# Surfing in the SPIRIT1 documentation and software

- Introduction
- Documentation folder
- Drivers folder
- GUI & GUI folder
  - For use the GUI on the SPIRIT1 KIT (EvaBoard) must be loaded the: **SPIRIT1\_CLI.hex** at the **address: 0x08003000**
- Firmware folder
  - Example ready to use for STM32L
- RN0095 SPIRIT1 development kit
  - The RN0095 lists the changes, new features, and recent corrections in release 2.0.0 of the SPIRIT1 development kit. This release note also provides information on the hardware and MCU supported by the current kit and it gives the known problems and limitations. Finally, this document traces the updates made to each previous

Finally, this document traces the updates made to each previous release of the SPIRIT1 development kit.

- <u>UM1657 User manual</u>
  - SPIRIT1 development kit graphical user interface (SPIRIT1 DK -GUI) which allows checking the SPIRIT1 main performance and easily measure parameters such as sensitivity, output power and main features of the SPIRIT1.

It also contains **SPIRIT1 firmware libraries** for **STM32L** and **STM8L** to allow development of SPIRIT1 applications. In addition, it contains a **Wireless M-BUS library** with documentation and example applications to allow development of Wireless M-BUS application based on the SPIRIT1.

SPIRIT1 DevKit

### • SPIRIT1 Low Level API

• This firmware provides a set of APIs to manage the Spirit device using the Spirit Development Kit Eval motherboard and a Virtual Com port driver.

# Introduction

STM release the complete SPIRIT1 API for STM32L and STM8L MCU families.



For get a complete, DOC, EXAMPLEs, etc, for the <u>SPIRIT1</u> you must install the **SDK** that is <u>here</u>, the name is: **STSW-CONNECT009 Setup for SPIRIT1 design kit**. See below.

Sample & Buy		To	p
Part Number 🔺	Version	Marketing Status	Order From ST
STSW-CONNECT009	2.0.0	Active	Download

After the installation you must see on your PC (Windows 7) something like below:

Computer	😋 🔵 マ 🐌 ト Computer ト OS (C:) ト Program Files (x86) ト STMicroelectronics ト SPIRIT1 DK_2.0.0 ト						
Organize 🔻 Include in I	Organize 🔻 Include in library 👻 Share with 👻 Burn New folder						
🔆 Favorites	Name	Date modified	Туре	Size			
🧮 Desktop	Documents	08/05/2015 16:52	File folder				
😻 Dropbox	🐌 Driver	08/05/2015 16:52	File folder				
🖳 Recent Places	🌗 Firmware	08/05/2015 16:52	File folder				
🗼 Downloads	🐌 gui	08/05/2015 16:52	File folder				
🕌 Box Sync	unins000.dat	08/05/2015 16:52	DAT File	86 KB			
	🔀 unins000.exe	08/05/2015 16:51	Application	702 KB			
🧊 Libraries	WirelessMBus_Application.exe	23/02/2015 15:56	Application	30.177 KB			
December 1							

And on the desktop you must see an icon like below:



### ATTENTION:

Up to now (May 2015) the <u>SW is not compatible</u> with the new <u>CUBE</u> libraries.

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# **Documentation folder**

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🔆 Favorites	Name	* · _	Date modified	Туре		
🧮 Desktop	📗 Documents 🗨		08/05/2015 16:52	File folder		
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Computer ►	Computer → OS (C:) → Program Files (x86) → STMicroelectronics → SPIRIT1 DK_2.0.0 → Documents →					

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🔆 Favorites	Name	Date modified	Туре	
🧮 Desktop	Firmware_Docs	08/05/2015 16:52	File folder	
😻 Dropbox	SPIRIT1	08/05/2015 16:52	File folder	
🔚 Recent Places	Wireless_MBUS	08/05/2015 16:52	File folder	
🗼 Downloads	🔊 index.html	23/02/2015 15:56	HTML Document	
🕌 Box Sync				

In the **DOCUMENTS** folder there are this subfolders:

• Firmware\_Docs – that contain the manuals regarding:

- SPIRIT1-DK\_DFU\_Bootloader
- SPIRIT1-Library
- Wireless\_MBUS\_Library
- **SPIRIT1** that contain:
  - Data sheet
  - USER MANUAL of the API
  - A doc of the evaluation boards
  - Application notes

Please, find on <u>www.st.com</u> the last release of the doc above

• Wireless\_MBUS – that contain some doc regarding WMBUS

Also there is the file **index.html** that is the index of all the contents of the documents folder and related subfolders.

# **Drivers folder**

Organize ▼ Include in library ▼ Share with ▼ Burn New folder						
	Name	Date modified	Туре			
Desktop	Documents	08/05/2015 16:52	File folder			
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🕌 Box Sync	unins000.dat	08/05/2015 16:52	DAT File			
	🔀 unins000.exe	08/05/2015 16:51	Application			
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Computer 🕨	OS (C:)  Program Files (x86)  STM	icroelectronics    SPIRIT1 DK_2.0	.0 🕨 Driver 🕨			
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ktop 📃 Desktop	🐌 DfuSe	08/05/2015 16:52	File folder			
😌 Dropbox	STEVAL-IKR0001Vx_SPIRIT_Platfor	m 08/05/2015 16:52	File folder			
📳 Recent Places						

In the **Driver** folder there are this subfolders:

- DfuSe <u>USB device firmware upgrade</u> STMicroelectronics extension: contains the demo GUI, debugging GUI, all sources files and the protocol layer (<u>UM0412</u>)
- STEVAL-IKR0001Vx\_SPIRIT\_Platform Contain the SW utility for SPIRIT1 GUI

# GUI & GUI folder

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🔆 Favorites	Name	Date modified	Туре			
📃 Desktop	🐌 Documents	08/05/2015 16:52	File folder			
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🖳 Recent Places	\mu Firmware	08/05/2015 16:52	File folder			
〕 Downloads		08/05/2015 16:52	File folder			
🍋 Box Sync	unins000.dat	08/05/2015 16:52	DAT File			
	🗊 unins000.exe	08/05/2015 16:51	Application			
🥃 Libraries	🔄 WirelessMBus_Applicatio 🛛 e	23/02/2015 15:56	Application			
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🧮 Desktop	鷆 qt4_plugins	08/05/2015 16:52	File folder			
😌 Dropbox	Spirit_GUI_Configuration	08/05/2015 16:52	File folder			
🖳 Recent Places		23/02/2015 15:56	PYD File			
🚺 Downloads	_hashlib.pyd	23/02/2015 15:56	PYD File			
🔑 Box Sync	socket.pyd		D:			

The **GUI** folder contain the GUI for use the SPIRIT1 demo SW.

For details about the way to use the GUI see the UM1657 manual section 3 (see here).

#### **ATTENTION:**

For use the GUI on the SPIRIT1 KIT (EvaBoard) must be loaded the:

## SPIRIT1\_CLI.hex

that is here:

C:\Program Files (x86)\STMicroelectronics\SPIRIT1 DK\_2.0.0\Firmware\Binary
It is necessary use the <u>ST-LINK-v2</u> + <u>ST-LINK-Utility</u> and **load the SW at the address**:
0x08003000

see below.

\_\_\_\_\_

STM32 ST_LIN	K Utility							
Eilo Edit View	Target CT 1	NK Externall	oodor Holm					
rite colt view larget St-Link External Loader nep								
🔚 🗖 👾	V 🖓 🥋	swv						
Memory display							Device Information	
Address: 0x08	8003000 - Size	e 0xC280	Data Widt	h: 32 hits 📼		Device	STM32L100x8/L15xx8	
riddressr oxoc		0,0200	bata mat	02010		Device ID	0x416	
Device Memory @	0x08003000 :		hev			Revision ID	Rev V	
Target memory, Ad	dress range: [0x0	8003000 0x0800	=2801			Fidsri size	IZONDYTES	
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0x08003000	20003918	0800ED31	0800ED41	0800ED43	.9. 1í	AíCí		
0x08003010	0800ED45	0800ED47	0800ED49	00000000	EíGi	Ií		
0x08003020	00000000	00000000	0000000	0800ED6D		mí		
0x08003030	0800ED4B	0000000	0800ED75	0800ED79	Kí	uíyí		
0x08003040	0800ED7D	0800ED81	0800ED85	0800ED89	}íí.	í‰í		
0x08003050	0800ED8D	0800ED91	0800ED95	0800ED99	í'í.	.•í™í		
0x08003060	0800ED9D	0800EDA1	0800EDA5	0800EDA9	í <sub>i</sub> í.	.¥í©í		
0x08003070	0800EDAD	0800EDB1	0800EDB5	0800EDB9	- í ± í	μí¹í		
0x08003080	0800EDBD	0800EDC1	0800EDC5	0800EDC9	½ í Á	íÅíÉí		
•								P.
00:07:39 : Connec 00:07:39 : SWD Fr 00:07:39 : Connec 00:07:39 : Debug i 00:07:39 : Device 00:07:39 : Device 00:07:59 : Device	equency = 1,8 MH tion mode : Conne in Low Power mode ID:0x416 flash Size : 128KBy family :STM32L100	iz. ct Under Reset. e enabled. vtes ix8/L15xx8 d successfully						^
00:08:11 : Flash m 00:08:11 : Verifica	emory programme tionOK	d in 3s and 307m	s.					-
Debug in Low Powe	r mode enabled.		Device ID:0x41	16		ļc	ore State : Live Update Disable	d



If you use 1 PC with 2 SPIRIT1\_Kit (EvaBoard) at 868Mhz, I suggest the SetUp below.

## Click here to go on top

Run the SPIRIT1 DK (see below).

**Run twice instance of SPIRIT DK** because the need to use 1 PC and 2 SPIRIT1\_Kit (EvaBoard)



At the top of the main window, the user can **select the appropriate COM** from a drop down list of the COM port available.

COM11 -	Open
COM11	
COM15	

Select the COM and next select: OPEN

#### **ATTENTION:**

If you change some parameters on the red box below, at the end you must press: **Configure radio** 

SPIRIT1 DK - Application v2.0.0		
	Registers table	
	Address > 0x01	Register ANA_FUNC_CONF[0]
Radio setting Frequency base Data rate Frequency deviation Channel filter Test RF	▷ 0x02 ▷ 0x03 ▷ 0x04	GPIO3_CONF GPIO2_CONF
867.999931 MHz 38.433 kbps 19.836 kHz 102.115 kHz TX CW START	<ul> <li>0x04</li> <li>0x05</li> <li>0x06</li> </ul>	GPIO1_CONF GPIO0_CONF MCU_CK_CONF
Modulation Output power TX PN9 START	▷ 0x07▷ 0x08	IF_OFFSET_ANA SYNT3
2-GFSK1 V 0 dBm RADIO	▷ 0x09▷ 0x0A	SYNT2 SYNT1 SYNT0
Packet setting / Transmission Test / Low Level Command	▷ 0x0C ▷ 0x0D	CH_SPACE IF_OFFSET_DIG

On one SIRIT1\_Kit (in my case COM103) choose:

- Transmission Test
- RX
- Low power

	dana				Registers tab	ble		
(105 ·	Close			<<	Address	Register	Value	Default
					▷ 0x01	ANA_FUNC_CONF[0]	0xC0	0xC0
adio setting					▷ 0x02	GPIO3_CONF	0xA2	0xA2
	Data rata Ero	nuoneu deu	intion Channel Alter	Tect DE	▷ 0x03	GPIO2_CONF	0xA2	0xA2
equency base	Data fate fire	queriey de t	Charmer nite	100010	▷ 0x04	GPIO1_CONF	0xA2	0xA2
867.999931 MH	iz 38.433 kbps 1	19.836	kHz 102.115	kHz (Tructure Trant)	▷ 0x05	GPIO0_CONF	A0x0	Ox0A
				TX CW START	▷ 0x06	MCU_CK_CONF	0x00	0x00
	Output power			TH PHO START	▷ 0x07	IF_OFFSET_ANA	0x36	0xA3
Modulation	Norm	al 🔻	CONETCUP	TX PN9 START	▷ 0x08	SYNT3	0x26	0x0C
2-GFSK1 -	0 🤤 dBm 🔄		RADIO		▷ 0x09	SYNT2	0x82	0x84
	M.	AX power			Þ 0x0A	SYNT1	0x7F	0xEC
					▷ 0x0B	SYNTO	0x71	0x51
ket setting 🔪 Tra	ansmission Test 🔰 Low Level	Command	)		▷ 0x0C	CH_SPACE	0x01	0xFC
					▷ 0x0D	IF_OFFSET_DIG	0xAC	0xA3
х тх			Tota	10	▷ 0x10	PA_POWER[8]	0x17	0x03
			pad	ets 10 💌	▷ 0x11	PA_POWER[7]	0x0E	0x0E
Test indicator			Ref	500 Am	▷ 0x12	PA_POWER[6]	0x1A	0x1A
Packet received	Packet discarded PER [%]	RSSI [dBn	] time	300 🗸 🖬	▷ 0x13	PA_POWER[5]	0x25	0x25
10		20.5	Sense	HEX  ASCTI	▷ 0x14	PA_POWER[4]	0x35	0x35
10	0.0	-29.5	RSSI		▷ 0x15	PA_POWER[3]	0x40	0x40
		_			P 0x16	PA_POWER[2]	0x4E	0x4E
X timeout 100	🗘 ms RSSI -130 🗘	Pay	load 18 🗘		P 0x17	PA_POWER[1]	0000	00x00
	threshold [dBm]	len	th bytes	.OW START	0x18	PA_POWER[0]	0x07	0x07
				oower	D OXIA	MODI	0.95	0x85
formation about t	he test				D OX16	MOD0	UXIA Ov45	0x07
There also	1-d-	DCCI	Data Databased		D OXIC	CHEIT	0,45	0x45
time stamp	Into	KSSI	Data Received		D OXID	AEC2	0,15	0x25
00:18:57.60	Packet received (18 bytes)	-30.0	STMicroelectronics		D 0x12	AFC2	0xC8	0x00
00:18:58.10	Packet received (18 bytes)	-29.5	STMicroelectronics		D 0x22	PSSI TH	0x24	0x24
00:18:58.60	Packet received (18 bytes)	-29.5	STMicroelectronics		D 0x23	CLOCKPEC	0x58	0x58
00:18:59.10	Packet received (18 bytes)	-29.5	STMicroelectronics	Ξ.	≥ 0x26	AGCCTRIO	0x84	0x84
00-19-59-60	Packet received (19 buter)	20.5	STMicroelectropics		▷ 0x30	PCKTCTR14	0x00	0x00
00.10.39.00	Packet received (10 bytes)	-23.3	Similardelectronics		▷ 0x31	PCKTCTRI3	0x07	0x00
00:19:00.10	Packet received (16 bytes)	-29.5	Simicroelectronics	-	▷ 0x32	PCKTCTRL2	0x3F	0x1E
0 00:19:00.60	Packet received (18 bytes)	-29.5	STMicroelectronics		▷ 0x33	PCKTCTRL1	0x30	0x20
				P	1.0.04	DOUTH CAM	0-00	0.00
(					P 0X34	PCKILENI	0,00	UXUU

On the other SIRIT1\_Kit (in my case COM104) choose: • Transmission Test

- TΧ ٠
- Low power •

104 Close	<			
	Address	Register	Value	Default
	▷ 0x01	ANA_FUNC_CONF[0]	0xC0	0xC0
io setting	▷ 0x02	GPIO3_CONF	0xA2	0xA2
quency base Data rate Frequency deviation Channel filter Test RF	> 0x03	GPIO2_CONF	UXA2	0xA2
19.836 up 102.115 up	0x04	GPIOI_CONF	0xA2	0xA2
107.999912 MHZ COLOGO KDPS KHZ KHZ KHZ TX CW START	> 0x05	MCILICK CONF	0,00	0,00
	≥ 0x07	IF OFFSET ANA	0x36	0xA3
Indulation Output power Normal TX PN9 START	▷ 0x08	SYNT3	0x26	0x0C
2-GFSK1 V 0 dBm CONFIGURE	▷ 0x09	SYNT2	0x82	0x84
MAX power	⊳ 0x0A	SYNT1	0x82	0xEC
	⊳ 0x0B	SYNTO	0x29	0x51
et setting \ Transmission Test / Low Level Command \	▷ 0x0C	CH_SPACE	0x01	0xFC
	> 0x0D	IF_OFFSET_DIG	0xAC	0xA3
Total 10 🗘	0x10	PA_POWER[8]	UX17	0x05
Data	> 0x12	PA_POWER[/]	0x14	0x1.6
Packet 6 661 mc timer 500 ms	> 0x13	PA POWERISI	0x25	0x25
Payload duration duration	▷ 0x14	PA POWER[4]	0x35	0x35
ength 18 🕏 bytes Random 🔿 HEX 💿 ASCII	▷ 0x15	PA_POWER[3]	0x40	0x40
	▷ 0x16	PA_POWER[2]	0x4E	0x4E
STMicroelectronics	▷ 0x17	PA_POWER[1]	0x00	0x00
LOW	▷ 0x18	PA_POWER[0]	0x07	0x07
power	> 0x1A	MOD1	0x93	0x83
ormation about the test	D 0x16	EDEVO	OVIE	0x07
Time stamp Info	> 0x1D	CHEIT	0x13	0x23
00-19-57 59 Design sent	▷ 0x1E	AFC2	0xC8	0xc8
00:18:57:58 Packet sent	▷ 0x21	RSSI_FLT	0xE3	0xE3
UU:10:D0.10 Packet sent	▷ 0x22	RSSI_TH	0x24	0x24
00:18:58.60 Packet sent	▷ 0x23	CLOCKREC	0x58	0x58
00:18:59.10 Packet sent	▷ 0x26	AGCCTRL0	0x8A	0x8A
00:18:59.60 Packet sent	▷ 0x30	PCKICTRL4	0x00	0x00
00:19:00.10 Packet sent	P 0x31	PCKICIRES	0x07	0x00
00:19:00.60 Packet sent	D 0x33	PCNICIRL2 DCVTCTD11	0x30	0x1E
h	> 0x34	PCKTI EN1	0,00	0x00
V Automatic scrolling	▷ 0x35	PCKTLENO	0x14	0x14

Now if you press, on both the GUI, the **START** button, you must see the result of the test. See above the box named: Information about the test

Click here to go on top

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# **Firmware folder**

Organize ▼ Include in library ▼ Share with ▼ Burn New folder							
☆ Favorites	Name	Date modified	Туре				
🧮 Desktop	퉬 Documents	08/05/2015 16:52	2 File folder				
💱 Dropbox	Driver	08/05/2015 16:52	2 File folder				
🕮 Recent Places	J Firmware	08/05/2015 16:52	2 File folder				
〕 Downloads	📙 GUI	08/05/2015 16:52	2 File folder				
隆 Box Sync	unins000.dat	08/05/2015 16:52	2 DAT File				
	🔂 unins000.exe	08/05/2015 16:51	1 Application				
潯 Libraries	WirelessMBus_Application.exe	23/02/2015 15:50	5 Application				
	$\bigvee$						
Computer +	OS (C:)  Program Files (x86)  STMicroelect	tronics + SPIRIT1 DK_2.0	.0 🕨 Firmware 🕨				
Organize 🔻 Include in libr	rary ▼ Share with ▼ Burn New fold	der					
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🧮 Desktop	퉬 Binary	08/05/2015 16:52	File folder				
😌 Dropbox	SPIRIT1_Library_Project	08/05/2015 16:52	File folder				
🔚 Recent Places	January STM8L	08/05/2015 16:52	File folder				
bownloads	J STM32L	08/05/2015 16:52	File folder				
Box Sync							

In the Firmware folder there are this subfolders:

- **Binary** This folder contain a ready to use FW for SPIRIT1 demo board. See below
  - sniffer.hex
  - SPIRIT1\_CLI.hex
  - SPIRIT1\_DK-DFU\_Bootloader.hex
  - SPIRIT1-wmbus\_vcom-meter-169.hex
  - SPIRIT1-wmbus\_vcom-meter-868.hex
  - SPIRIT1-wmbus-gui-169.hex
  - SPIRIT1-wmbus-gui-868.hex

• **SPIRIT1\_Library\_Project** – This folder contain examples for SPIRIT1 ready to use for **IAR** compiler.



 Explain in details all folders is too long, so I prefer to highlight some important folders.

NOTE: For using the examples present in the SPIRIT\_Library\_Project folder is necessary copy the entire folder in a new position, for example in <u>C:\</u>
 In the folder:

C:\Program Files (x86)\STMicroelectronics\SPIRIT1
 DK 2.0.0\Eirmutero\SPIRIT4\_Library\_Project\Applie

*DK\_2.0.0\Firmware\SPIRIT1\_Library\_Project\Application\examples* there are a loot of examples, see below.

Computer +	OS (C) Program Files (x	36) • STMicroelectronics • SPIR	T1 DK 2.0.0 Firmware	•	Search Eirmware				
Organize 🔻 📜 Open	Include in library - Shi	are with 🔻 Burn New fold	ler		8≣ ▼ [				
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😋 🔍 🗢 🕌 « OS (C:) 1	<ul> <li>Program Files (x86)</li> </ul>	/licroelectronics ► SPIRIT1 DK_2.0.	0 ▶ Firmware ▶ SPIRIT:	1_Library_Project →					
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Dronboy	Application     Documents	🔾 🔾 🗢 📕 « Program File	s (x86) 🕨 STMicroelectro	nics + SPIRIT1 DK_2.0.0	<ul> <li>Firmware &gt; SPIRIT1_Library_Project</li> </ul>	<ul> <li>Application</li> </ul>	c		
Secent Places	EWARM		<b>CI</b>	D N (1)					
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Box Sync	SDK Eval Util	🔶 Favorites	Name		Date modified Type	Size			
	SPIRIT1 Library	E Desktop	examples		08/05/2015 16:52 File folder				
🔚 Libraries	WHATSNEW.txt	😌 Dropbox	in runtime		08/05/2015 16:52 File folder				
		🔚 Recent Places	SDK_Common.h		23/02/2015 15:56 H File				
SPIRIT1_Library_Pr	roject Date modified: 08/05/.	🚺 Downloads	SDK_Configuratio	n_Common.h	23/02/2015 15:56 H File	•			
File folder		No Sync	STM8L_Common	.h	23/02/2015 15:56 H File	V			
~			stm8l15x_conf.h			-			
		🕽 Libraries	stm8l15x_it.c						
		Documents	stm8l15x_it.h	🔾 🗢 🖉 🖉 🖉 STN	ficroelectronics + SPIRIT1 DK_2.0.0 +	Firmware +	SPIRIT1_Library_Project +	Application + exi	amples
		🌙 Music	stm32l1xx_conf.h						
		Pictures	🛃 stm32l1xx_it.c	Organize 🔻 Incli	ide in library   Share with	Burn Ne	ew folder		
		😽 Videos	stm32l1xx_it.h	👉 Favorites	Name		Date modified	Туре	
				Desktop	BasicGeneric		08/05/2015 16:52	File folder	
				Cronbox			08/05/2015 16:52	File folder	
				Recent Places	EncryptionGeneric		08/05/2015 16:52	File folder	
				Downloads	FifoHandler		08/05/2015 16:52	File folder	
				Box Sync	LdcrGeneric		08/05/2015 16:52	File folder	
					PingPong		08/05/2015 16:52	File folder	
				📜 Libraries	Spiff		08/05/2015 16:52	File folder	
				Documents	STackGeneric		08/05/2015 16:52	File folder	
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					JUSCICLID		00/03/2013 10.32	inc ioluel	

The examples are ready for compile for **STM8L** and **STM32L**. For see how to use the **BasicGeneric** example see my explanation: How to use the example A/B (simple Tx/Rx example) using the SPIRIT1\_SDK\_ver2.0 and IAR 32KFree



After this you must see something like below.

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In the red box there are all the examples ready to use on **SPIRIT1 evaboards**. Of course, you must include a single example at a time. For see how to include or exclude an example <u>see this tutorial</u> at <u>pg.4</u> (*Select (include) and deselect (exclude) the file from IAR project*)

- **EWSTM8L** This folder is similar to the EWRAM but for **STM8L**
- **SDK\_Eval\_Util** This folder contain src files and inc files for SPIRIT1 evaboard
- SPIRIT1\_Library This folder contain src files and inc files for SPIRIT1
- WHATSNEW.txt This file explain the main changes of the last SPIRIT1 library
- STM8L Contain the SDK, Library and WMBUS files for STM8L



• STM32L – Contain the DFU, SDK, Library, WMBUS, etc files for STM32L



# RN0095 - SPIRIT1 development kit (or EvaBoard)

The RN0095 lists the changes, new features, and recent corrections in release 2.0.0 of the SPIRIT1 development kit. This release note also provides information on the hardware and microcontrollers supported by the current kit and it gives the known problems and limitations. Finally, this document traces the updates made to each previous release of the SPIRIT 1 development kit.

The **RN0095** is in the folder:

- C:\Program Files (x86)\STMicroelectronics\SPIRIT1
  - DK\_2.0.0\Documents\SPIRIT1\DevKit

and is named: DM00147497, see below the red arrow.





# UM1657 - User manual

UM1657 is SPIRIT1 development kit graphical user interface (SPIRIT1 DK - **GUI**) which allows checking the SPIRIT1 main performance and easily measure parameters such as sensitivity, output power and main features of the SPIRIT1.

It also contains **SPIRIT1 firmware libraries** for **STM32L** and **STM8L** to allow development of SPIRIT1 applications.

In addition, it contains a **Wireless M-BUS library** with documentation and example applications to allow development of Wireless M-BUS application based on the SPIRIT1.

UM1657 is in the folder:

 C:\Program Files (x86)\STMicroelectronics\SPIRIT1 DK\_2.0.0\Documents\SPIRIT1\DevKit see below the red arrow.



# SPIRIT1 DevKit

In the folder:

- C:\Program Files (x86)\STMicroelectronics\SPIRIT1
  - DK\_2.0.0\Documents\SPIRIT1\DevKit

there are the complete doc regarding the SPIRIT1 development kit.

For the last release of this kit go <u>here</u> and select **ALL**, see below.

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SPIRIT1 • Active	Low data ra	te, low power \$	Sub 1GHz tr	ransceiver				

Scroll the page down until the section: **Related Tools and Software** here there are the last doc of evaboards and SW, see below.

Related Tools and Software	
Related Tools and Softwa	ire
Part Number	Description
STEVAL-IKR001V2	SPIRIT1 - Low Data Rate Transceiver - 315 MHz - FULL KIT
STEVAL-IKR002V4B	SPIRIT1 - low data rate transceiver - 868 MHz - DAUGHTER BOARD - integrated balun
STEVAL-IKR002V7D	SPIRIT1 - Low Data Rate Transceiver - 169 MHz - DAUGHTER BOARD - range extender
STEVAL-IKR002V5D	SPIRIT1 - Low Data Rate Transceiver - 915 MHz - DAUGHTER BOARD
STEVAL-IKR001V2D	SPIRIT1 - Low Data Rate Transceiver - 315 MHz - DAUGHTER BOARD
STEVAL-IKR002V4D	SPIRIT1 - Low Data Rate Transceiver - 868 MHz - DAUGHTER BOARD
STEVAL-IKR002V3D	SPIRIT1 - Low Data Rate Transceiver - 433 MHz - DAUGHTER BOARD
STEVAL-IKR002V2D	SPIRIT1 - Low Data Rate Transceiver - 315 MHz - DAUGHTER BOARD
STEVAL-IKR002V1D	SPIRIT1 - Low Data Rate Transceiver - 169 MHz - DAUGHTER BOARD
100001/5	915 MHz - FULL KIT

# SPIRIT1 Low Level API

The SPIRIT1 Low Level API manual is in the folder:

- C:\Program Files (x86)\STMicroelectronics\SPIRIT1
- DK\_2.0.0\Documents\SPIRIT1\Firmware\_Library

This firmware provides a set of APIs to manage the Spirit device using the Spirit Development Kit Eval motherboard and a Virtual Com port driver.

This document provides a description of Spirit Low Level APIs from a general point of view and a more detailed view of the Spirit1\_Libraries.

To have more details the user should consult the **doxygen** documentation available in the **.chm** file, see in the folders below:

- C:\Program Files (x86)\STMicroelectronics\SPIRIT1 DK\_2.0.0\Documents\Firmware\_Docs
- C:\Program Files (x86)\STMicroelectronics\SPIRIT1
   DK\_2.0.0\Documents\SPIRIT1\Firmware\_Library
- C:\Program Files (x86)\STMicroelectronics\SPIRIT1 DK\_2.0.0\Firmware\SPIRIT1\_Library\_Project\Documents