

# TDA7255V - UWLink<sup>®</sup> Evaluation Kit

Universal Wireless Link

## TDA7255V

ASK/FSK Transceiver for the 434 MHz frequency band

## User Manual

Revision 1.0, 2010-12-01

**Edition 2010-12-01**

**Published by  
Infineon Technologies AG  
81726 Munich, Germany**

**© 2010 Infineon Technologies AG  
All Rights Reserved.**

#### **Legal Disclaimer**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

#### **Information**

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office ([www.infineon.com](http://www.infineon.com)).

#### **Warnings**

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

**TDA7255V**

**Revision History: 2010-12-01, 1.0**

**Previous Revision: none**

Page	Subjects (major changes since last revision)
	initial version

**Trademarks of Infineon Technologies AG**

APOXI™, BlueMoon™, COMNEON™, CONVERGATE™, COSIC™, C166™, CROSSAVE™, CanPAK™, CIPOST™, CoolMOS™, CoolSET™, CORECONTROL™, DAVE™, EasyPIM™, EconoBRIDGE™, EconoDUAL™, EconoPACK™, EconoPIM™, EiceDRIVER™, EUPEC™, FCOS™, FALC™, GEMINAX™, GOLDMOS™, HITFET™, HybridPACK™, ISAC™, ISOFACE™, IsoPACK™, my-d™, MIPAQ™, ModSTACK™, NovalithIC™, OmniTune™, OmniVia™, OPTIVERSE™, OptiMOS™, ORIGA™, PROFET™, PRO-SIL™, PrimePACK™, RASIC™, ReverSave™, SCEPTRE™, SEROCCO™, SICOFI™, SMARTi™, SMINT™, SOCRATES™, SatRIC™, SensoNor™, SINDRION™, SmartLEWIS™, SIEGET™, TrueENTRY™, TEMPFET™, TriCore™, thinQ!™, TRENCHSTOP™, VINAX™, VINETIC™, X-GOLD™, XMM™, X-PMU™, XPOSYSTM™, XWAY™.

**Other Trademarks**

AMBA™, ARM™, MULTI-ICE™, PRIMECELL™, REALVIEW™, THUMB™ of ARM Limited, UK. AUTOSAR™ is licensed by AUTOSAR development partnership. Bluetooth™ of Bluetooth SIG Inc. CAT-ig™ of DECT Forum. COLOSSUS™, FirstGPS™ of Trimble Navigation Ltd. EMV™ of EMVCo, LLC (Visa Holdings Inc.). EPCOS™ of Epcos AG. FLEXGO™ of Microsoft Corporation. FlexRay™ is licensed by FlexRay Consortium. HYPERTERMINAL™ of Hilgraeve Incorporated. IEC™ of Commission Electrotechnique Internationale. IrDA™ of Infrared Data Association Corporation. ISO™ of INTERNATIONAL ORGANIZATION FOR STANDARDIZATION. MATLAB™ of MathWorks, Inc. MAXIM™ of Maxim Integrated Products, Inc. MICROTEC™, NUCLEUS™ of Mentor Graphics Corporation. Mifare™ of NXP. MIPI™ of MIPI Alliance, Inc. MIPS™ of MIPS Technologies, Inc., USA. muRata™ of MURATA MANUFACTURING CO. OmniVision™ of OmniVision Technologies, Inc. Openwave™ Openwave Systems Inc. RED HAT™ Red Hat, Inc. RFMD™ RF Micro Devices, Inc. SIRIUS™ of Sirius Sattelite Radio Inc. SOLARIS™ of Sun Microsystems, Inc. SPANSION™ of Spansion LLC Ltd. Symbian™ of Symbian Software Limited. TAIYO YUDEN™ of Taiyo Yuden Co. TEAKLITE™ of CEVA, Inc. TEKTRONIX™ of Tektronix Inc. TOKO™ of TOKO KABUSHIKI KAISHA TA. UNIX™ of X/Open Company Limited. VERILOG™, PALLADIUM™ of Cadence Design Systems, Inc. VLYNQ™ of Texas Instruments Incorporated. VXWORKS™, WIND RIVER™ of WIND RIVER SYSTEMS, INC. ZETEX™ of Diodes Zetex Limited.

The information in this document is subject to change without notice.

Last Trademarks Update 2009-05-27

## Table of Contents

1	Introduction .....	6
2	Using the TDA7255V UWLink Extension-Board as stand-alone module .....	7
3	Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC.....	9

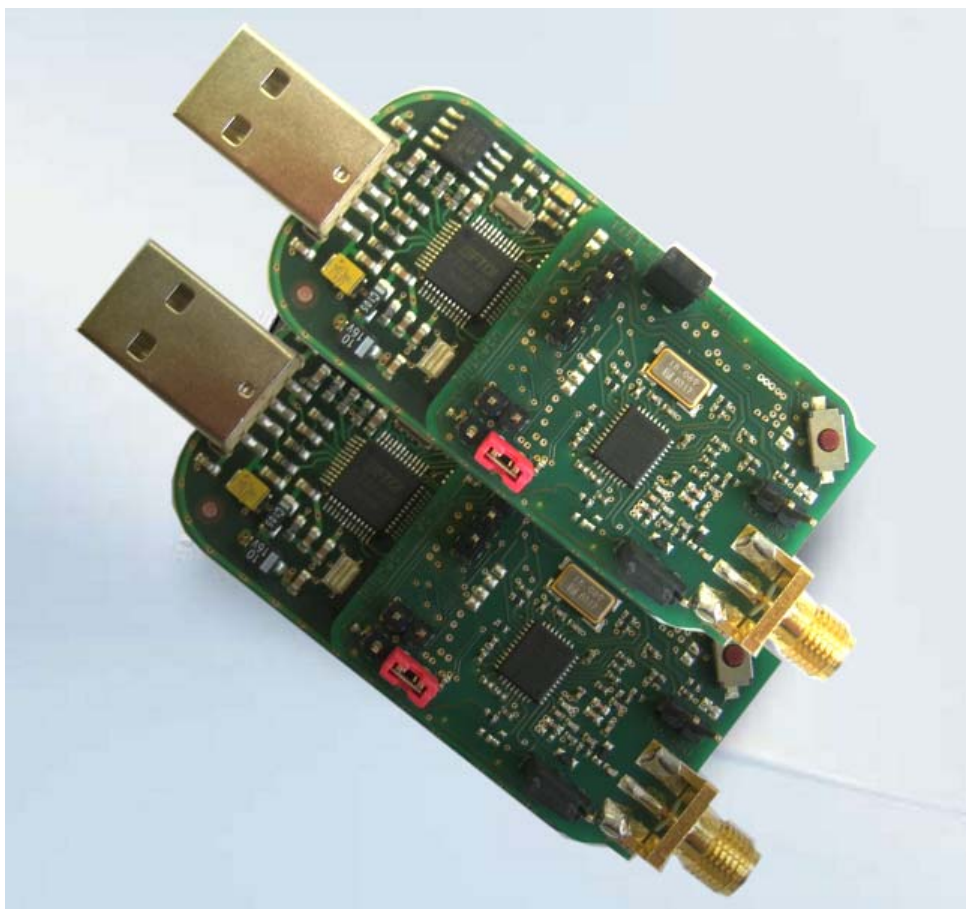
## List of Figures

Figure 1	Evaluation-Kit: 2 x TDA7255V UWLink Mainboard & Extension-Board.....	6
Figure 2	Jumper (axial).....	7
Figure 3	Jumper (SMD).....	8
Figure 4	SIB-Server button.....	9
Figure 5	TDA7255V Explorer button.....	10
Figure 6	TDA7255V-Explorer, Open button.....	11
Figure 7	TDA7255V-Explorer, Wizard tab.....	11
Figure 8	RX/TX and ASK/FSK external controlled or register controlled.....	12
Figure 9	TDA7255V-Explorer, Register tab.....	12
Figure 10	TDA7255V-Explorer, Explorer tab.....	13
Figure 11	TDA7255V-Explorer, Explorer tab, Test transmission field.....	13
Figure 12	TDA7255V-Explorer, Explorer tab, Power Down and Data Detect pin.....	14
Figure 13	Reset button.....	14
Figure 14	Save button.....	14
Figure 15	File-Open button.....	15

## 1 Introduction

The **TDA7255V UWLINK Extension-Board** can either be used as stand-alone module with any other system environment or together with the **UWLink Mainboard** as Interface to your Windows PC.

The **TDA7255V-Explorer** Windows Software may be used to set the configuration registers and to read out the status registers of the **TDA7255V**.



**Figure 1 Evaluation-Kit: 2 x TDA7255V UWLink Mainboard & Extension-Board**



## 2 Using the TDA7255V UWLInk Extension-Board as stand-alone module

- Close solder bridge JP1 (see Figure 3; default setting of the **TDA7255V UWLInk Extension-Board**).
- Leave solder bridge JP2, JP3, JP4 and JP5 open (see Figure 3; default setting of the **TDA7255V UWLInk Extension-Board**).
- Select either RX-mode or TX-mode by setting the jumper of the RX/TX-multi-pin connector (X8) accordingly (see Figure 2).
- Select either ASK or FSK by setting the jumper of the ASK/FSK-multi-pin connector (X7) accordingly (see Figure 2).
- Apply a supply voltage of 3V (2.1V to 5V) to connector X3 (for polarity see also Figure 2).
- Apply an antenna or RF-signal generator on the 50 Ω RF-connector (X1; see Figure 2) if the RX-mode is selected (via RX/TX-Jumper). Use an ASK-modulated or FSK-modulated RF-signal according the mode selected by the jumper of the ASK/FSK-multi-pin connector.
- Apply an antenna or Spectrum-Analyzer to be able to measure the spectrum, for instance, on the 50 Ω RF-connector (X1; see Figure 2) if the TX-mode is selected (via RX/TX-Jumper).  
CAUTION: Applying a signal, from a RF-signal generator for instance, in TX-mode could possibly damage the power amplifier output of the **TDA7255V**!
- Connect the Data Input/Output (X2; see Figure 2) to an Oscilloscope, for instance, to be able to measure the data output signal, in case of RX-mode (via RX/TX-Jumper) is selected.
- Apply a data signal, a PRBS9-sequence or just a rectangular signal on the Data Input/Output (X2; see Figure 2) if TX-mode is selected. For data signal Low- and High-level see the Data Sheet.

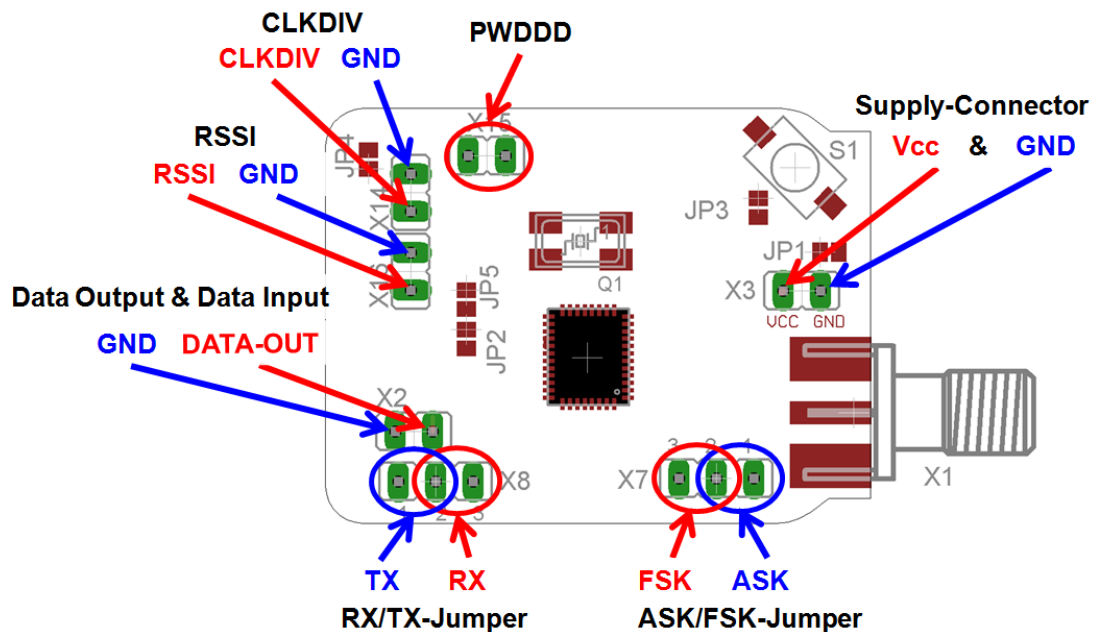
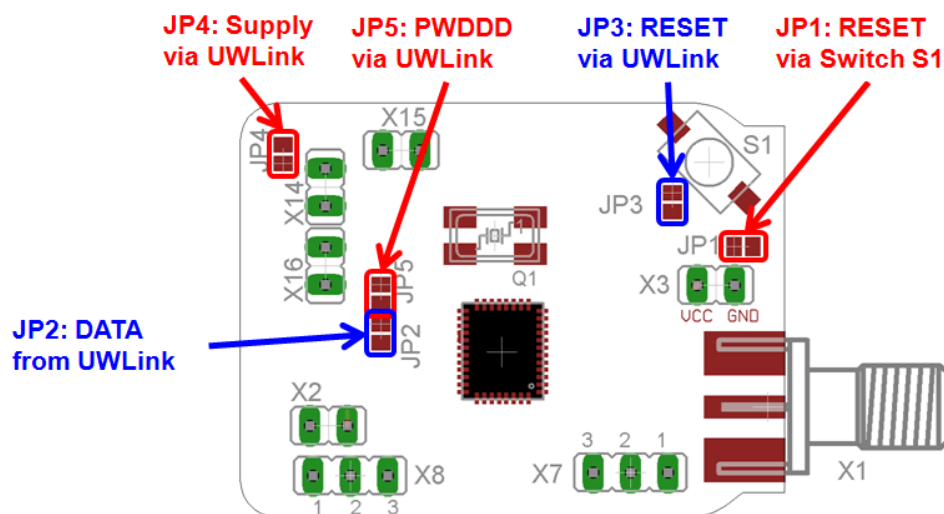


Figure 2 Jumper (axial)

**Name and function of the connectors and Jumpers of the TDA7255V UWLink Extension-Board:**

- X1: 50 Ω RF-connector (RF-In in receive-mode/RF-Out in transmit-mode)
- X2: Data Input/Output
- X3: Supply-Connector (Vcc/GND) external supply
- X7: ASK/FSK-multi-pin connector
- X8: RX/TX- multi-pin connector
- X14: CLKDIV-Output-Connector (Clock-output)
- X15: PWDDD-Connector
- X16: RSSI-Output
- S1: Reset-switch
- JP1: Reset via Switch S1
- JP2: Data to UWLink
- JP3: Reset via UWLink
- JP4: Supply via UWLink
- JP5: PWDDD via UWLINK



**Figure 3 Jumper (SMD)**



### 3 Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC

Before using the UWLink Mainboard as interface, the required software, which can be downloaded from the Infineon Web page (see link below), has to be installed.

Please follow this step-by-step approach when you start up your **TDA7255V-UWLink-Set** for the first time:

**Important Note:** The **TDA7255V Explorer** Windows Software requires the **DAS (Device Access Server)** and the **SIB-Server** services running in the background. Both are automatically installed while following the steps below.

#### Step 1 – Installation of the TDA7255V-Explorer

- Go to [www.infineon.com/TDA7255V](http://www.infineon.com/TDA7255V) and download the latest **TDA7255V-Explorer** Installation Package (e.g. **TDA7255V\_Explorer\_E1.1.05.zip**)
- Extract the ZIP-archive to a temporary directory on your PC.
- Open the sub-directory **1\_DAS** and execute **DAS\_setup.exe** and follow the on-screen instructions.
- Execute **TDA7255V\_Explorer\_E1.1.05.exe** and follow the on-screen instructions.
- Execute the **NextGenLoader** and start the installation of the **SIB-Server** by just double-clicking at the **SIB Server** button (see Figure 4) and follow the on-screen instructions.



Figure 4 SIB-Server button

#### Step 2 – Usage of the TDA7255V-Explorer

- Start the **TDA7255V Explorer** by double-clicking at the **TDA7255V Explorer** button (see Figure 5).
- Click to **OPEN** in the **Wizard**-tab to start the communication (see Figure 6).
- Now you are ready to configure the **TDA7255V**: Either by changing the settings in the **Wizard**-tab of the **TDA7255V Explorer** (see Figure 6), or by changing the bit values of each register directly in the **Registers**-tab (see Figure 9). **CAUTION:** If you choose RX/TX and ASK/FSK “Register Controlled” (see Figure 8) it is strongly recommend to remove the jumper of the RX/TX-multi-pin connector and ASK/FSK-multi-pin connector to avoid conflicting hardware and software settings and harming of the **TDA7255V**!

Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC

- Furthermore you can read the **SFR Status register** and **SFR ADC register** at the **Explore**-tab. See the **RSSI Voltage and Vcc Measurement**- and **Data valid decision**-fields in the **Explore**-tab (see Figure 10).
- A PRBS9 sequence with variable data rate can be generated by the **TDA7255V-Explorer** and will be applied to the data input when closing the jumper JP2 (see Figure 3). The desired data rate can be adjusted and the transmission started in the **Test transmission**-field in the **Explore**-tab (see also Figure 11).
- The **TDA7255V** can be switched between **Power-Down-Mode** and **Device-Active-Mode** by the **TDA7255V-Explorer** when closing the jumper JP5 (see Figure 3). You can switch to **Power-Down-Mode** or **Device-Active-Mode** by just clicking on the accordant side of the symbolic dip-switch in the **Power Down and Data Detect pin**-field in the **Explore**-tab (see Figure 12).
- The **TDA7255V** can be reset by the “Reset”-button in the **Chip Control**-field at each tab of the **TDA7255V-Explorer** (see Figure 13) when closing jumper JP3 and opening jumper JP1 (see Figure 3).
- The registers settings can be saved as config-file (\*.spi.def) by clicking at the “**Save**”-button in the **Register**-tab on the one hand (see Figure 14). Already available config-files can be loaded by clicking at the “**File-Open**”-button on the other hand (see Figure 15)



Figure 5 TDA7255V Explorer button

Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC

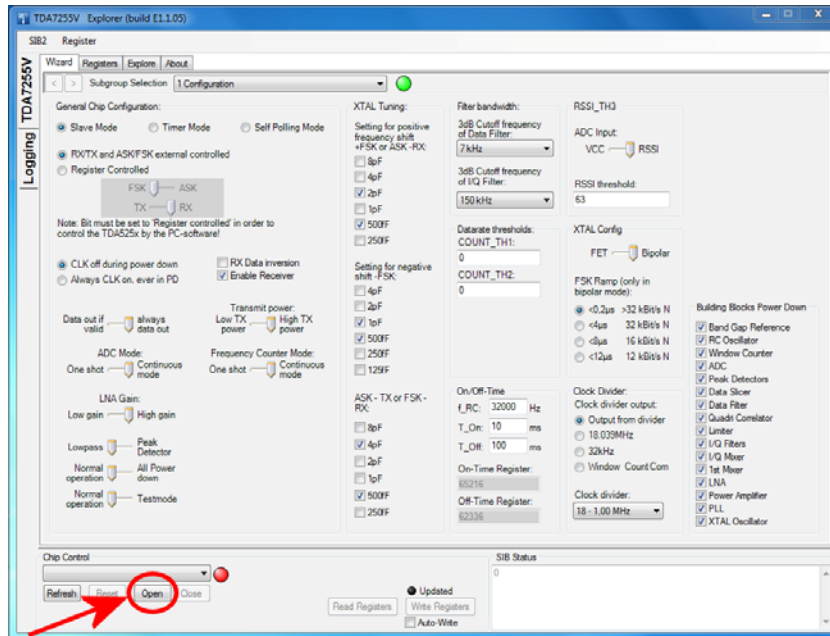


Figure 6 TDA7255V-Explorer, Open button

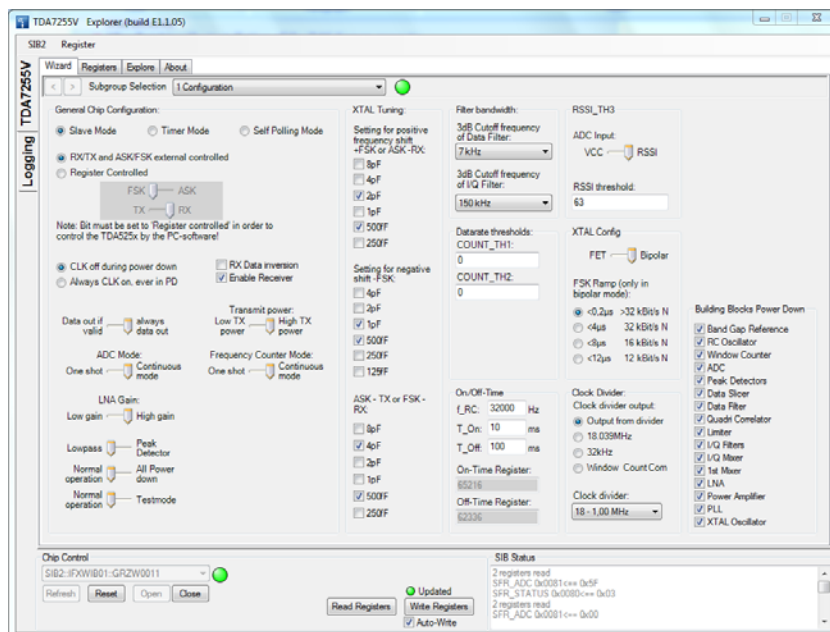


Figure 7 TDA7255V-Explorer, Wizard tab

Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC

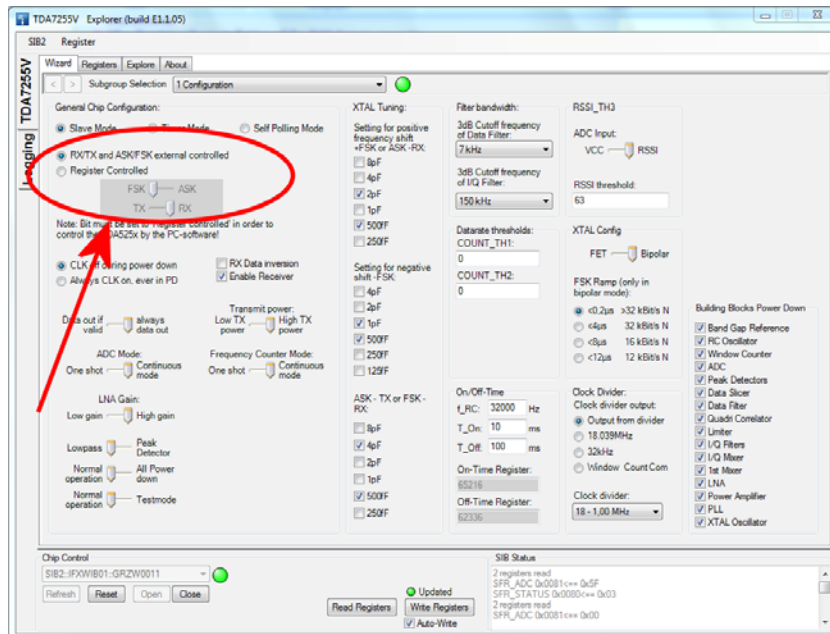


Figure 8 RX/TX and ASK/FSK external controlled or register controlled

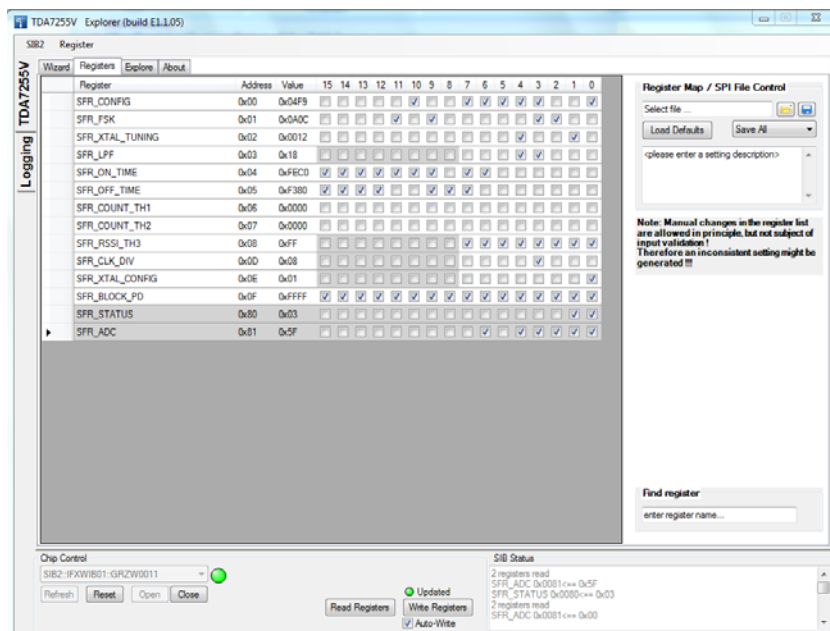


Figure 9 TDA7255V-Explorer, Register tab

Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC

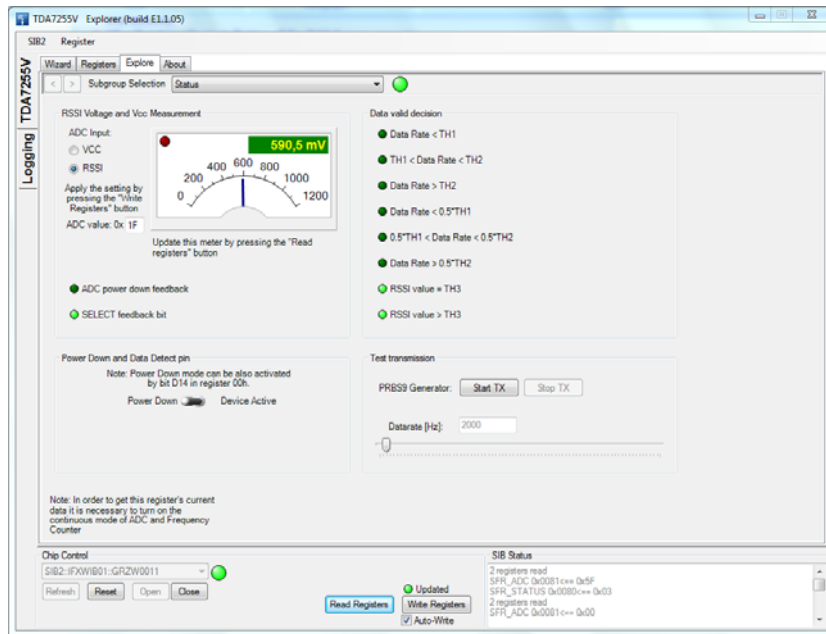


Figure 10 TDA7255V-Explorer, Explorer tab

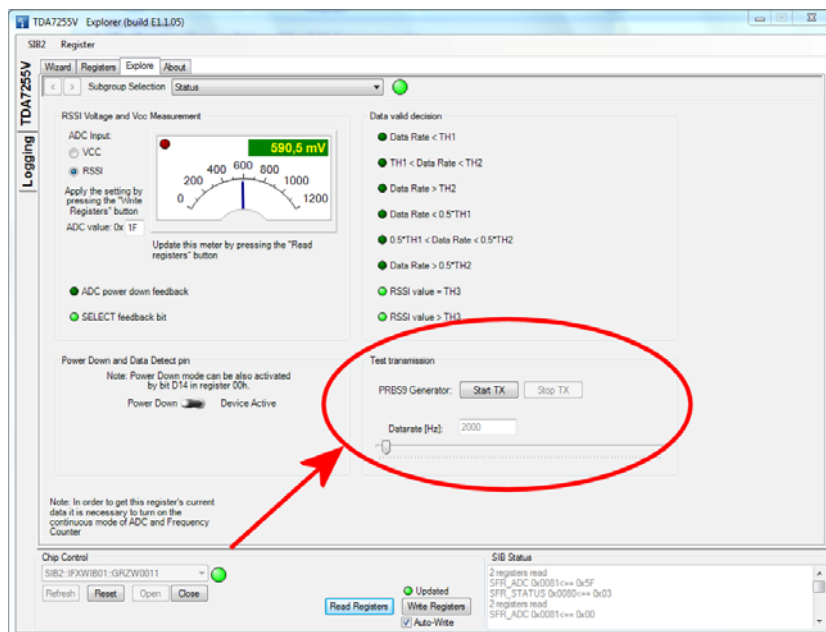


Figure 11 TDA7255V-Explorer, Explorer tab, Test transmission field

Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC

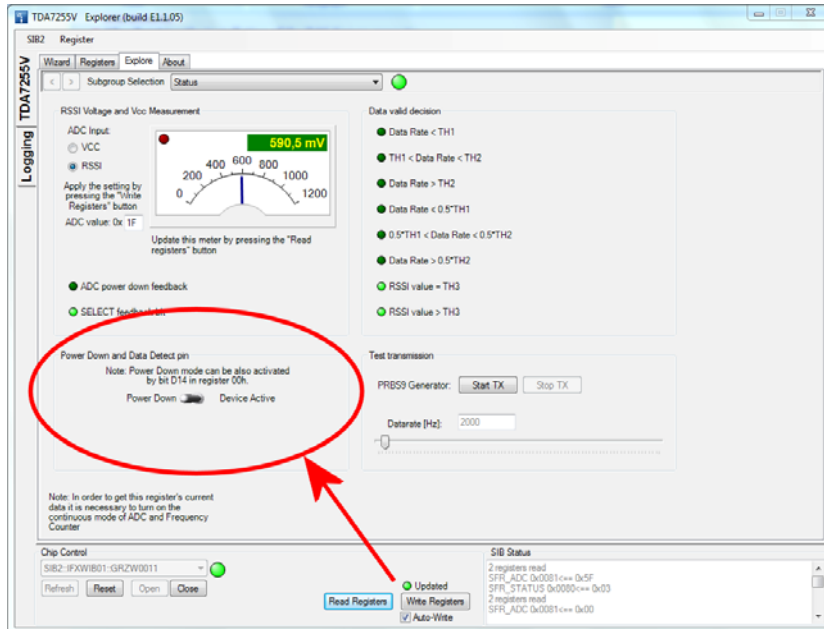


Figure 12 TDA7255V-Explorer, Explorer tab, Power Down and Data Detect pin

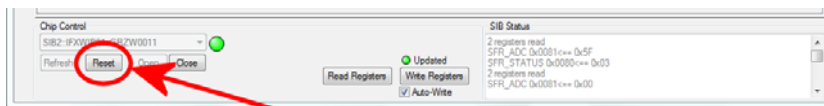


Figure 13 Reset button

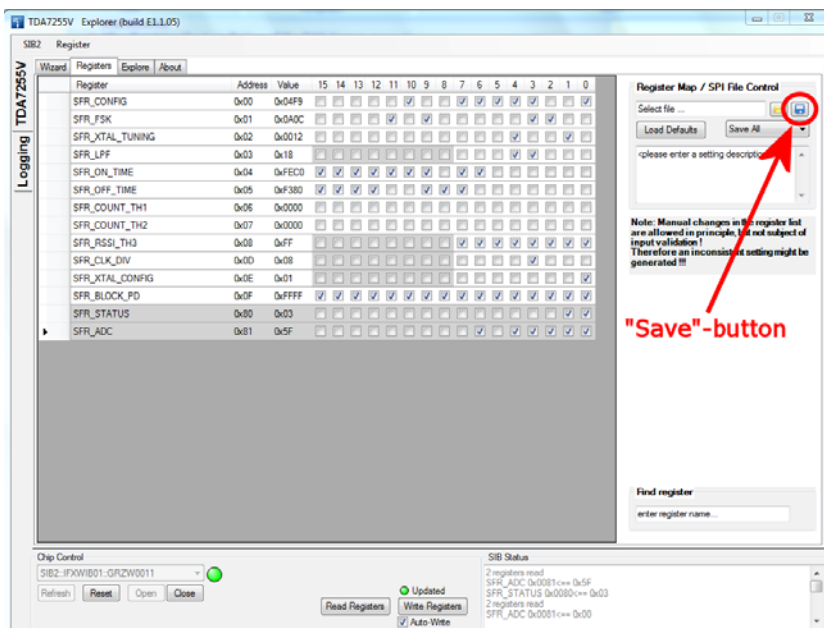


Figure 14 Save button



Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC

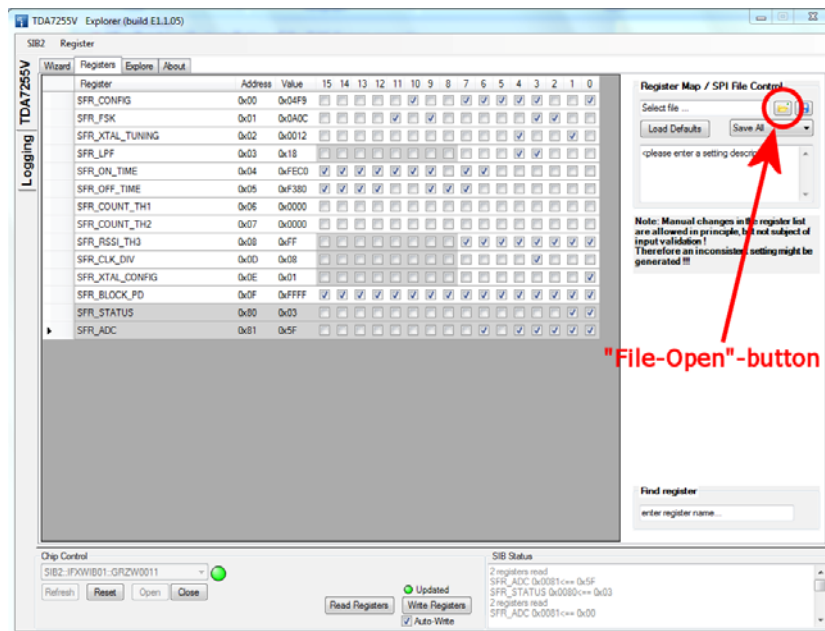


Figure 15 File-Open button

Step 3 – Configure the TDA7255V UWLink Extension-Board by the TDA7255V-Explorer via the USB connector of the PC

- If “reset” via **TDA7255V-Explorer** is desired or required you have to close solder bridge JP3 and open JP1 (see Figure 3).
- If you intend to send the PRBS9 sequence of the **TDA7255V-Explorer** (see **Test transmission**-field in the **Explore**-tab) in TX-mode you have to close solder bridge JP2 (see Figure 3).
- If you intend to supply the **TDA7255V UWLink Extension-Board** via the UWLink Mainboard you have to close JP4 (see Figure 3).
- If you intend to control the power-mode (**Power-Down-Mode/Device-Active-Mode**) of the **TDA7255V** by the **TDA7255V-Explorer** you have to close solder bridge JP5 (see Figure 3).
- Connect the **TDA7255V UWLink Extension-Board** to the **UWLink Mainboard**.
- The **TDA7255V UWLink Extension-Board** can be supplied by the USB-connector via the **UWLink-Mainboard** by closing jumper JP4 (see Figure 3). Alternatively, the **TDA7255V UWLink Extension-Board** may be supplied by an external power supply of 3V (2.1V to 5V) via connector X3 (JP4 must be open). For the polarity of X3 see also Figure 2.
- Connect the **UWLink Mainboard** to the USB-connector of your PC.
- Start the **TDA7255V Explorer** by double-clicking at the **TDA7255V Explorer** button (see Figure 5).
- Click to **OPEN** in the **Wizard**-tab to start the communication (see Figure 6).
- It is strongly recommended to remove the jumper of the RX/TX-multi-pin connector and ASK/FSK-multi-pin connector before you select “RX/TX and ASK/FSK Register Controlled” (see Figure 8) to avoid conflicting hardware and software settings and harming of the **TDA7255V!** If you select “RX/TX and ASK/FSK external controlled” (see Figure 8) you have to set the jumper of the ASK/FSK- and RX/TX-multi-pin connector according the desired mode (see Figure 2).

---

**Using the TDA7255V UWLink Extension-Board together with the UWLink Mainboard as interface to a Windows PC**

- Apply an antenna or RF-signal generator on the 50  $\Omega$  RF-connector (X1; see Figure 2) if the RX-mode is selected. Use an ASK-modulated or FSK-modulated RF-signal according the selected mode.
- Apply an antenna or Spectrum-Analyzer to be able to measure the spectrum, for instance, on the 50  $\Omega$  RF-connector (X1; see Figure 2) if the TX-mode is selected (via RX/TX-Jumper).  
CAUTION: Applying a signal, from a RF-signal generator for instance, in TX-mode could possibly damage the power amplifier output of the **TDA7255V!**
- Connect the Data Input/Output (X2; see Figure 2) to an Oscilloscope, for instance, to be able to measure the data signal, in case of RX-mode (via RX/TX-Jumper) is selected.
- Apply a data signal or just a rectangular signal on the Data Input/Output (X2; see Figure 2) if TX-mode is selected **or use the PRBS9-sequence of the TDA7255V-Explorer** when JP2 is closed. For data signal Low- and High-level see Data Sheet.

[www.infineon.com](http://www.infineon.com)

Published by Infineon Technologies AG