and capabilities demonstration of NT1066. It is suitable for in-lab examining and has PLS and SMA connectors for wiring to measurement equipment like spectrum analyzer, oscilloscope, network analyzer etc. or to external development platforms.

Wide list of attractive features and high level of customization make NT1066 capable to meet a demand of researchers and OEM developers in special applications: high precision positioning, goniometric, driverless car systems, professional drones and related areas.

2. KEY FEATURES

- IO ports:
 - Three 50Ω SMA input connectors for L1, L2, L3, L5 bands of GNSS signal reception (recommended for passive or low gain antennas)
 - Three 50Ω SMA input connectors for L1, L2, L3, L5 bands of GNSS signal reception (recommended for active antennas)
 - 50Ω SMA input connector for S band of IRNSS or L2, L3, L5 bands of GNSS signals receiving
 - 50Ω SMA input connector for real-time corrections data reception
 - SMA input connector for external reference frequency
 - Every channel individual IF output ready to connect either as digital, analog differential or single-ended signal
 - External sampling frequency input ready to connect either as CMOS, LVDS or single-ended sinewave
 - Clock output ready to connect either as CMOS, LVDS or single-ended sinewave
 - Embedded USB to SPI convertor for NT1066 registers configuration
- On-board reference frequency source:
 - 10 MHz 0.28ppm high-stability TCXO
- Additional modules:
 - 1 to 4 RF splitter
 - 4-channel RF preselector
- Comprehensive software and manual:
 - NT1066 datasheet
 - NT1066 EVK user manual
 - GUI for NT1066 registers access (Windows 7/8/8.1/10 and Linux Ubuntu 16.04 compatible)
 - NT1066 configuration examples
 - Database of PCB reference design (on request)

Block diagram of the PCB_NT1066_EVK1 evaluation kit. The central component is the NT1066 chip, which has four channels (A, B, C, D) for signal processing. Channel A inputs are SMA connectors X4 and X5, leading to ChA_LNA_IN and ChA_AA_IN, with outputs ChA_I_OUT and ChA_Q_OUT. Channel B inputs are SMA connectors X6 and X7, leading to ChB_LNA_IN and ChB_AA_IN, with outputs ChB_I_OUT and ChB_Q_OUT. Channel C inputs are SMA connectors X8 and X9, leading to ChC_LNA_IN and ChC_AA_IN, with outputs ChC_I_OUT and ChC_Q_OUT. Channel D inputs are SMA connectors X10 and X3, passing through baluns T2 and T3 to ChD_IN and ChD_DGPS_IN, with outputs ChD_I_OUT and ChD_Q_OUT. The chip also has ChD_RF_GC, ChD_I_IF_GC, and ChD_Q_IF_GC outputs. A reference input REF_IN is connected to SMA connector X11 and TCXO 10M (DA5). A feedback signal FS is connected to SMA connector X2 and balun T1. The chip is clocked by CLK (connected to balun T4 and SMA connector X13) and has an SPI interface connected to XP2. The chip is powered by a 3V0 LDO (5V0 input) and has an ASIC_VCC pin. The chip is connected to a PLD (XP2) which has a Jumper (XP3) and a 5V Power Connector (X1). The PLD is also connected to a USB/SPI converter (DD1) which is connected to a USB connector (X14). The USB/SPI converter has a clock output type option U connected to balun T1 and SMA connector X13. The USB connector is connected to a 5V Power Connector (X1). The PCB is labeled PCB_NT1066_EVK1.

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Frequency range for channel "A":

- 1 - L1: 1530 - 1620 MHz
- 2 - E6: 1250 - 1300 MHz
- 3 - L2, L3, L5: 1150 - 1250 MHz

Frequency range for channel "B":

- 1 - L1: 1530 - 1620 MHz
- 2 - E6: 1250 - 1300 MHz
- 3 - L2, L3, L5: 1150 - 1250 MHz

Frequency range for channel "C":

- 1 - L1: 1530 - 1620 MHz
- 2 - E6: 1250 - 1300 MHz
- 3 - L2, L3, L5: 1150 - 1250 MHz

Additional modules:

- X - No modules
- A - 1 to 4 RF splitter
- B - 4-channel RF preselector

Clock output type:

- C - CMOS output
- B - LVDS output
- U - Single-ended sinewave