

**Semtech – RF solutions** 

2016-05-18



# LoRa<sup>™</sup> is a disruptive wireless long range technology delivering dramatic performance improvements for the AMI, M2M, IOT, mobile and consumer markets



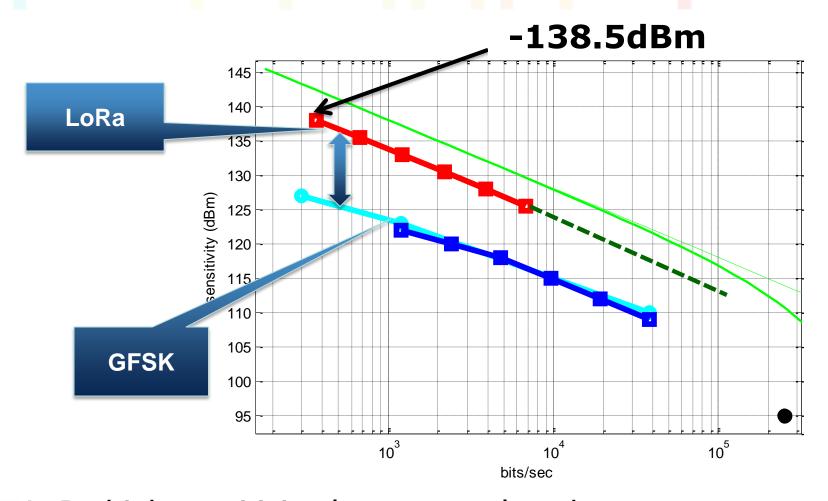




**10x** range improvement versus existing solutions

# LoRa - High Sensitivity





□ LoRa high sensitivity, long range, low data rates

□ FLoRa high sensitivity, high data rates

## SX1272/73: Unparalleled Performance



#### □ Long Range

- +20 dBm output power, programmable in 1 dB steps
- -137 dBm sensitivity
- 860 MHz 1020 MHz frequency range w/ 60 Hz resolution

#### ☐ Low Current

- 9.3 mA RX FSK
- 10 mA RX Lora
- 100 nA Sleep
- Fast wake-up: 100us Sleep to RX/TX

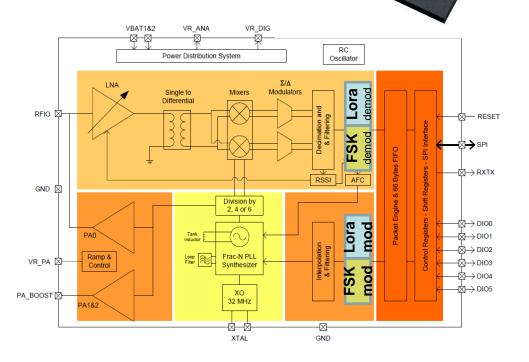
#### Robust Links

- -12 dBm IIP3
- 69 dB adjacent channel rejection
- Jamming resistant
- Simultaneous channel reception

#### □ Low System Cost

- TCXO not required (20-30 ppm XTAL)
- SAW not required
- Eliminates repeaters

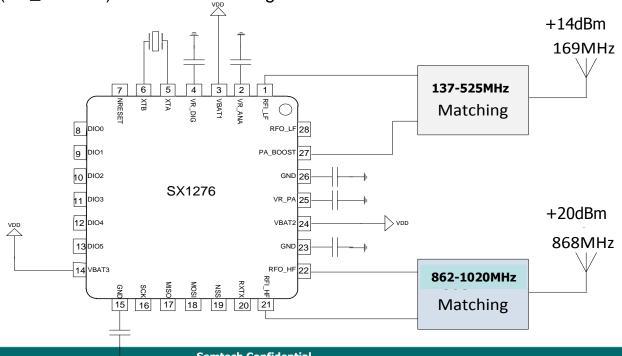




### SX1276/77/78: Dual Band Operation



- Similar benefits as 1272/73
  - One radio but two selectable bands.
  - Long range, low current, robust performance, and lower system cost
  - More BW options for further improvements in sensitivity and narrow-band operation
- Covers all major ISM bands from 137-1020MHz
- Optimal for dual band designs
  - Separate ports optimize performance and minimize BOM
  - +20dBm PA (PA\_BOOST) can be used for high band



## SX127x Family



- Benefits offer different value proposition to different markets
  - Metering eliminate repeaters and reduce battery size
  - Security more robust performance and range but with same infrastructure
- ☐ Create derivatives for price segmentation
  - Freq band, data rate, and sensitivity
- □ All support 802.15.4g, WMBus & LoRa™



Part Number	Freq Range	Sens	DR	SF	Target
SX1272	860-1020 MHz	-138.5 dBm	0.3-40kbps	6-12	Metering
SX1273	860-1020 MHz	-130.5 dBm	1.7-40kbps	6-9	Security and control
SX1276	137-1020 MHz	-148 dBm	0.018-40kbps	6-12	Metering
SX1277	137-1020 MHz	-139 dBm	0.11-40kbps	6-9	Security and control
SX1278	137-525 MHz	-148 dBm	0.018-40kbps	6-12	China market
SX1279	137-960 MHz	-148 dBm	0.018-40kbps	6-12	





WHAT IS LORA?

FOR DEVELOPERS

THE ALLIANCE

JOIN

**NEWS & EVENTS** 

MEMBERS AREA





https://www.lora-alliance.org/

## Membership Benefits

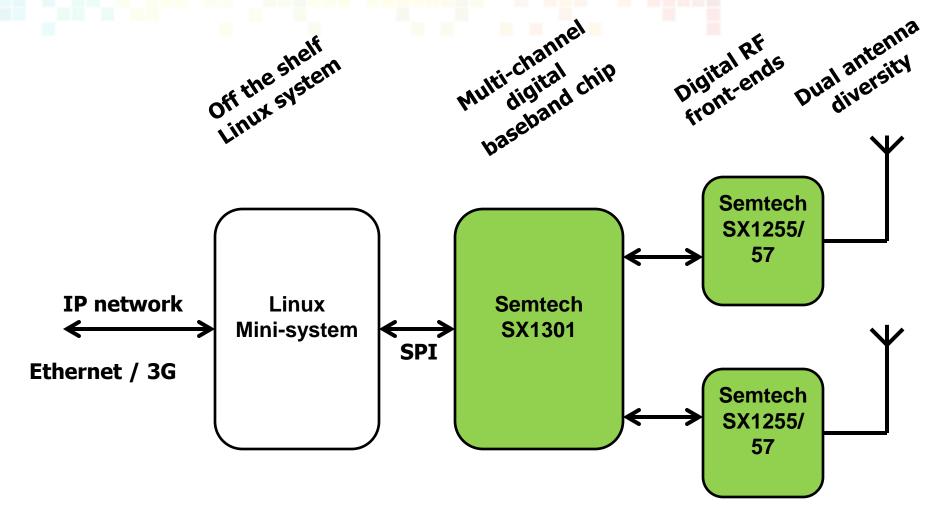
MEMBERSHIP RIGHTS	SPONSOR (\$50k)	CONTRIBUTOR (\$20k)	ADOPTER (\$3k)	PUBLIC (Free)
The right to request Board of Director seat	•			
The right to submit Alliance Deliverables for final approval by the Board Of Director	•			
The right to access Alliance operational data	•			
The right to initiate, participate in, vote and chair Committees	•			
The right to initiate, participate in, vote and chair Work Groups	•	•		
The right to contribute to Draft Deliverables and access Final Deliverables	•	•		
The right to participation in press articles & interviews	•	•		
The right to have certified Compliant Products	•	•	•	
The right to use Alliance and/or Certification Logo on certified products	•	•	•	
The right to access to members only website	•	•	•	
The right to participate in general or annual meetings	•	•	•	
The right to receive Alliance communications	•	•	•	
The access Final Deliverables	•	•	•	
Access to Released Deliverables	•	•	•	•

Become a Member



#### The LoRa Gateway

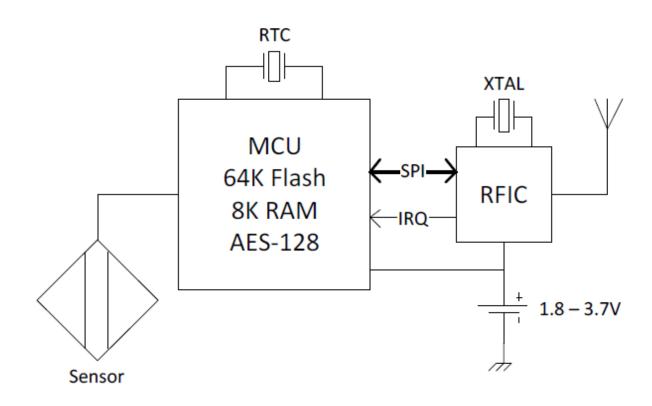




#### LoRaWAN - hardware requirements



Hardware requirements for compliance to the loraWan net. Any microcontroller with some I/O + SPI and 64K Flash and 8k RAM. An additional ID-chip is good but can be embedded in the microcontroller.



## **Contacts**



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