

# **Test Procedure for the SIGFOX-GEVB Evaluation Board**

## Step 1:

Connect the ON Semiconductor Sigfox shield on top of a ON Semiconductor Base Board.







## Step 2:

Follow instruction to get the Sigfox example Software loaded in the IDE:

C/C++ - Smart_Window_Shutter_with_Cloud/main.cpp - IDK			to application under the read that
File Edit Source Refactor Navigate Search Project Examples Ru	n Window	Help	
📑 👻 🔚 👘 🛛 🛪 🔨 🕶 📆 💷 💷 🔯 👔 Simple	+	LED (IOXP_LED)	월 ▼ 禄 ▼ ⇐ ← ▼ → ▼
Complex	۱.	Button (IOXP_BTN)	
Project Explorer 💥 🗠 C/C++ Projects	Le III	Touch Proximity (LC717A00_Touch)	
AMIS30543D_Stpr	92	Ambient Light (NOA1305_ALS)	e project, then it is recommended to
AX8052F143_SFX AX8052F143_WMBUS	94	PIR (NCS36000_PIR)	Cin causy seasons to run and get
> 🖉 CAN	95	IO Expander (PCA9655E_IOEXP)	
E Carriots_POST	97	Led Ballast (NCV78763_LED)	
EROD_Receive	98	Stepper (AMIS30543D_Stpr)	
EROD_Send	100	WIFI (WizFi250Interface)	
DXP_LED XCV78763 LED	101	EEPROM (CAT25M02_EEPROM)	
> 😂 NOA1305_ALS	102	LCD (NHD_C0216CZ_Lcd)	
POE_controlled_LED_Lightining	104	Carriots Cloud	87cf4d19f6757b68f4092d0bff45ef826a0e5
Room_Occupancy_Detection	105	Sigfox +	Sigfox (AX8052F143_SFX)
Sigfox_Glucose_Monitor     Sigfox_HRM	107	THREAD •	Local Loop +
Smart_Light_with_Cloud	108 109	Enocean (AX8052F143_EN)	J - (( cigne_incensity , ), ( Motor_
▲ Smart_Window_Shutter_with_Cloud	110	BLDC (LV8907)	or each stop.
Binaries	111	POE (WizFi5100Interface)	dow closed state &
Includes	113	HRM (CBA9)	g[MAX_WINDOW_POSITIONS] = {
b le header.h	114	STRUIX (ULPMC10)	},
main.cpp	116	CAN	
▶ 庙 Shields.h	117	WMBUS	
Config.cfg	118	RFID	
ا Makefile	120		_



#### Step 3:

The firmware should include the read\_out for PAC and Device\_ID info readout. (PAC is a 16 digits Hexadecimal number; DEVICE ID is a 8 digits Hexadecimal Number)

## // GET PAC Info

wait(2);

```
sfx.getChipInfo(PAC, sfxBuff, USR_BUFFER_SIZE);
sprintf(dataBuf, "PAC = %s\r\n", sfxBuff);
lcd.displayString(dataBuf);
pc.printf("Sigfox PAC = %s\r\n", sfxBuff);
sfx.cleanBuffer(dataBuf, USR_BUFFER_SIZE);
sfx.cleanBuffer(sfxBuff, USR_BUFFER_SIZE);
wait(2);
// GET DEVICE_ID Info
sfx.getChipInfo(DEVICE_ID, sfxBuff, USR_BUFFER_SIZE);
sprintf(dataBuf, "DEVICE_ID = %s\r\n", sfxBuff);
lcd.displayString(dataBuf);
pc.printf("Sigfox DEVICE_ID = %s\r\n", sfxBuff);
sfx.cleanBuffer(dataBuf, USR_BUFFER_SIZE);
sfx.cleanBuffer(dataBuf, USR_BUFFER_SIZE);
sfx.cleanBuffer(sfxBuff, USR_BUFFER_SIZE);
```

Comment out the following transmission section as your account has not yet been activated:

```
75
       //Max number of messages that can be sent to sigfox cloud is 140
76
       //This limit of 140 messages is limited by sigfox protocol and not the application
77
       //the application or library
78 // while (count < MAX_SFX_TX)
79 //
           sprintf(dataBuf, "ONSemi %d", count);
80 //
           lcd.displayString(dataBuf);
81
82
           //param1: Const char data(max of 12 bytes), param2: downlink(1)/no downlink(0)
83
           //param3: buffer to contain downlink if expected, param4: size of downlink buffer
84
           //Max bytes to be sent is restricted by the AT command of sigfox firmware and not
85
           //the library/application
869 //
           sfx.sendFrame(dataBuf, 0, sfxBuff, USR BUFFER SIZE);
87
           count++;
           wait(2);
```



Flash the code to your device and enable it so that it will read out the codes: On LCD:





## (Alternatively) on Console:



2/15/2017



## Step 4 (Optional: Should have been completed by default):

Ask your ON Semiconductor marketing contact to get your device activated through Sigfox by providing your representative with the PAC and Device\_ID information.

#### Step 5:

Once activation confirmed by Sigfox (through ON Semiconductor Marketing) create and activate your Sigfox account.

https://backend.sigfox.com/activate/ON

Select country and your operator:

		The spinister was	and the second se	ew
(=)() W https://becksnil.aigfee.com/ect	t-attpCN	P-BC Date Staarm List Y Dev	Kit Activation ×	
a 🖸 French le T 🖨 Grente – Le T Valley 🖉	EFC European Research	🔿 fy?how-laT_IDK 🕲 laT IDK - All Decuments 🔀 image le	ersors World Pri 😢 Le guide d'achat des objet	"∰r ∰ • ∰ • ⊡ ∰r Page+ Safety+ Taols
M sigfox				Lost password
	Dev Kit Activation			
	Activate your Syloc subscription inclu	ded with your ON Semiconductor kit.		0
	Pick your countr	y Dev	ice information	Account details
	AUSTRALIA	E RELGION	COLOMBIA ECZECH REPUBLIC	12 OCHMARK
	thins tr		PHAXSI Simp	leCell IoTDenmark
	H FEILAHO	R BRANCE	GERMANN	E BELAND
	Connected Finlar	nd 🍸 sigfox	sigfo	
	. TTALY	CONTRAINING CONTRACT	M MERICO	THETHERE, ANDS

Enter Device ID and PAC info when prompted:

Dev Kit Activation		
Activate your Sigfox subscription included with your ON	I Semiconductor kit.	
Pick your country		Device information
	DEVICE ID (HEX)	
	PAC	

Complete registration information and submit.



A password creation link will be sent to you for next log on.

How to set you SIGFOX <bac Sent: Mon 9/26/2016 To: Bruno Damien</bac 	P <b>assword</b> end-noreply@ <mark>sigfox.</mark> com> :38 PM
	SIGFOX Des certarets à billion d'mants
	Hi , To set your password, click on the following link : https://backend.sigfox.com/auth/change-evk-password?id=e17-4d89-a97b- You will be asked to enter your new password. This link is valid until 2016-09-27 11:38:03 (GMT +00:00). After this period, you can
	get a new one by clicking on the "Lost password" link. Thanks, SIGFOX Team
	SIGFOX Cloud : http://backend.sigfox.com Web site : http://www.sigfox.com 31670 Labigs, FRANCE



#### Step 6:

Back to the Firmware and the IoT Kit:

In order to avoid consumption of your daily 140 message maximum (6 Messages per hour) Modify the code so that messages are only sent twice per reset of the board:

31	<pre>#include "mbed.h"</pre>	
32	<pre>#include "Shields.h"</pre>	
33		
34	<pre>#define USR_BUFFER_SIZE</pre>	128
35	<pre>#define SFX_RET_SUCCESS</pre>	0
36	<pre>#define DATA_BUFFER_SIZE</pre>	12
37	#define MAX_SFX_TX	2 // Note : the maximum Frame per days is 140 and the max Frame per hour is 6 .
38		

At the send frame section re-establish code section and modify the frame to be sent with "0011223344"



Flash it to the shield:





## Step 7:

Make your DIY <sup>1</sup>/<sub>4</sub> wave antenna: F= 867MHz => Lambda = 34cm

Cut a piece of electric wire with section similar to the SMA connector central hole.

Wire length is 9cm and remove 5mm of plastic envelope:

This antenna is only 1dB less efficient than of- the-shelf products so it should not affect the connection capability of the kit.







#### Step 8:

Reset the Board; Communication is started (2 loops)

## Step 9:

Log to the Sigfox Backend web site: https://backend.sigfox.com/welcome/news Using the credentials established in <u>step 5</u>. Go to DEVICE TAB and select your device:

Y sigfox	DEVICE	DEVICE TYPE	USER	GROUP							<b>&amp; A</b>	00
Sigfox - Reinvent radio communication	Device - List											
		Id State All		<b>v</b>			Average SNR	SdB (all)	50 dB			GV
						¢			<b>&gt;</b>	Ŵ	RESET	FILTER
	Count:2/2					page	1					0
			Average F	≀ssi Communication sta	itus Id 🖕	Last seen よ	Name 🛔	PAC Product certific	ate Protocol version			
			-120	.63	197399	2017-02-08 13:32:00	Device 00197399		V1			
			<b>111</b> -95.	22	19739A	2017-02-07 18:01:06	Device 0019739A		V1			
						page	1					

RSSI and SNR perf quasi identical to Commercial antenna show that your device has transmitted message to Sigfox infrastructure; Click on your device ID





## Select the MESSAGE tab:

y sigfox	DEVICE DEVICE TYPE USER GROUP					
INFORMATION	Device 19739A - Messages					
LOCATION						
MESSAGES	From date					
EVENTS	To date					
STATISTICS						
EVENT CONFIGURATION						
			page 1 😜	)		
		Time	Data / Decoding	Location	Link quality	Callbacks
		2017-02-08 13:44:59	4f4e53656d692039 ASCII: ONSemi 9	¢	attl	o
		2017-02-08 13:44:49	4f4e53656d692038 ASCII: ONSemi 8	¢	attl	0
		2017-02-08 13:44:39	4f4e53656d692037 ASCII: ONSemi 7	¢	attl	0
		2017-02-08 13:44:30	4f4e53656d692036 ASCII: ONSemi 6	¢	attl	O
		2017-02-08 13:44:20	4f4e53656d692035 ASCII: ONSemi 5	¢	attl	O
		2017-02-08 13:44:10	4f4e53656d692034 ASCII: ONSemi 4	¢	att	o
		2017-02-08 13:44:00	4f4e53656d692033 ASCII: ONSemi 3	¢	attl	o
		2017-02-08 13:43:50	4f4e53656d692032 ASCII: ONSemi 2	¢	attl	0
		2017-02-08 13:43:40	4f4e53656d692031 ASCII: ONSemi 1	¢	attl	o
			4f4e53656d692030	•		•

# **Step 10:**

View your message stored on SIGFOX Cloud:

							1	6	
		page 1				-		***.	
	Time	Data / Decoding	Location	Link quality	Callbacks	35.4	100		
2010	6-09-26 16:01:19	1234567890		att		15	1 8	an O	Dise
201	6-09-26 16:01:03	1234567890		att				調	
201	6-09-26 15:57:00	1234567890		all		10.00			- All
201	6-09-26 15:56:45	1234567890		all		19635			
201	6-09-26 15:55:15	1234567890		attl				Tre	-
201	6-09-26 15:54:59	1234567890		att			May Mad	2 Euro	
201	6-09-26 15:39:26	00112233ee		att		H	ng	2. LAIV	QQ
2014	6-09-26 15:39:11	0011223300		att		97	- Jane	177	300
2016	6-09-26 15:36:46	0011223344		all					RV 10-0
2010	6-09-26 15:36:30	0011223344		att					
2010	6-09-26 13:55:51	0011223344		att				1	
2016	6-09-26 13:55:40	0011223344		att				1	
2016	5-09-26 13:55:30	0011223344		all				1	
2016	5-09-26 13:55:19	0011223344		att				1	
	09-26 13 55:04	0011223344		all				1	

