

Designing cost-effective, compact and low-power LoRa and Sigfox nodes with Murata's Open MCU LPWAN Module

October 2017



Welcome



Thank you for joining this webinar presented by Adam Chidley, Senior Product Manager, Avnet Abacus and Mark Porter, Business Development Manager at Murata Europe.

- Brief introduction to Avnet Abacus and Murata
- 40 minute technical presentation
- 10 minute Q&A session

Avnet Abacus and Murata partnership

Avnet Abacus is part of Avnet, a leading global distributor of electronic components.

We specialise in interconnect, sensors, wireless, passive, power supplies and battery products.

Our extensive team of technical specialists offers design and solution support to engineers across Europe.

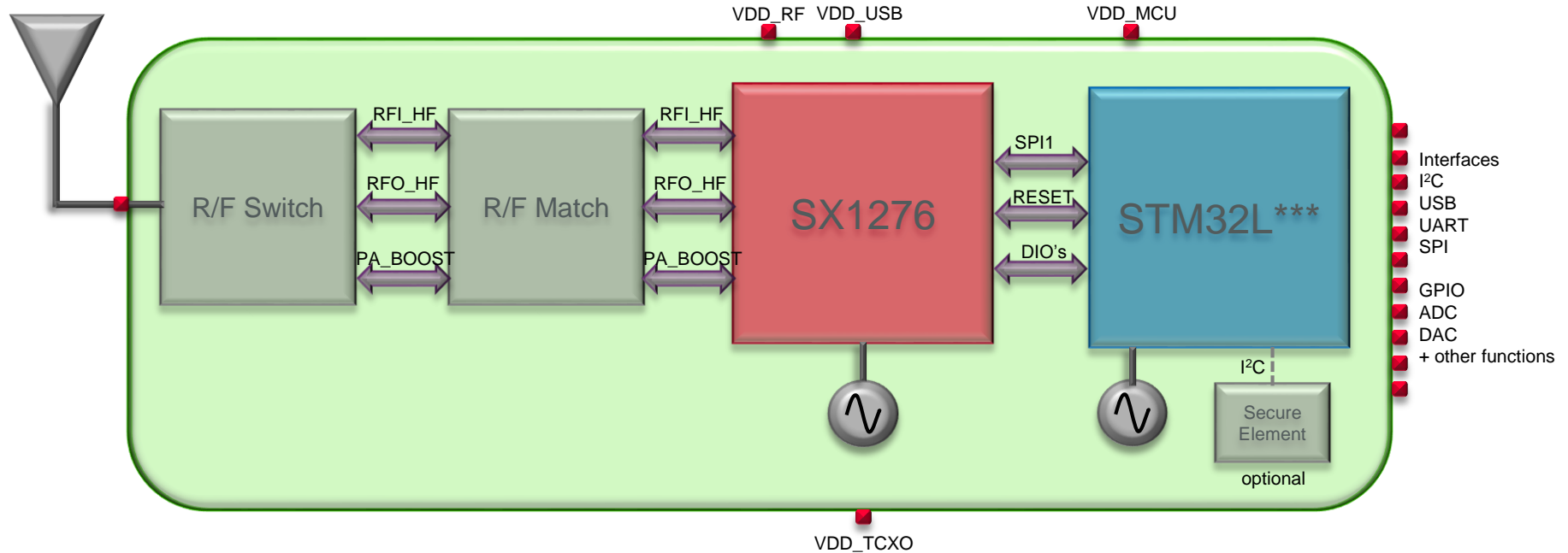
Murata is a global leader in the design, manufacture and supply of advanced electronic materials, leading edge electronic components, and multi-functional, high-density modules.

Murata innovations can be found in a wide range of applications from mobile phones to home appliances, and automotive applications to energy management systems and healthcare devices.

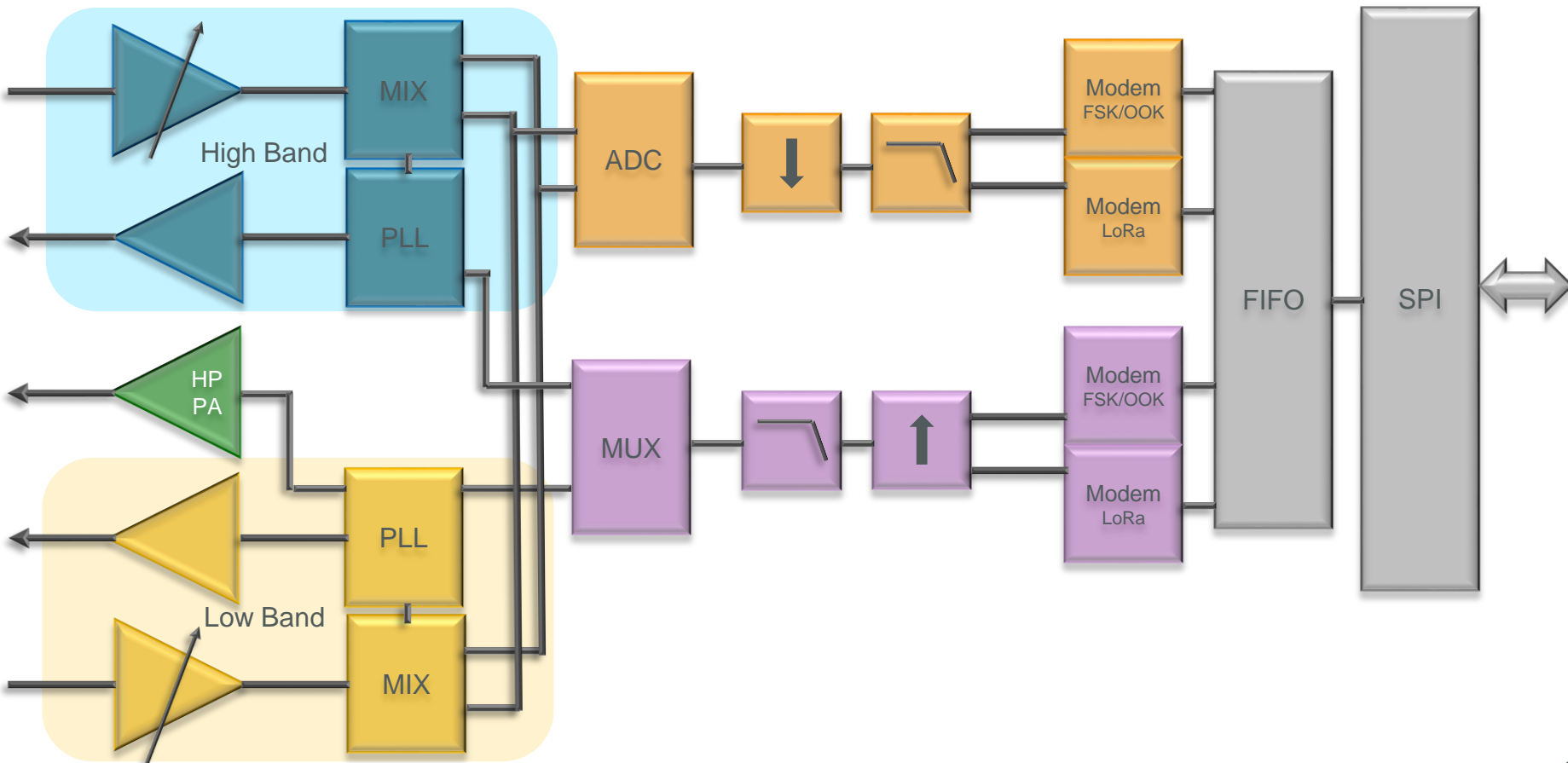
Together we bring you a portfolio of high-performing solutions and associated technologies that enable you to transform concepts into smart connected designs across a wide range of applications.

- Open MCU Module hardware
- What the Open MCU Module can do for you
- Getting started with LoRa
- What's coming next for LPWAN from Murata
- Getting started with Sigfox

Module hardware in detail



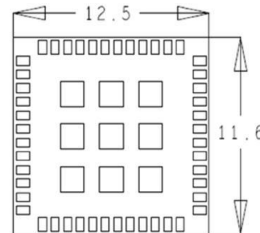
Semtech SX1276 architecture



Modules for LoRa[®]

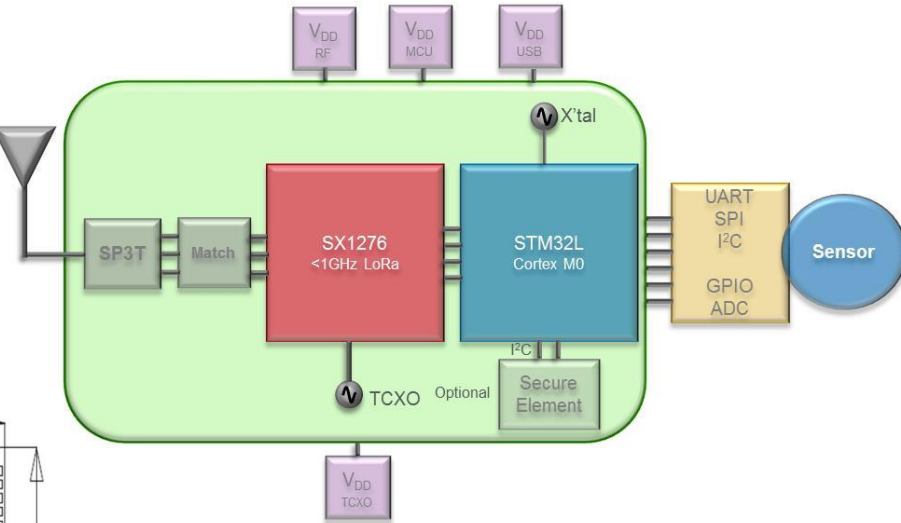
Features

- Radio Chip - Semtech SX1276
- MCU – STMicro STM32L (Cortex M0+)
 - Flash – 192Kbytes
- Dimension – 12.5 x 11.6 x 1.7 max mm
- Antenna configurations – external
- Host interfaces – UART/SPI/I²C
- Other interfaces – GPIO/ADC
- LGA (57 pads)
- RF Tx Power - +14dBm (+20dBm with PA boost)
- Vdd – 2.2V ~ 3.6V
- Operating Temperature Range – -40°C ~ +85°C
- Metal Shield Can
- FCC/IC certified and ETSI compliant
- LoRa Alliance™ Certified



Part Number

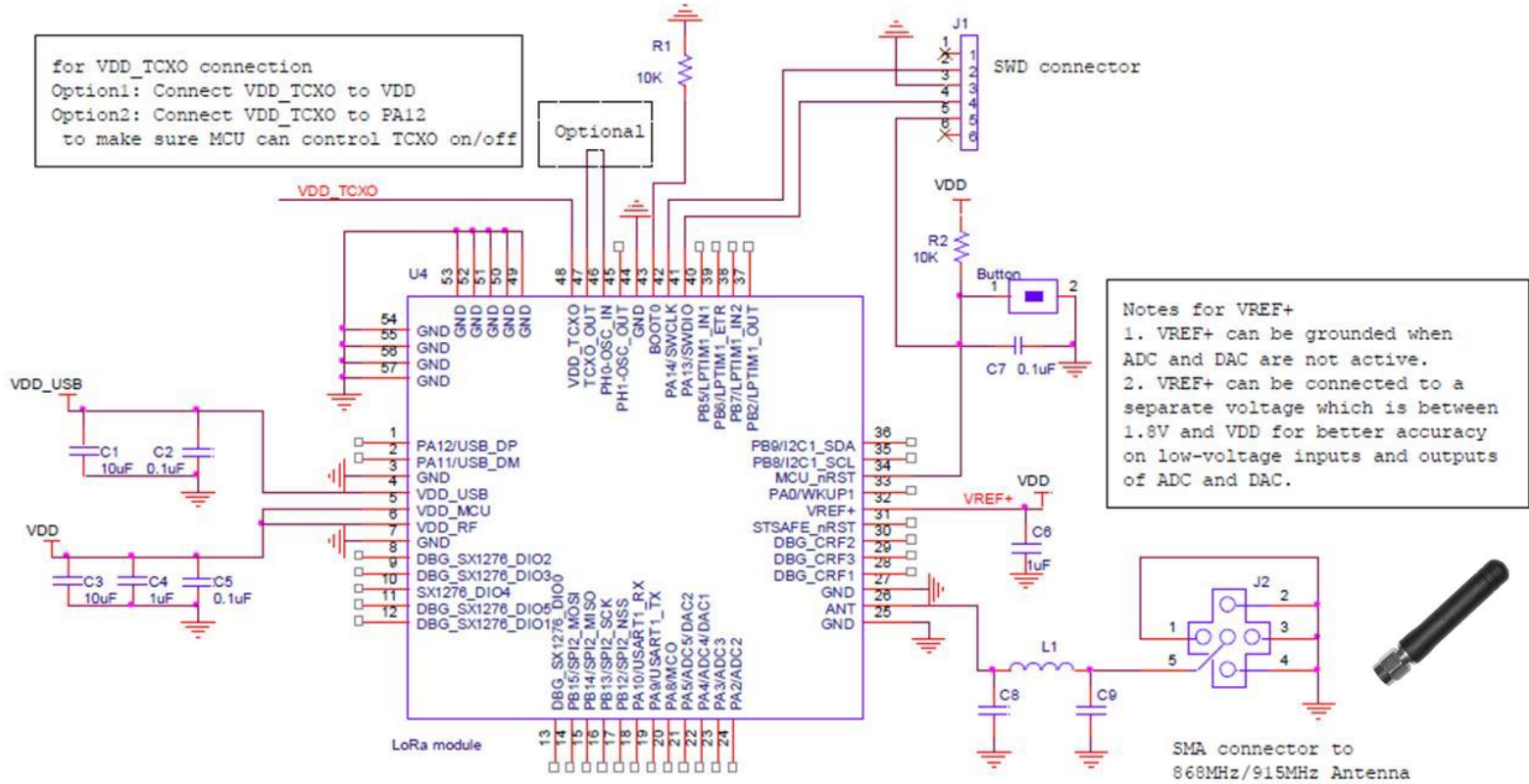
Modules : CMWX1ZZABZ-078
 Sample Modules : CMWX1ZZABZ-TEMP
 EVB : B-L072Z-LRWAN1 STMicro



WebLink

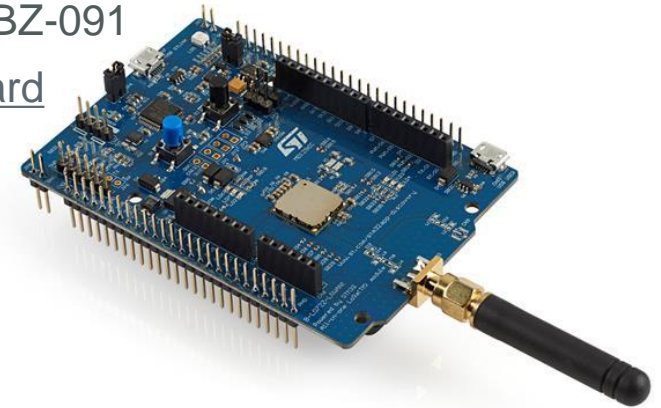
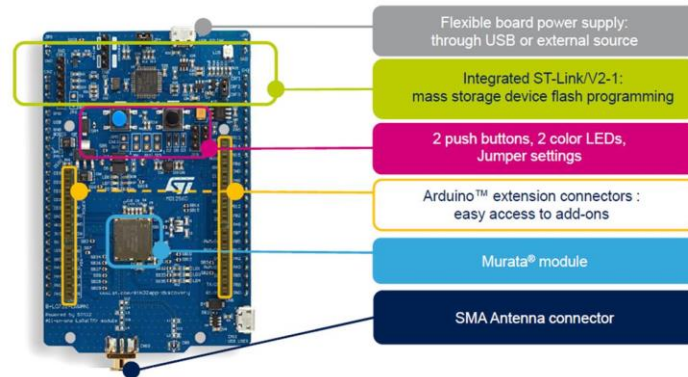


Module reference schematic



STMICRO discovery board

- STMICRO development tool – DISCOVERY Board
 - Developed for Open MCU Murata Module
 - ST-LINK/V2-1 embedded debug tool interface, LEDs, push-buttons, antenna, Arduino™ Uno V3 connectors and USB OTG connector in Micro-B format
 - Part Number B-L072Z-LRWAN1
 - Includes Murata LoRa® Module CMWX1ZZABZ-091
 - Supplied from STMICRO : LoRa Discovery Board

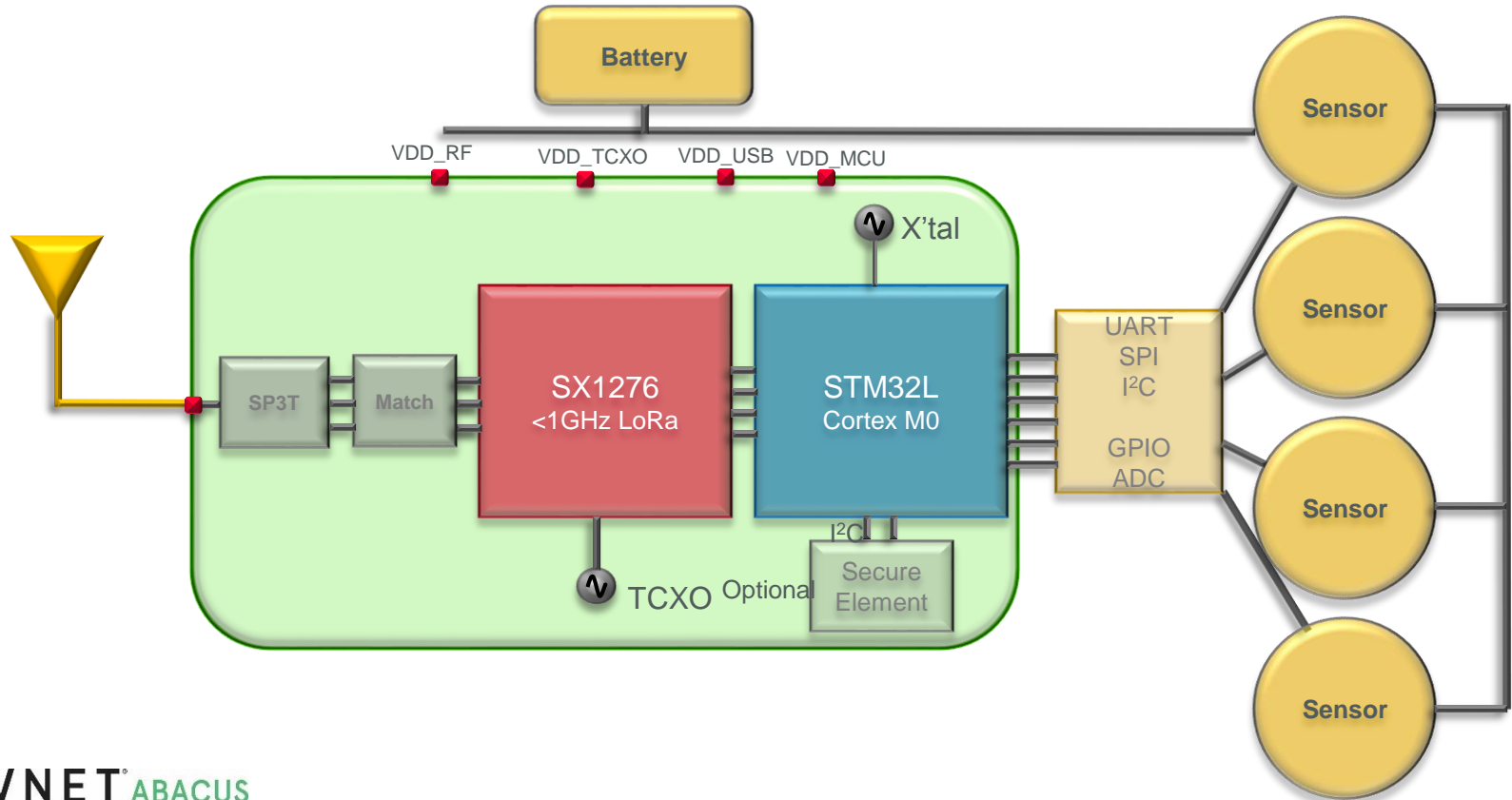


Source : STMICROelectronics

Open MCU Module

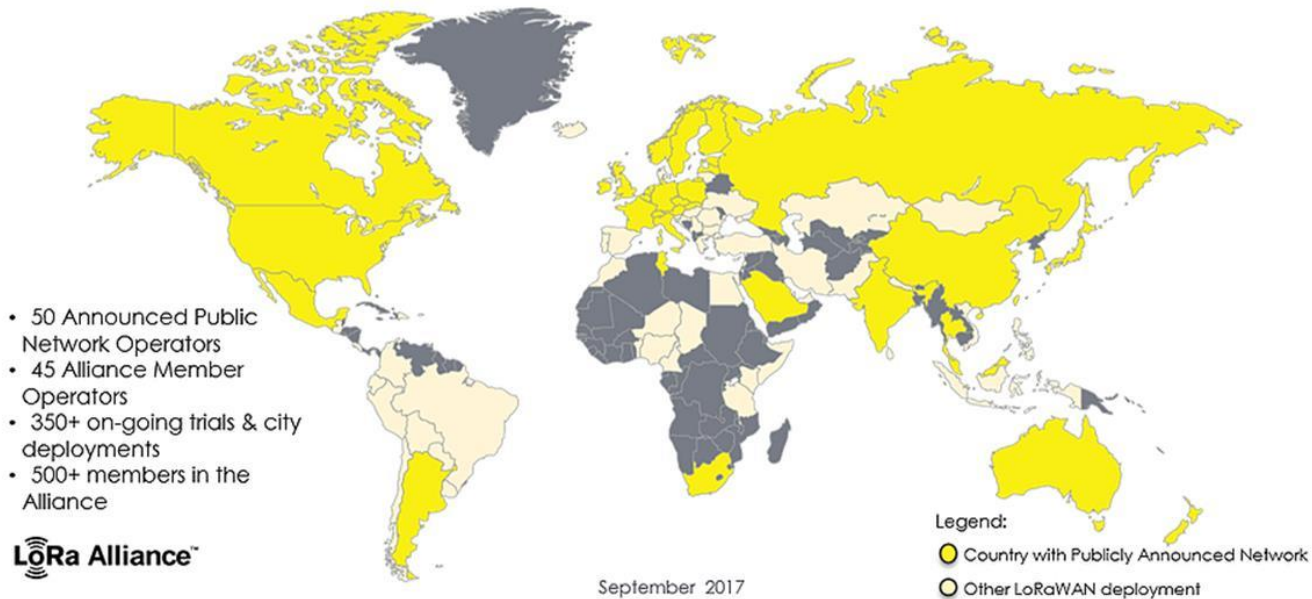
- Module is supplied “blank”
- Flash in MCU available to support Unique Identifier, Stack and Application
- Supporting EU / USA / APAC ISM bands (860~930MHz)
- Hardware supports LoRa protocol (with STMicro stack)
- Hardware will support Sigfox protocol (with planned STMicro stack)
- Hardware supports FSK/OOK Modulation
- Flexible for design and deployment

Sensor End Node for LoRa network



LoRa global coverage

Countries — LoRaWAN™ Networks



All information contained herein is current at time of publishing – LoRa Alliance is not responsible for the accuracy of information presented

Device activation for LoRa network

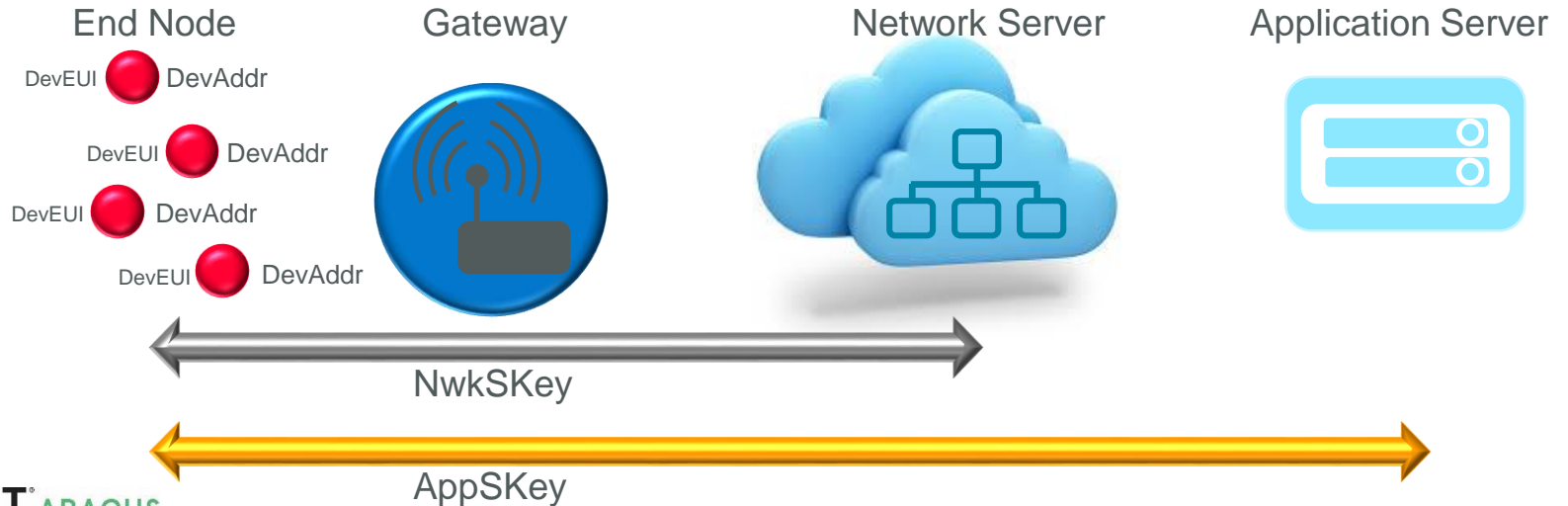


- Device Activation requires
 - Device Address (DevAddr)
 - Network Session Key (NwkSKey)
 - Application Session Key (AppSKey)
- Activation for the LoRa Network is done by either OTAA or ABP
 - Over The Air Activation
 - Activation By Personalisation



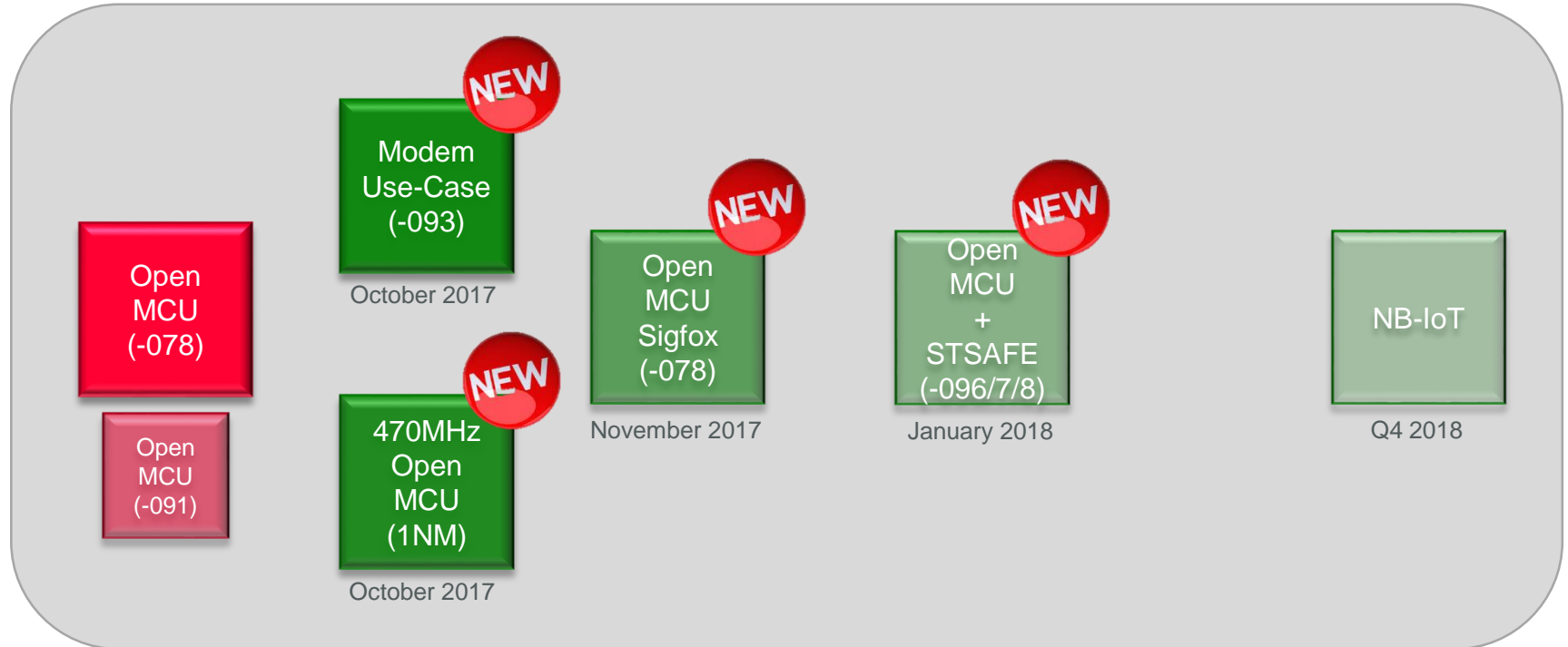
Security in LoRa Network

- Unique Identifier (DevEUI)
- Device Address (DevAddr)
- Network Session Key (NwkSKey)
- Application Session Key (AppSKey)

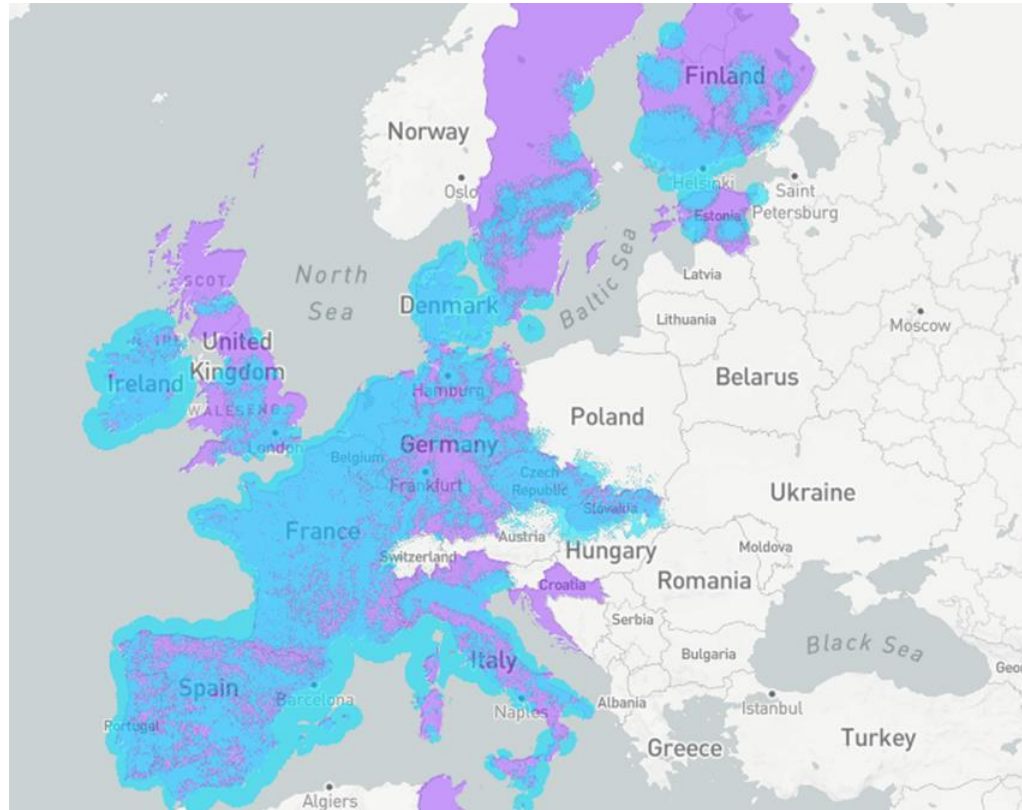


Murata LPWAN developments

Generic Part Number : CMWX1ZZABZ-xxx



Sigfox network coverage



Open MCU ABZ module for Sigfox

- Hardware same as for LoRa – open MCU Module
- STMicro supporting Stack as downloadable Firmware for Murata Module
 - Supports AT Commands
 - Will allow Application to be added to Module
- Murata will support authentication in development stages
 - Limited number of keys
 - Header file provided for network access
- Sigfox will provide network Token for development, register on portal
- In production customers get Token from Sigfox portal

Q&A and further resources



There will now be a 10-minute Q&A

Further resources

- View a recording of this webinar and download the slide deck
- Share the on-demand webinar with your colleagues
- Download the Murata IOT and MEMS brochures
- Find out more about key products and order samples
- Find out more about battery solutions for LPWAN applications
- Speak to one of our technical specialists in your local language