

## **How to use example A/B that is present in SPIRIT1 SDK 2.0 on IAR 32K free version (rel.7.20)**

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## Introduction

This explanation is based on: **SPIRIT1 DK 2.0.0** (STSW-CONNECT009 - Setup for SPIRIT1 design kit ) that is [here](#).

The example A/B is very simple example that implement a simple Tx/Rx link using two SPIRIT1 [evaboard](#).

EveBoard **A** is the **Tx**, the EvaBoard **B** is the **Rx**.



**OLD evaboard version**



**NEW evaboard version**

### **LED Link Tx/Rx OK**

After you have programmed two evaboard, A that is Tx and B that is Rx, (see explanation later in this manual) you reset both the evaboard and you must see:

Evaboard **A**:

DL9 (green) ON - ***It is present only on the OLD evaboard board version***

DL1 (green) flashing

Evaboard **B**:

DL9 (green) ON - ***It is present only on the OLD evaboard board version***

DL1 (green) ON

DL2 (orange) flashing

This means that the Tx/Rx link is present.

### **LED Link Tx/Rx FAIL**

If you **Turn Off** the evaboard **A** you must see in evaboard **B** the LED in this conditions:

DL9 (green) ON - ***It is present only on the OLD evaboard board version***

DL1 (green) flashing

DL2 (orange) ON or OFF **is not important**

This means that the link Tx/Rx is lost.

### **How to test this example**

Simply program the two boards (A and B) and power it.

You must see on board A the green led (DL1) flashing and on Board B the green led (DL1) ON.

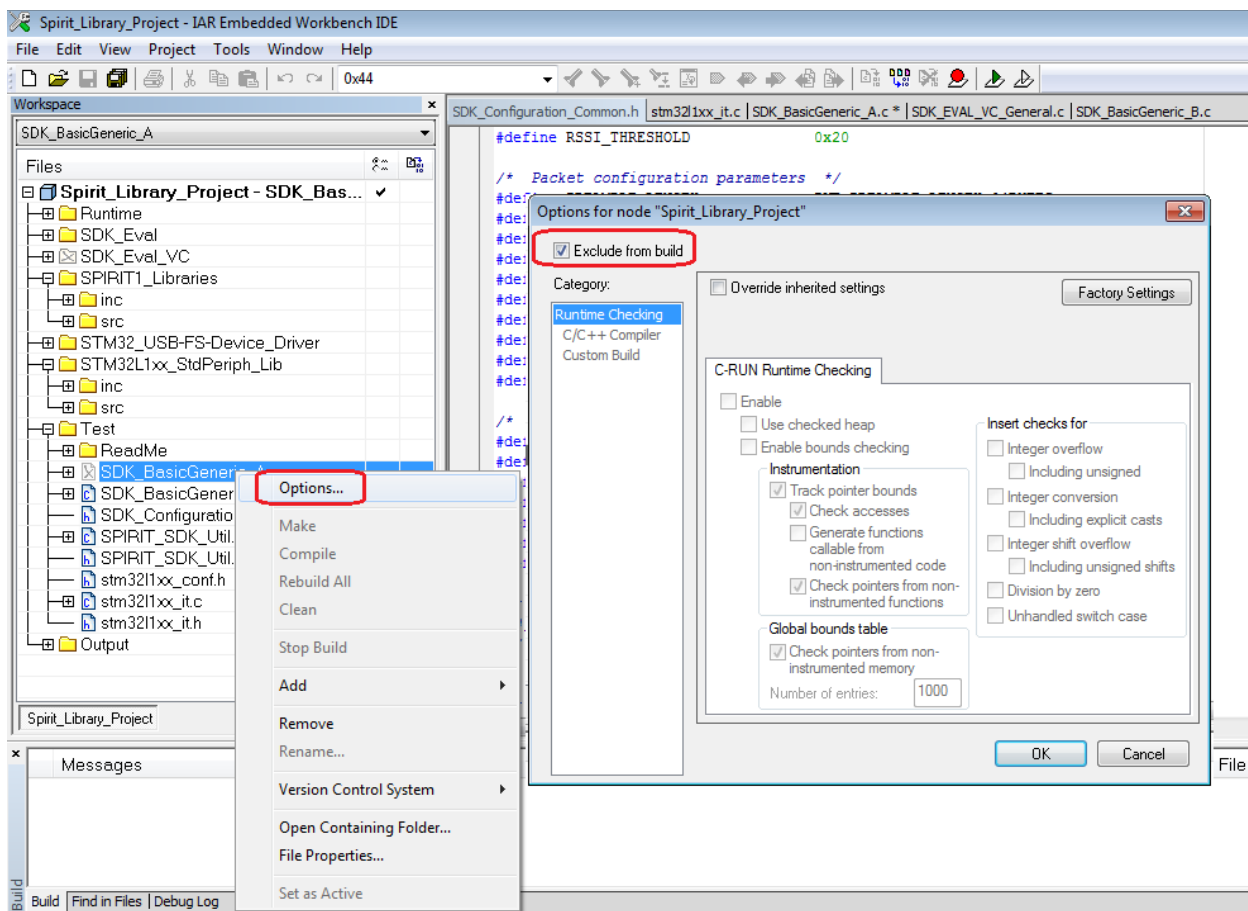
Turn off the board A and on the board B you must see the green led (DL1) flashing.

## The Working Directory

C:\...\STM\_SIRIT1Q\IAR-SW-A-B\Firmware\SPIRIT1\_Library\_Project\EWARM

## Select (include) and deselect (exclude) the file from IAR project

For select (include) or deselect (exclude) a file in IAR you must click on it with the **right mouse button** and from the window that appear select **Option**. At this point a new window is open and on the top you have a **flag for include** or **exclude** a file from the project. See below.

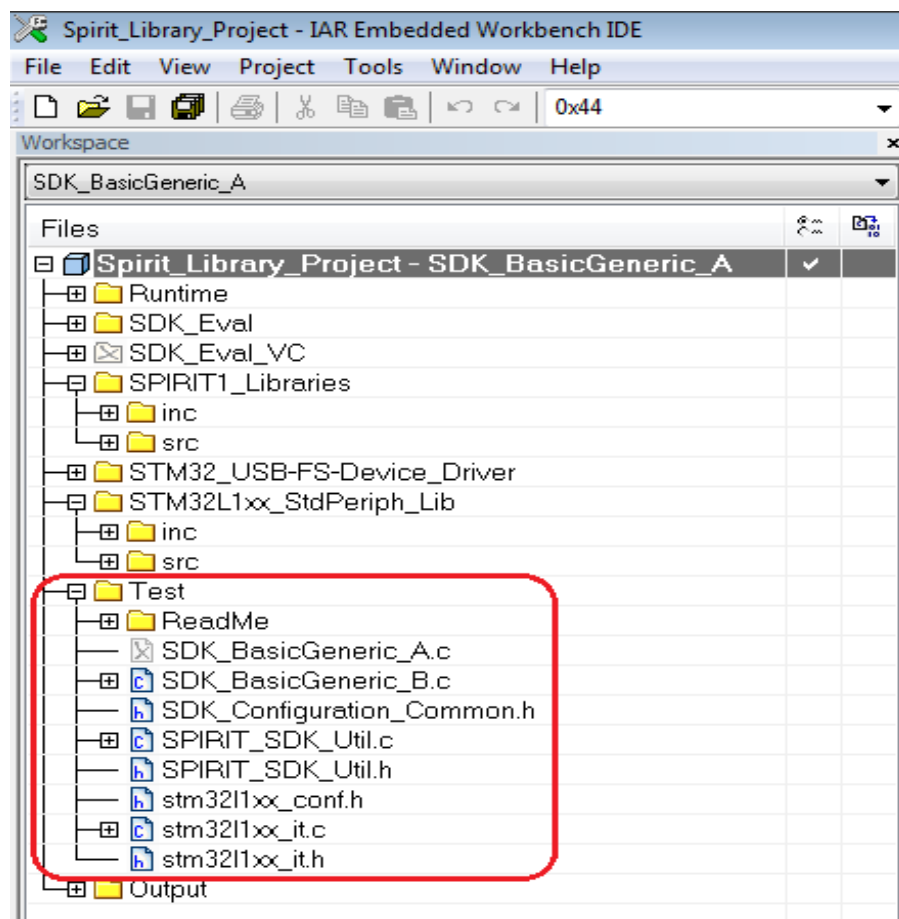


## Configure the address in A evaboard (Tx)

In the file: **SDK\_Configuration\_Common.h**

You must set the Addresses of the TX **A** board (in our case is **0x44**, and destination is **0x34**), see below.

```
/* Addresses configuration parameters */  
#define EN_FILT_MY_ADDRESS      S_DISABLE  
#define MY_ADDRESS              0x44  
#define EN_FILT_MULTICAST_ADDRESS S_DISABLE  
#define MULTICAST_ADDRESS      0xEE  
#define EN_FILT_BROADCAST_ADDRESS S_DISABLE  
#define BROADCAST_ADDRESS      0xFF  
#define DESTINATION_ADDRESS     0x34
```



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**Also you must configure** (on the evaboard **A**) **the quartz frequency mounted on your SPIRIT1 module that for 169Mhz is 25MHz and for 868Mhz is 50MHz**

**The example below is for 169MHz.**

Open the file: **SDK\_BasicGeneric\_A.c**  
and in the section **/\* Includes** (it is at top of the file) specify: **25000000**, see below.

```
/* Includes
-----*/
#include "SDK_EVAL_Config.h"
#include "SPIRIT_Config.h"
#include "SDK_Configuration_Common.h"
#include "SPIRIT_SDK_Util.h"
// #define USE_VCOM
#define XTAL_FREQUENCY      25000000
#define SPIRIT_VERSION      SPIRIT_VERSION_3_0

#include "SDK_Common.h"
```



**Frequency for Tx/Rx (on the evaboard **A** and **B**)**

Now is necessary configure the frequency of the Tx/Rx of the SPIRIT1 module that is in use.

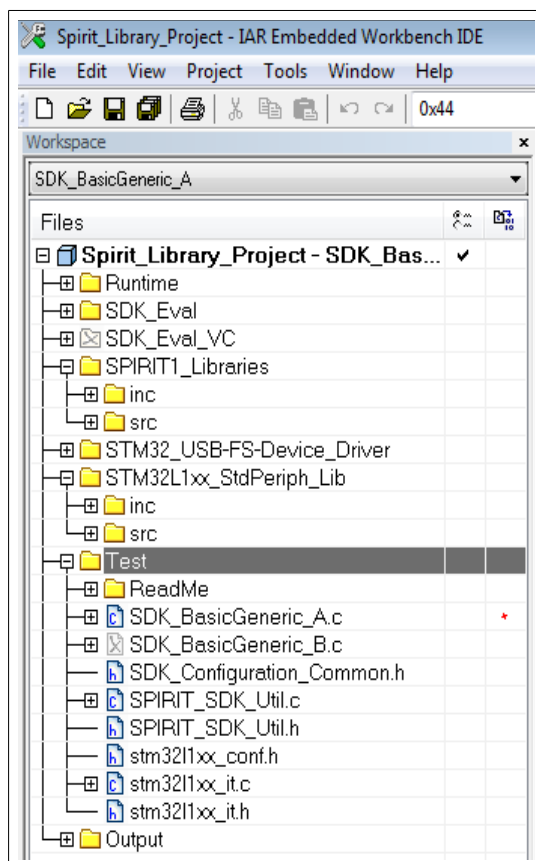
See the explanation that are [here](#).

## Compile the A (Tx) example

**Include** the **SDK\_BasicGeneric\_A.c** and **exclude** the **SDK\_BasicGeneric\_B.c** from the compilation.

See below.

For know how to do this read [here](#).





**Before to do the compilation do the step show below 1...8.**

Click with the **left button** of the **mouse** on: **Spirit\_Library\_Project-SDK\_BasicGeneric\_A \***

Click with the **right button** of the **mouse** on: **Spirit\_Library\_Project-SDK\_BasicGeneric\_A \***, and choose **Options**

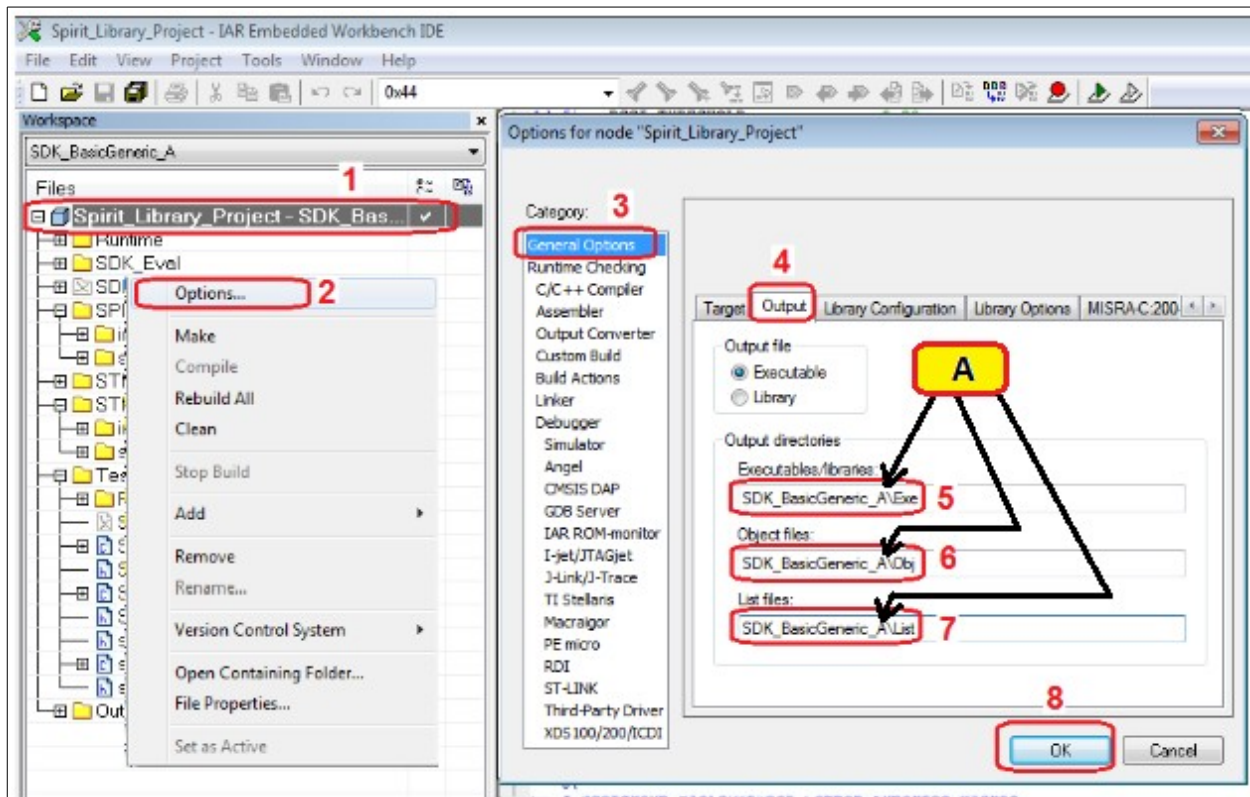
From the new window that appear set in the box **5**, **6** and **7** the name:

**SDK\_BasicGeneric\_A\Exe**

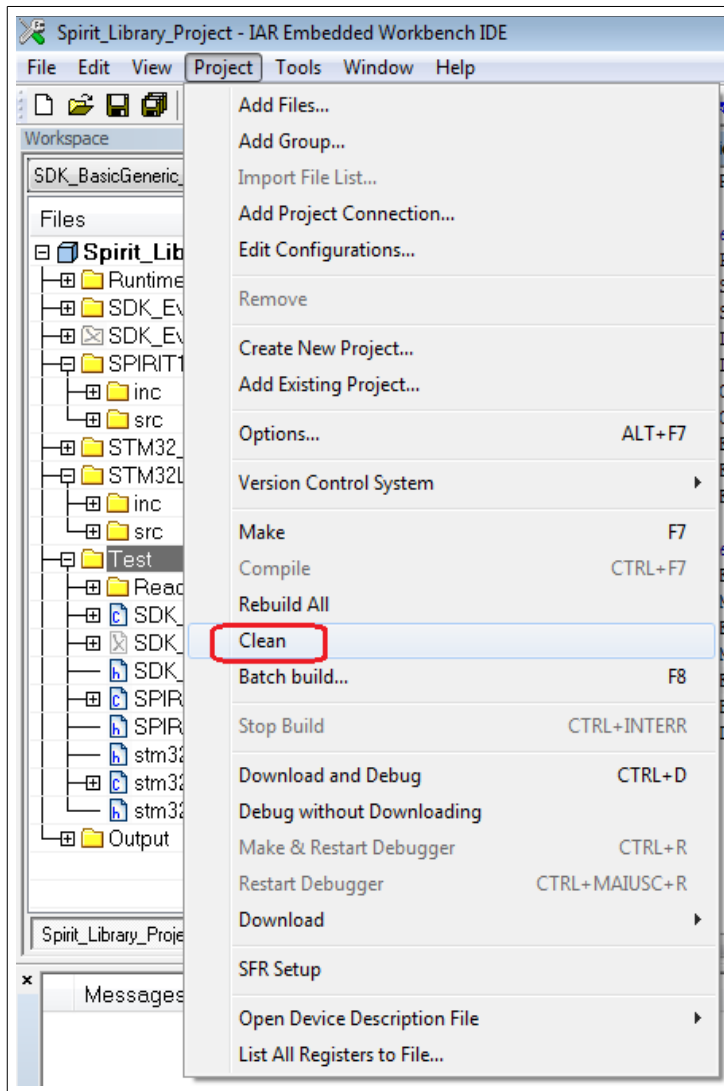
**SDK\_BasicGeneric\_A\Obj**

**SDK\_BasicGeneric\_A>List**

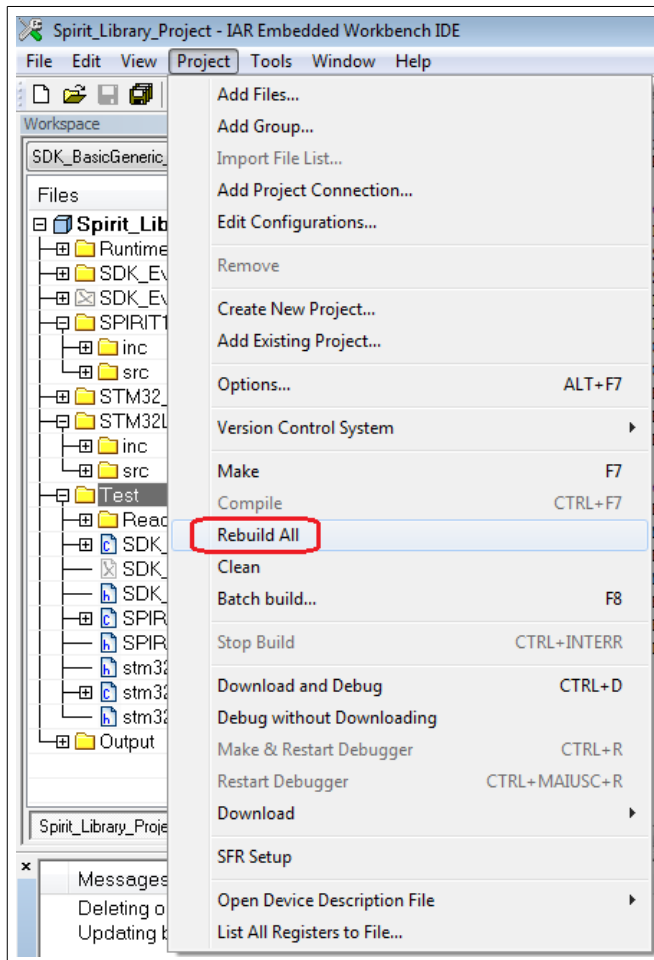
Next press **OK**.



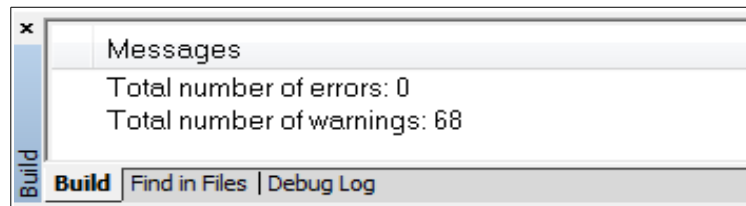
Now select: **Project -> Clean**  
See below.



Now select: **Project -> Rebuild All**  
See below.



At the end of the compilation you must see:

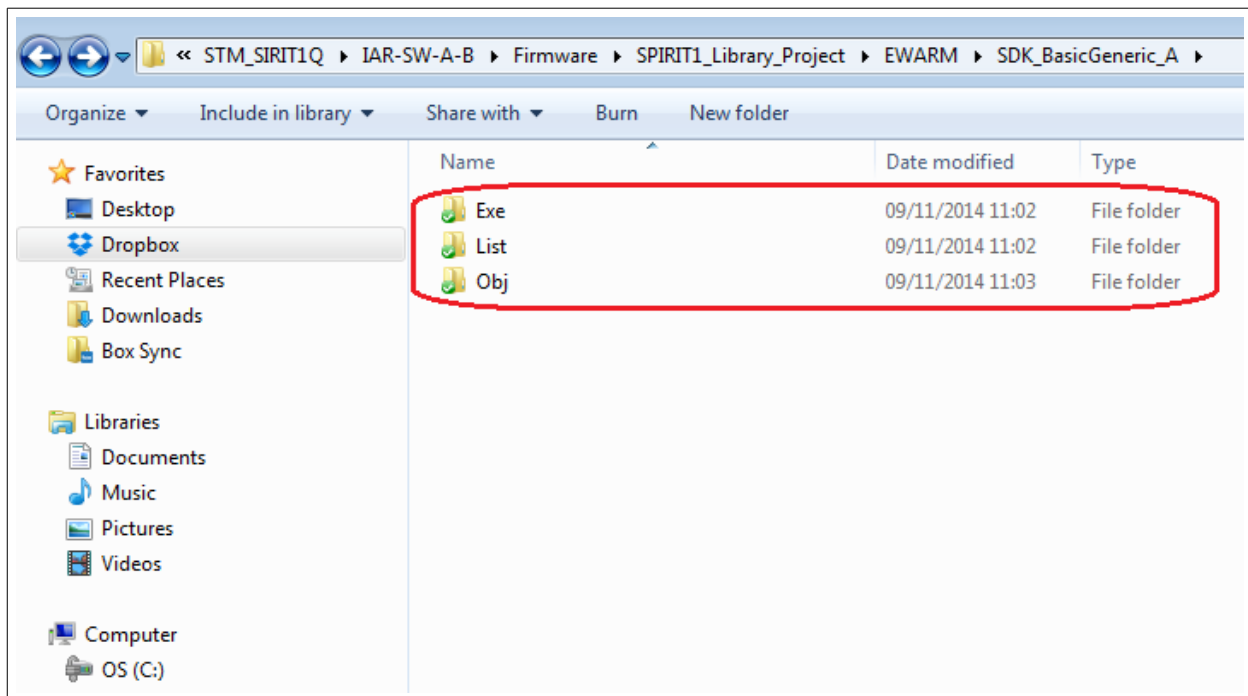


In the directory:

C:\...\STM\_SIRIT1Q\IAR-SW-A-

B\Firmware\SPIRIT1\_Library\_Project\EWARM\**SDK\_BasicGeneric\_A**

you must see the results of the compilation. See below.



Now, using the [ST-LINK-v2](#), download the FW to the evaboad **A**.

The FW is here:

C:\...\STM\_SIRIT1Q\IAR-SW-A-

B\Firmware\SPIRIT1\_Library\_Project\EWARM\SDK\_BasicGeneric\_A\Exe

and the name is: **SDK\_BasicGeneric\_A.hex**

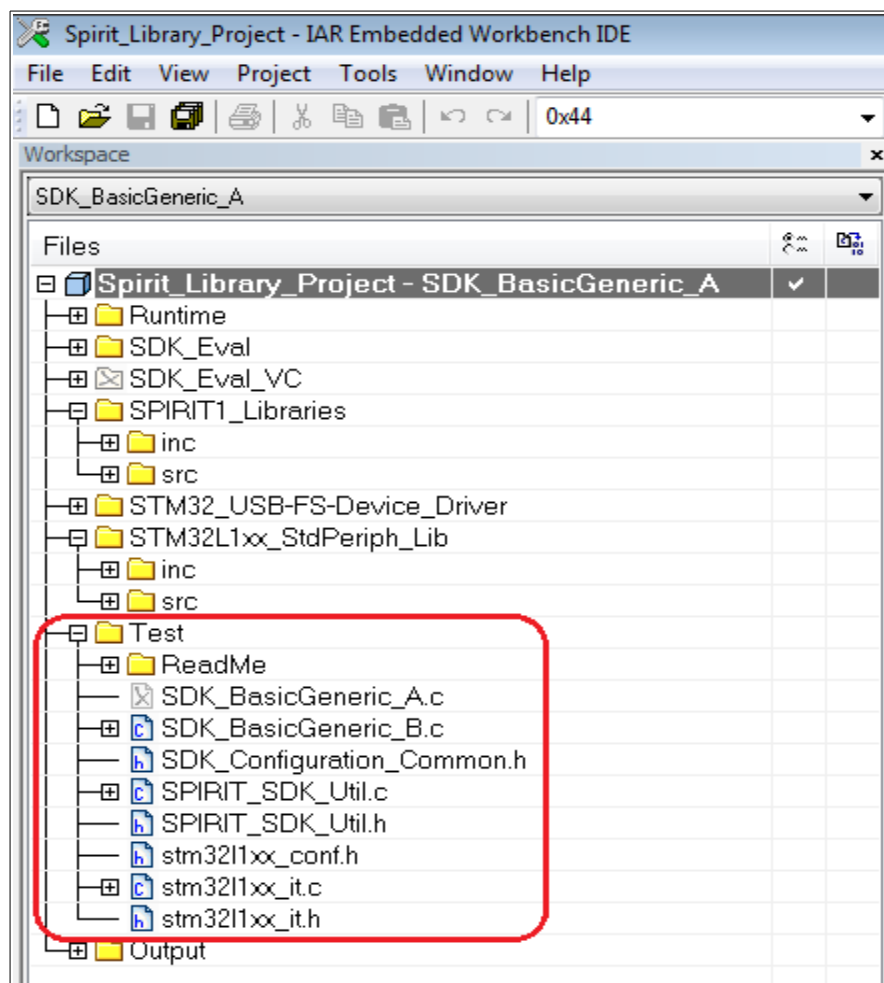
To download the FW you must use the [ST-LINK-Utility](#) and download the FW at the address: **0x08003000**

## Configure the address in B evaboard (Rx)

In the file: **SDK\_BasicGeneric\_B.c**

You must set the Addresses of the RX **B** board (in our case is **0x34**, and destination is **0x44**), see below.

```
/* Addresses configuration parameters */
#undef MY_ADDRESS
#define MY_ADDRESS          0x34
#undef DESTINATION_ADDRESS
#define DESTINATION_ADDRESS 0x44
```



Click [here](#) to go to the INDEX

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**Also you must configure** (on the evaboard B) **the quartz frequency mounted on your SPIRIT1 module that for 169Mhz is 25MHz and for 868MHz is 50MHz**

**The example below is for 169MHz.**

Open the file: **SDK\_BasicGeneric\_B.c**  
and in the section **/\* Includes** (it is at top of the file) specify: **25000000**, see below.

```
/* Includes
-----*/
#include "SDK_EVAL_Config.h"
#include "SPIRIT_Config.h"
#include "SDK_Configuration_Common.h"
#include "SPIRIT_SDK_Util.h"

// #define USE_VCOM
#define XTAL_FREQUENCY      25000000
#define SPIRIT_VERSION      SPIRIT_VERSION_3_0
#ifdef STM8L
#include "STM8L_Common.h"
#define XTAL_FREQUENCY      50000000
#define SPIRIT_VERSION      SPIRIT_VERSION_3_0
#define RANGE_TYPE          RANGE_EXT_NONE        //RANGE_EXT_SKYWORKS
#elif SDK
#include "SDK_Common.h"
#endif
#ifdef USE_VCOM
#include "SDK_EVAL_VC_General.h"
#endif
#endif
```



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Click [here](#) to go to the INDEX

**Frequency for Tx/Rx (on the evaboard A and B) - The example below is for 169MHz.**

Now is necessary configure the frequency of the Tx/Rx of the SPIRIT1 module that is in use. Open the file: **SDK\_Configuration\_Common.h** and specify the frequency, in our case, we did the test using SPIRIT1 module at 169MHz, the declaration must be: **USE\_VERY\_LOW\_BAND**  
See below.

```
/**
 * @file    SDK_BasicPktTest_Common.h
 * @author  AAS & RF – AMS
 * @version 3.1.0
 * @date    March 1, 2014
 * @brief   Common configuration header file.
 * @details
 *
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 * LOCATED
 * IN THE ROOT DIRECTORY OF THIS FIRMWARE PACKAGE.
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 */

/* Define to prevent recursive inclusion
-----*/
#ifndef __SDK_PKT_TEST_COMMON_H
#define __SDK_PKT_TEST_COMMON_H
#define USE_VERY_LOW_BAND
```



Other possible definitions (present in the same file) for different frequencies are:

```
#ifdef USE_VERY_LOW_BAND
```

```
#define BASE_FREQUENCY      169.0e6
```

```
#endif
```

```
#ifdef USE_LOW_BAND
```

```
#define BASE_FREQUENCY      315.0e6
```

```
#endif
```

```
#ifdef USE_MIDDLE_BAND
```

```
#define BASE_FREQUENCY      433.0e6
```

```
#endif
```

```
#ifdef USE_HIGH_BAND
```

```
#define BASE_FREQUENCY      868.0e6
```

```
#endif
```

### Compile the **B (Rx)** example

Now do the same that you did for A also on the **B** evaboard but **exclude from the compilation** the **SDK\_BasicGeneric\_B.c** and **include** the **SDK\_BasicGeneric\_B.c**

**Before to do the compilation do the step show below 1...8.**

Click with the **left button** of the **mouse** on: **Spirit\_Library\_Project-SDK\_BasicGeneric\_A \***

Click with the **right button** of the **mouse** on: **Spirit\_Library\_Project-SDK\_BasicGeneric\_A \***, and choose **Options**

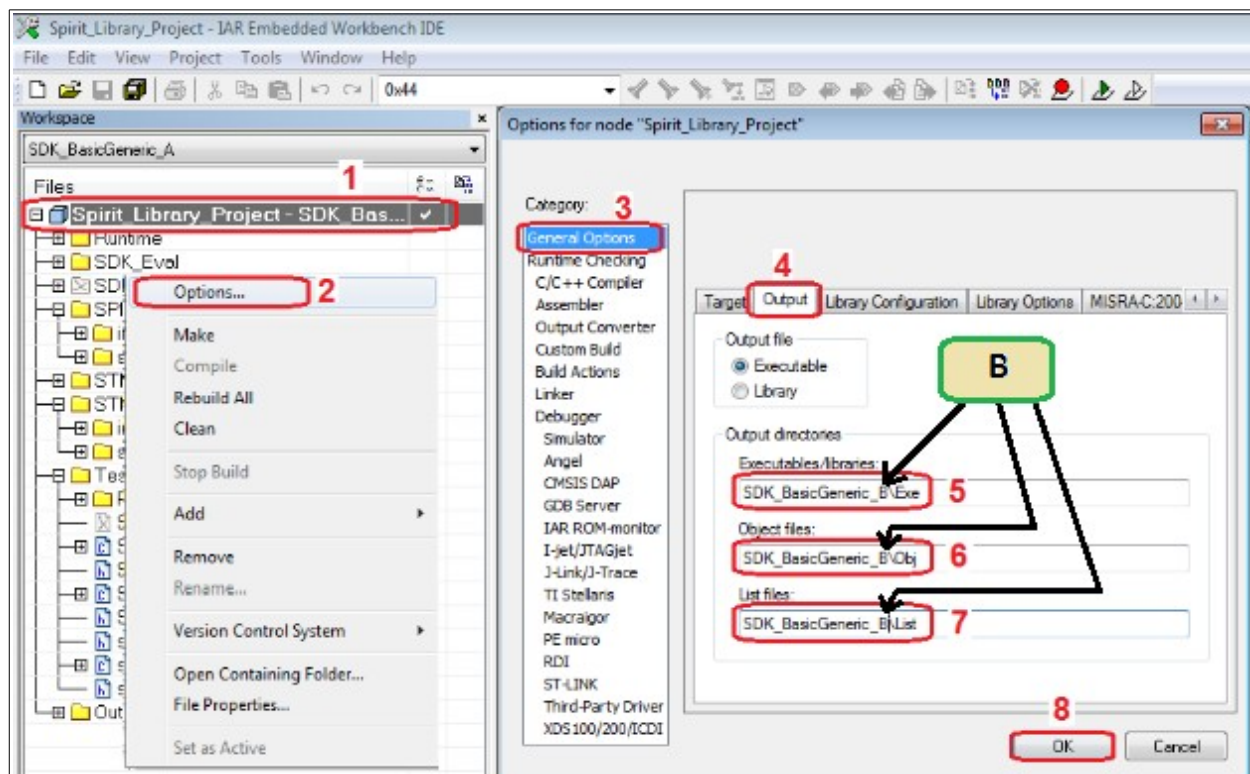
From the new window that appear set in the box **5**, **6** and **7** the name:

**SDK\_BasicGeneric\_B\Exe**

**SDK\_BasicGeneric\_B\Obj**

**SDK\_BasicGeneric\_B>List**

Next press **OK**.



Now rebuild all:

**Project -> Clean**

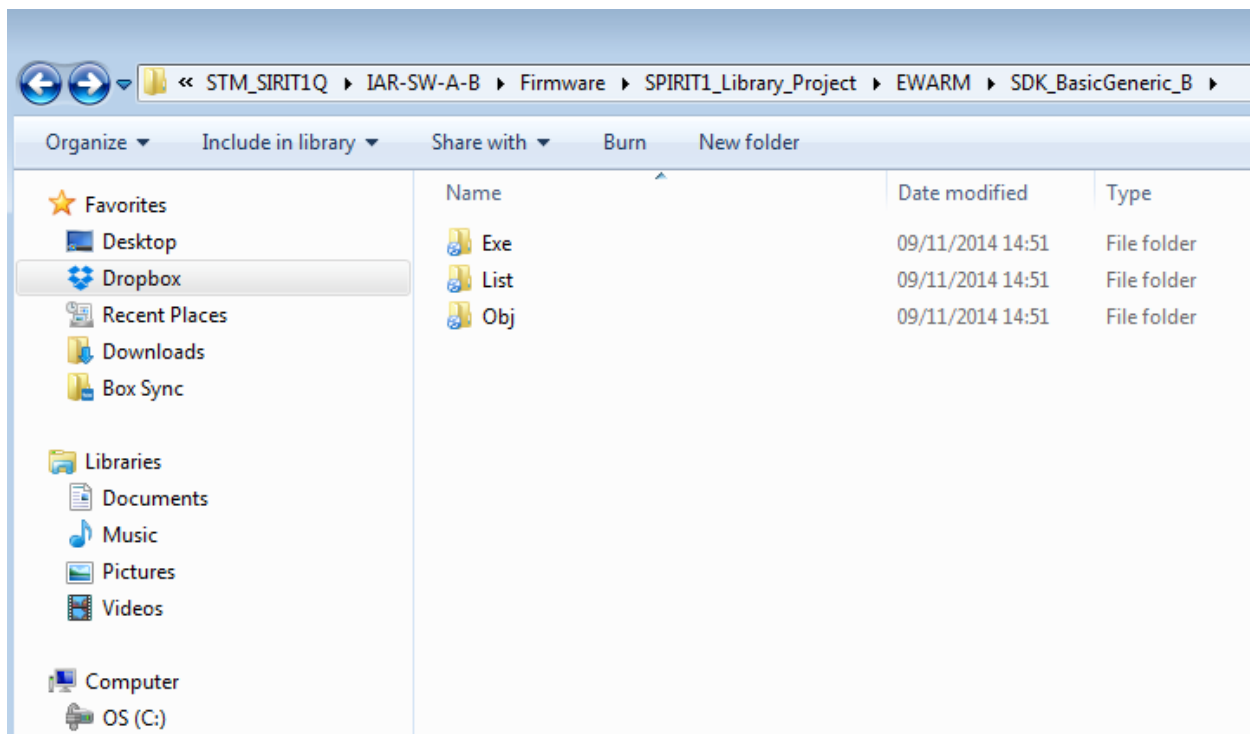
**Project -> Rebuild All**

In the directory:

C:\...\STM\_SIRIT1Q\IAR-SW-A-

B\Firmware\SPIRIT1\_Library\_Project\EWARM\SDK\_BasicGeneric\_B

you must see the results of the compilation.



Now, using the [ST-LINK-v2](#), download the FW to the evaboad **B**.

The FW is here:

C:\...\STM\_SIRIT1Q\IAR-SW-A-

B\Firmware\SPIRIT1\_Library\_Project\EWARM\SDK\_BasicGeneric\_B\Exe

and the name is: **SDK\_BasicGeneric\_B.hex**

To download the FW you must use the [ST-LINK-Utility](#) and download the FW at the address: **0x08003000**