

# SECURE WIRELESS CONNECTIVITY SOLUTIONS

## PORTFOLIO & ROADMAP

MAR.13.2017





# NXP value proposition for IoT

## LOW POWER



- Ultra-efficient dynamic power
- Ultra-low static power consumption with full retention
- Low-power peripherals
- Tools for low power design, e.g. the power estimation, power profiler, and consumption calculator

## SECURE



- Multiple levels of scalable security for ultimate flexibility and protection
- Ensuring communications, software and physical system are protected from threats

## CONNECTIVITY



- State-of-the-art RF performance
- Choice of connectivity to fit application
- Interoperable connectivity
- Integrated RF transceiver supporting: Bluetooth Smart 4.2, IEEE802.15.4, Thread, ZigBee

## EASY TO USE



- 'Tap-N-Pair' NFC Commissioning for best-in-class consumer experience
- Bring voice detection & triggering features to wide range of products

## QUICK TO MARKET



- Complete kits simplify design and lower risk – get to final product design quickly
- Full ecosystem including application software and cloud connectivity





# NXP Products & Enablement for IoT

KEY  
FEATURES

Voice Triggering

Simplified Device  
Commissioning

Interoperable Wireless  
Connectivity

Security

Sound/Audio Detection

ENABLEMENT

Kits, Reference  
Designs, Solutions

## WIRELESS CONNECTIVITY & NFC

PRODUCTS  
FOR



Bluetooth Smart  
Mesh



## PROCESSING & SECURITY



Microcontrollers



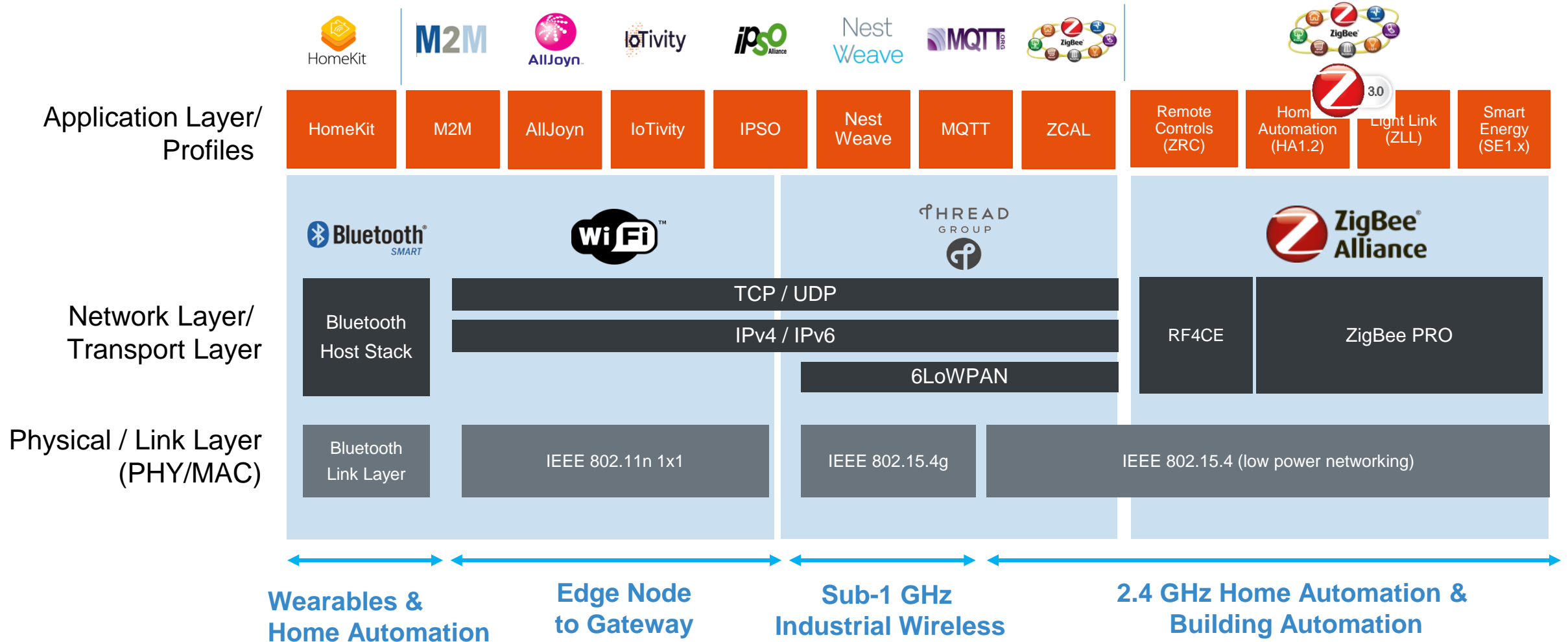
Secure Element



Application  
Processors



# Connectivity Landscape



# NXP Software Solutions Summary



**ZigBee®**

Control your world



Software Solution	Supported Platforms	Status	Solution
Thread Stack	KW2xD, KW41Z/21Z	Beta	Pre-Certified
ZigBee Pro Stack	JN Portfolio	✓	✓ Certified
ZigBee 3.0	JN Portfolio	Beta	On going
ZigBee Light Link	JN Portfolio	✓	✓ Certified
ZigBee Home Automation, Green Power, Smart Energy	JN Portfolio	✓	✓ Golden Unit
ZigBee RF4CE Stack and ZRCv2.0 profile	JN Portfolio	✓	✓ Golden Unit
IEEE 802.15.4 MAC with Simple Stack	JN and KW Portfolios	✓	✓ Certified
Simple MAC, SMAC (PHY level driver)	KW Portfolio	✓	N/A
BLE 4.1 Stack	KW40Z/30Z	✓	✓ Certified
BLE 4.2 Stack	KW41Z/31Z	✓	Certified (Oct'16)
BLE 5.0 Stack	JN518x	Alpha (2Q17)	Certified (4Q17)







**ZigBee®**



Low Power, Robustness, Range

# Products





**ZigBee 3.0**  
Better Together



**JN5169**

**Low power, High Performance 802.15.4 wireless microcontroller**

32b RISC @32MHz  
32kB RAM  
512kB flash  
Tx Power +10dBm  
Rx Sensitivity -96dBm  
Tx 23.3mA, Rx 14.7mA  
QFN40 6x6mm  
Tamb -40°C / +125°C

**Development Kit**  
HA and lighting integrating **easy and secure NFC**

commissioning

**Modules**

NXP Modules

**Target Applications**  
HBA, Lighting., Smart meters

Energy metering

**Availability**

Now



**JN5174/78/79**

**Low power, High Performance 802.15.4 wireless microcontroller**

Cortex M3 @32MHz  
32kB RAM,  
160/256/512kB flash  
Tx Power +10dBm  
Rx Sensitivity -96dBm  
Tx 22.5mA, Rx 14.8mA  
QFN40 6x6mm  
Tamb -40°C / +125°C

**Development Kit**  
HA and lighting integrating **easy and secure NFC**

commissioning

**Modules**

NXP Modules

**Target Applications**  
HBA and Lighting

**Availability**

Sampling Now

Full Release June 2016



**THREAD**



**KW2xD**

**High Performance 802.15.4 wireless microcontroller**

Cortex M4 @50MHz  
64kB RAM,  
512kB flash  
Tx Power +8dBm  
Rx Sensitivity -102dBm  
Dual-PAN, Antenna Div.  
Tx 19mA, Rx 17mA  
LGA 8x8mm  
Tamb -40°C / +85°C

**Development Kit**  
FRDM, USB Dev Boards

**Modules**

From Partners

**Target Applications**  
Home and Building Automation

**Availability**

Now



**KW21Z**

**Very Low power, High Performance 802.15.4 wireless microcontroller**

Cortex M0+ @48MHz  
128kB RAM,  
512kB flash  
Tx Power +4dBm  
Rx Sensitivity -101dBm  
Dual-PAN, Antenna Div.  
Tx 6.5mA, Rx 6.5mA  
QFN 7x7mm, WLCSP  
Tamb -40°C / +105°C

**Development Kit**  
FRDM, USB Dev Boards

**Modules**

From Partners

**Target Applications**  
Home and Building Automation

**Availability**

Sampling April 2016

Full Release Sept 2016



**Bluetooth SMART**



**KW31Z**

**Very Low power, High Performance BLE 4.2 wireless microcontroller**

Cortex M0+ @48MHz  
128kB RAM,  
512kB flash  
Tx Power +4dBm  
Rx Sensitivity -96dBm  
**TRNG**  
**Buck Boost DC/DC from 0.9V to 4.2V**

Tx 6.5mA, Rx 6.5mA,  
QFN 7x7mm, **WLCSP**  
Tamb -40°C / +105°C

**Development Kit**  
FRDM, USB Dev Boards

**Modules**

From Partners

**Target Applications**  
Secure BLE applications,  
Home Automation

**Availability**

Sampling April 2016

Full Release Sept 2016



**QN9080**

**Ultra Low Power, High Performance BLE 4.2 wireless microcontroller**

Cortex M4 **with FPU**  
128kB RAM, 256kB ROM  
512kB flash  
Tx Power +2dBm  
Rx S -95dBm w/o DC-DC  
Rx S -93dBm w/ DC-DC  
Tx 3.4mA, Rx 3.6mA,  
ADC: 14 ENOB @ 32 kHz  
Fusion Sensor processor  
QFN 6x6mm, **WLCSP**  
Tamb -40°C / +105°C

**Development Kit**  
EVB, miniDK

**Modules**

To be defined

**Target Applications**  
Watches and wristband

**Availability**

Q1 2017



**ZigBee**



**THREAD**



**Bluetooth SMART**



**KW41Z**

**Very Low power, High Perfs '15.4 / BLE 4.2 wireless microcontroller**

Cortex M0+ @48MHz  
**128kB RAM, 512kB flash**  
Tx Power +4dBm  
TH Rx Sens -101dBm  
BLE Rx Sens -96dBm  
Dual-PAN, Antenna Div.  
Tx 6.5mA, Rx 6.5mA,  
QFN 7x7mm, **WLCSP**  
Tamb -40°C / +105°C

**Development Kit**  
FRDM, USB Dev Boards

**Modules**

From Partners

**Target Applications**  
Home and Building Automation

**Availability**

Sampling April 2016

Full Release Sept 2016



**JN5180 / 80S**

**Ultra Low power, High Perfs '15.4 / BLE 5.0 wireless microcontroller**

Cortex M4 @48MHz  
**Integrated NFC 152kB RAM, 640kB flash**  
Tx Power +10dBm  
TH Rx Sens -101dBm  
BLE Rx Sens -96dBm  
Dual-PAN, Antenna Div.  
Tx 17mA, Rx 3.5mA,  
QFN 6x6mm, 4x4mm  
Tamb -40°C / +125°C

**Development Kit**  
HA & Lighting dev Kit

**Modules**

NXP modules

**Target Applications**  
Home and Building Automation

**Availability**

Sampling Q1 / Q3 2017

Full Release Q4 2017



**NXP NFC I2C TAG**

**NTAG I2C plus connected NFC tag solution by NXP**

ISO/IEC 14443-2/3, NFC forum compliant - Type 2 Tag  
888B EEPROM or 1904B EEPROM  
Access Protection via RF : WRITE ONLY per 16 Bytes  
*Pass through mode*: 64B SRAM buffer to transfer data  
*Signal output* : To detect RF field or synchronise data  
*Energy harvesting* : To power external components  
SOT902 (leadless) – TSSOP8 (8pin)



**PN7120**

**Best plug'n play full NFC solution – easy integration into any OS environment**

ISO15693 compliant - longer read range than ISO14443  
Reading distance up to 70mm  
MIFARE Classic security (CRYPTO1 HW)  
Host protocol : NCI 1.0  
Host Software : Android driver and Linux driver  
Host interface : I2C  
VFBGA49

# 2.4 GHz WMCU

## Product Features





KWXX

# KW Platforms and Protocols

Standard Key Features Timers, SPI, UART, I2C, GPIO		CPU	Memory	Supported Frequency Band	Supported Protocols					Radio Performance			
			Flash / SRAM		BLE	Thread	ZigBee Pro	802.15.4 MAC	SMAC	Sensitivity	Transmit Power	Receive Current	Transmit Current
<b>KW41Z</b>	Bluetooth® Low Energy & IEEE® 802.15.4	Cortex-M0+	256-512 KB / 64-128 KB	2.4 GHz	✓	✓	✓	✓	✓	-96 dBm (BLE) -102 dBm (802.15.4)	Up to +4 dBm	6.2 mA	6.0 mA
<b>KW40Z</b>	Bluetooth Low Energy & IEEE 802.15.4	Cortex-M0+	160 KB / 20 KB	2.4 GHz	✓	✓	✓	✓	✓	-91 dBm (BLE) -102 dBm (802.15.4)	Up to +5 dBm	6.5 mA	8.4 mA
<b>KW31Z</b>	Bluetooth Low Energy	Cortex-M0+	256-512 KB / 64-128 KB	2.4 GHz	✓					-96 dBm	Up to +4 dBm	6.2 mA	6.0 mA
<b>KW30Z</b>	Bluetooth Low Energy	Cortex-M0+	160 KB / 20 KB	2.4 GHz	✓					-91 dBm	Up to +5 dBm	6.5 mA	8.4 mA
<b>KW21Z</b>	IEEE 802.15.4	Cortex-M0+	256-512 KB / 64-128 KB	2.4 GHz		✓	✓	✓	✓	-102 dBm	Up to +4 dBm	6.2 mA	6.0 mA
<b>KW20Z</b>	IEEE 802.15.4	Cortex-M0+	160 KB / 20 KB	2.4 GHz		✓	✓	✓	✓	-102 dBm	Up to +5 dBm	6.5 mA	8.4 mA
<b>KW2xD</b>	IEEE 802.15.4	Cortex-M4	256-512 KB / 32-64 KB	2.4 GHz		✓	✓	✓	✓	-102 dBm	Up to +8 dBm	19.5 mA	18 mA
<b>KW01Z</b>	Sub-1 GHz	Cortex-M0+	128 KB / 16 KB	315 MHz, 433 MHz, 470 MHz, 868 MHz, 915 MHz, 928 MHz, and 955 MHz				✓	✓	-120 dBm	Up to +17 dBm	16 mA	16 mA

[http://www.nxp.com/products/arm-processors/kinetis-cortex-m/w-series:KINETIS\\_W\\_SERIES?cof=0&am=0](http://www.nxp.com/products/arm-processors/kinetis-cortex-m/w-series:KINETIS_W_SERIES?cof=0&am=0)



# Kinetis KW41Z/31Z/21Z

## Core/Memory/System

- Cortex-M0+ running up to 48 MHz
- **Up to 512 kB Flash, Up to 128 kB SRAM**
- Four independently programmable DMA controller channels

## 2.4 GHz Radio Transceiver

- Support for **BLE v4.2**, Generic FSK (250/500 kbps, 1Mbps), 802.15.4-2011
- **-95 dBm in BLE mode**, -100 dBm in 802.15.4 mode
- **-25 to +3.5 dBm programmable output power**
- **Increased coexistence performance**
- **6.5 mA Rx & 6.5 Tx (0dBm)** current target (DC-DC enabled)
- <2uA low power current
- **Integrated balun (~9% board area savings)**

## Communications/HMI/Timers

- 2xSPI, LP-UART, 2xI2C, CMT, GPIO with IRQ capability (KBI)
- Hardware Touch Sensing Inputs (TSI)
- 3xFlexTimer (TPM) with PWM & quadrature decode support
- Low Power (LPTMR), Programmable Interrupt (PIT) and RTC timers

## Analog & Security

- 16-bit ADC with integrated temperature sensor and battery monitor
- 12-bit DAC and 6-bit High-speed Comparator
- AES Accelerator and True Random Number Generator

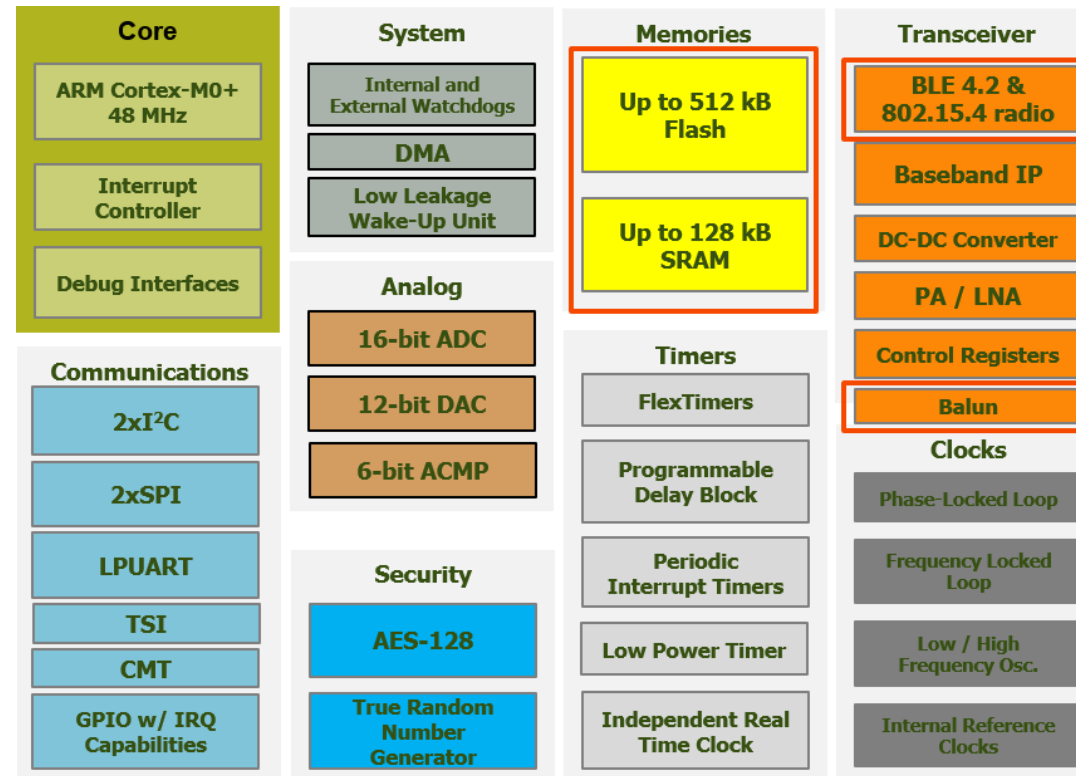
## Integrated DC/DC Converter

- Normal: 1.71V to 3.6V
- Buck : 2.1V to 4.2V for coin cell operation
- Boost : 0.9V to 1.795V for single alkaline battery operation

## Unique Identifiers

- 80-bit device ID programmed at factory
- 40-bit unique number can be used for Bluetooth Low Energy or IEEE 802.15.4 MAC Address

**-40°C to +105°**



**Differences from KW40Z/30Z/20Z**

Device	Memory	Protocol	Package
MKW21Z512VHT4/R MKW21Z256VHT4/R	512K Flash, 128K RAM 256K Flash, 64K SRAM	802.15.4	7x7 48-pin Laminate QFN
MKW31Z512VHT4/R MKW31Z256VHT4/R	512K Flash, 128K RAM 256K Flash, 64K SRAM	BLE, GFSK	7x7 48-pin Laminate QFN
MKW41Z512VHT4/R MKW41Z256VHT4/R	512K Flash, 128K RAM 256K Flash, 64K SRAM	BLE, GFSK & 802.15.4	7x7 48-pin Laminate QFN
Features	Description		
<b>Software and Protocol Stacks</b>	Bluetooth Low Energy Host Stack & Profiles, GFSK Thread Stack BLE + Thread (Concurrent/time slice operation) IEEE 802.15.4 MAC, SMAC w/ Connectivity Test and Wireless UART KSDK, IAR, FreeRTOS		
<b>Availability</b> (subject to change)	Full Market Launch– Oct' 16 WLCSP Package in progress		



# Kinetis KW40Z/30Z/20Z

## Core/Memory/System

- Cortex-M0+ running up to 48 MHz
- 160 kB Flash, 20 kB SRAM
- Four independently programmable DMA controller channels

## 2.4 GHz Radio Transceiver

- Support for BLE v4.1, 802.15.4-2011
- -91 dBm in BLE mode, -102 dBm in 802.15.4 mode
- -20 to +5 dBm programmable output power
- 6.5 mA Rx & 8.4 mA Tx (0dBm) current target (DC-DC enabled)
- <2uA low power current

## Communications/HMI/Timers

- 2xSPI, LP-UART, 2xI<sup>2</sup>C, GPIO with IRQ capability (KBI)
- Carrier Modulated Timer (CMT)
- Hardware Capacitive Touch Sensing Interface (TSI)
- 3xFlexTimer (TPM) with PWM & quadrature decode support
- Low Power (LPTMR), Programmable Interrupt (PIT) and RTC timers

## Analog & Security

- 16-bit ADC with integrated temperature sensor and battery monitor
- 12-bit DAC and 6-bit High-speed Comparator
- AES Accelerator and True Random Number Generator

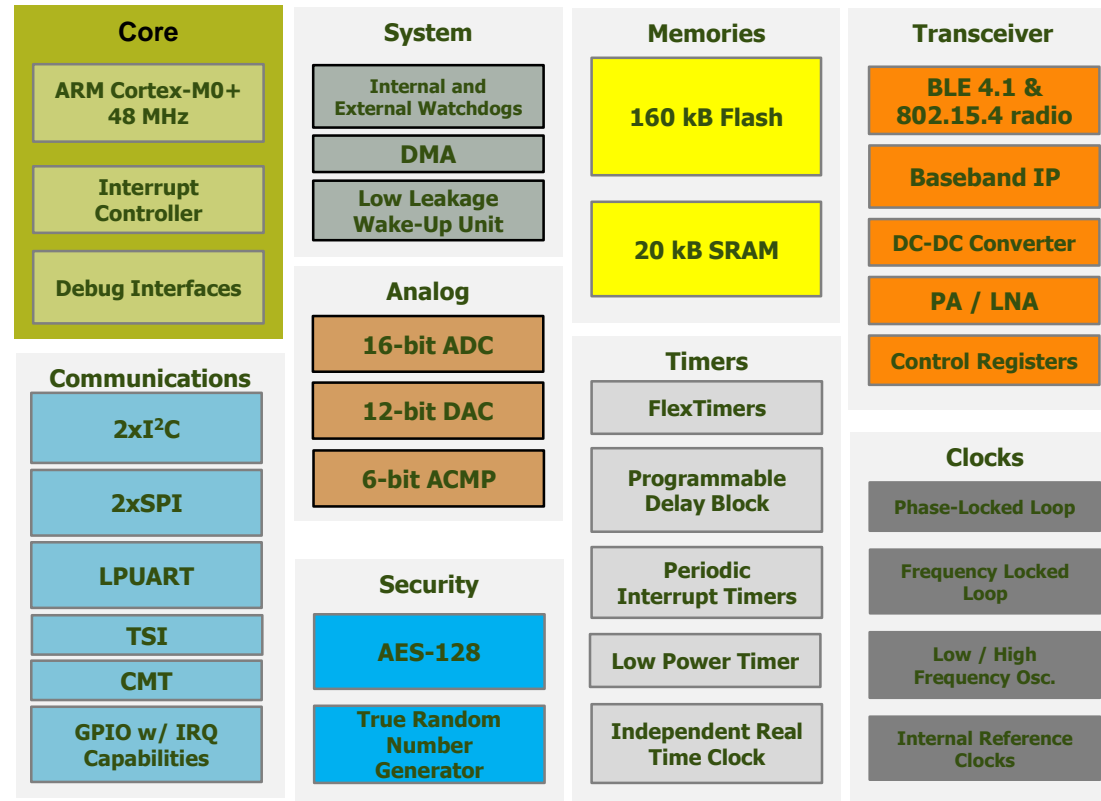
## Integrated DC/DC Converter

- Normal: 1.71V to 3.6V
- Buck : 2.1V to 4.2V for coin cell operation
- Boost : 0.9V to 1.795V for single alkaline battery operation

## Unique Identifiers

- 80-bit device ID programmed at factory
- 40-bit unique number can be used for Bluetooth Low Energy or IEEE 802.15.4 MAC Address

**-40°C to +85°C**



Device	Memory	Protocol	Package
MKW20Z160VHT4/R	160K Flash, 20K RAM	802.15.4	7x7 48-pin Laminate QFN
MKW30Z160VHM4/R	160K Flash, 20K RAM	BLE	5x5 32-pin Laminate QFN
MKW40Z160VHT4/R	160K Flash, 20K RAM	BLE & 802.15.4	7x7 48-pin Laminate QFN
Features	Description		
Software and Protocol Stacks	Bluetooth Low Energy Host Stack & Profiles IEEE 802.15.4 MAC SMAC w/ Connectivity Test and Wireless UART KSDK, IAR, FreeRTOS		
Availability	Available now		





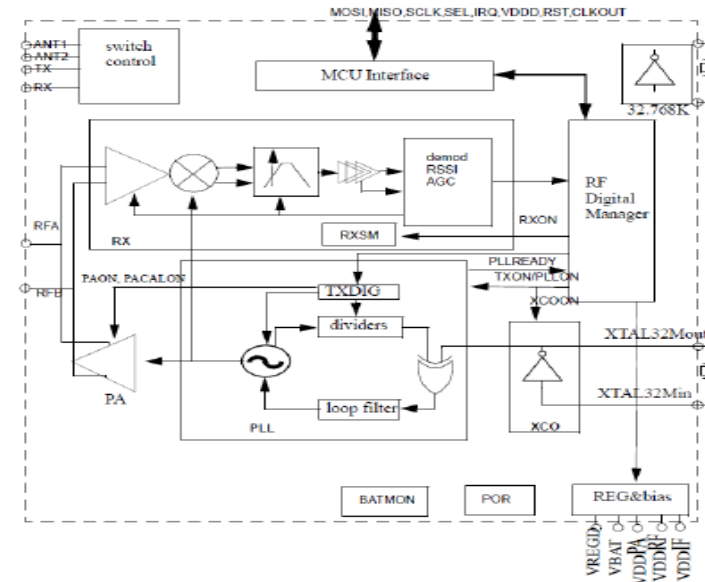
# MCR20A High-Performance 802.15.4 Transceiver

## 2.4 GHz Radio Transceiver Features

- High performance 2.4 GHz IEEE 802.15.4 RF transceiver
- Support for MBAN frequencies (2.36-2.4 GHz)
- Packet processor for hardware acceleration
- Supports single ended and diversity antenna options
- Dual-PAN support
- -30 to + 8 dBm power output
- Support for external PA/LNA (FEM)
- -102 dBm sensitivity
- Tx 17mA @ 0dBm
- Rx 15mA LPPS mode, 19mA full Rx
- AES Hardware encryption/decryption
- True Random Number Generator
- SPI Interface (memory mapped)
- 6 GPIO

## System Features

- -40°C to 105°C
- Operating range: 1.8 V to 3.6 V, -40C to +105C
- 5x5 32-pin QFN



Ordering Part Number: **MCR20AVHM**

# JN517x: Wireless MCU

- **CPU**

- 32 MHz ARM Cortex-M3 core
- Up to 512 KB Flash & up to 32 KB RAM

- **2.4 GHz radio transceiver**

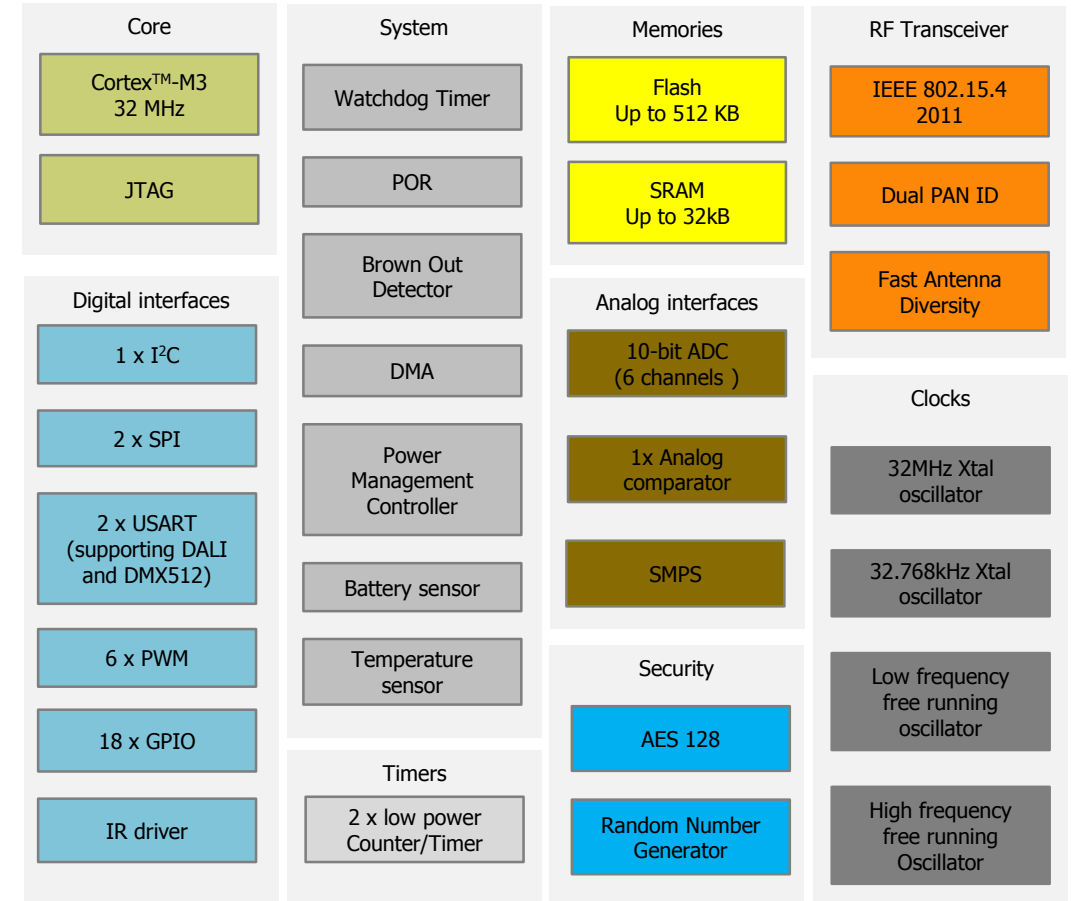
- IEEE-802.15.4 2011 compliant
- Dual PAN support
- Antenna diversity
- +10 dBm power amplifier
- -96 dBm RX sensitivity
- Peak typical current:
  - 22.5mA TX @ +10dBm, 14mA @ +3dBm
  - 14.8mA RX

- **Security**

- Crypto engine: AES 128-256, RNG

- **System**

- Ambient temperature: -40°C to +125°C
- HVQFN40 6x6 mm



# QN90XX

# QN902x

## • CPU

- 32 MHz ARM Cortex-M0 core
- 128 kB Flash & 64 kB RAM & 96kB ROM

## • 2.4 GHz radio transceiver

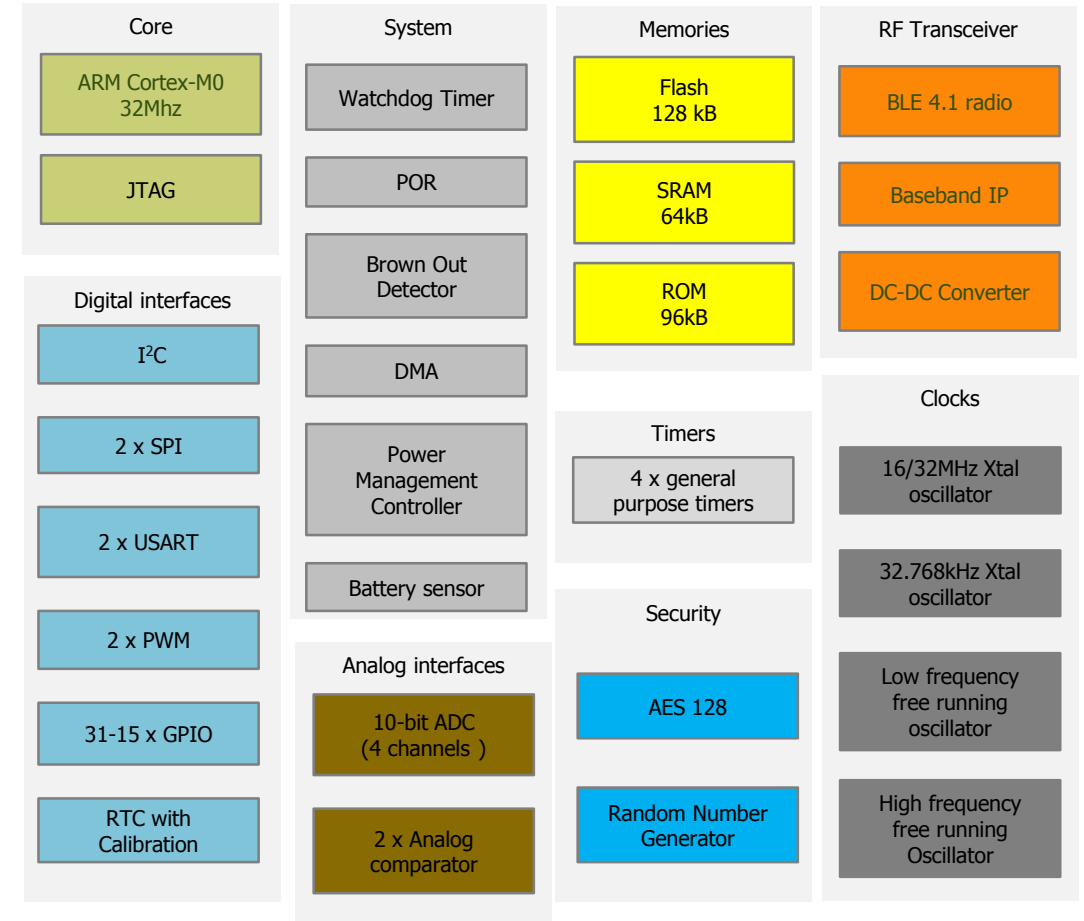
- Bluetooth 4.0 LE single mode
- Support master and slave roles
- Master can support up to 8 simultaneous links
- Programmable output power : -20 to +4 dBm
- -95 dBm RX sensitivity (Bluetooth Smart)
- Peak typical current w/ MCU: 8.8mA TX @+0dBm and 9.25mA RX with DC/DC activated

## • Security

- Crypto engine: AES-128, RNG

## • System

- DC/DC working from 2.4V to 3.6V
- Ambient temperature: -40°C to +85°C
- QFN48 6x6mm, QFN32 5x5mm





# QN9080

2017

## • CPU

- 32-bit ARM Cortex-M4 with FPU
- Up to 512 kB Flash & 128 kB RAM, 256 kB ROM

## • 2.4 GHz radio transceiver

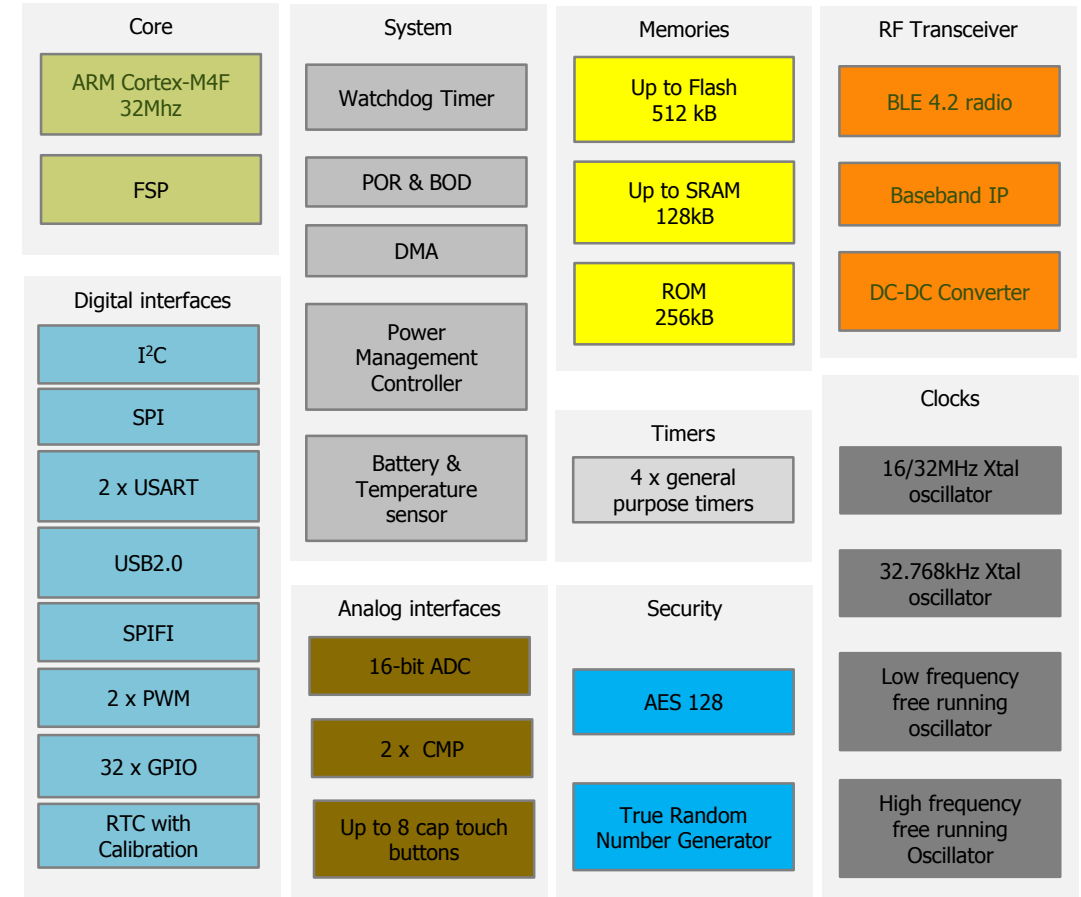
- [Bluetooth 4.2 LE single mode](#)
- Programmable output power : -20 to to [+2 dBm](#)
- [-95 dBm](#) RX sensitivity (Bluetooth Smart)
- Peak typical current: [3.4mA](#) TX @+0dBm and [3.6mA](#) RX with DC/DC activated
- [1 uA](#) sleep current with RAM/register retention

## • Security

- [Crypto](#) engine: AES-128, TRNG

## • System

- Fusion Sense Processor (FSP), for high efficiency and low power
- DC/DC working from [1.8V to 3.6V](#)
- Ambient temperature: -40°C to +85°C
- QFN48 6x6mm, 3.2x3.2 WLCSP



# Sub-GHz MCUs

## Product Features



# Sub-GHz Wireless MCUs for Industrial / IoT applications

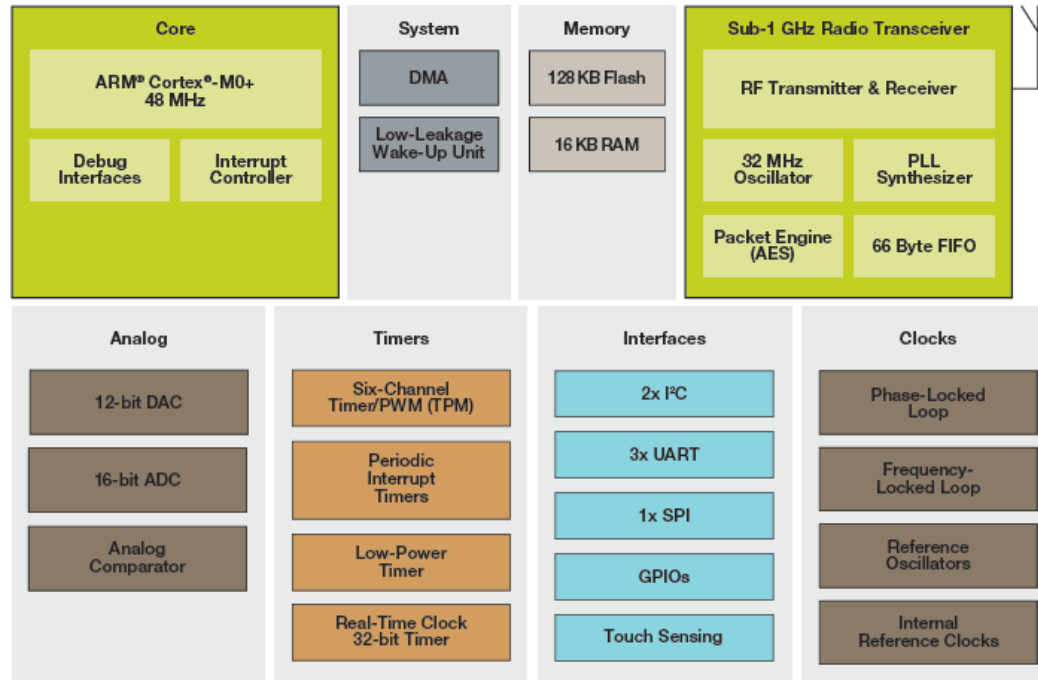


# KW01



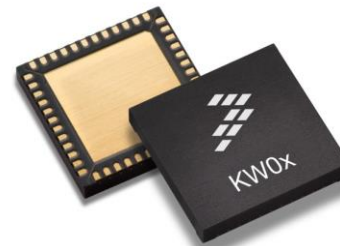
# KW01 Block Diagram

**Cortex-M0+ w/ 128KB Flash**  
*Integrated Sub1-GHz Radio*



## Orderable Part

Part Number	Description
MKW01Z128CHN	<ul style="list-style-type: none"> <li>• 290–1020 MHz smart radio</li> <li>• 128 KB flash/16 KB RAM</li> <li>• 60 MAPLGA 8 mm x 8 mm</li> <li>• Bulk tray</li> </ul>



## CPU

- 32-bit ARM® Cortex™-M0+ 48MHz Core
- 128KB Flash and 16KB SRAM

## Radio Transceiver, Sub 1-GHz

- Supports 290-340MHz, 424-510MHz, and 862-1020MHz frequency bands FSK, GFSK, MSK, GMSK and OOK modulations up to 600kbps
- Up to -120dBm RX sensitivity @ 1.2kbps
- -18 to +17dBm TX output power in steps of 1dBm

## Low Power for Battery Operated Devices

- Typical consumption
  - LISTEN mode
  - 0.1 µA sleep
  - 16 mA RX peak
  - 20 mA TX peak at 0 dBm, 33 mA at +10 dBm

## System

- 16-bit ADC, Capacitive Touch Sensing, I2C, UART, SPI, Timers
- Operating Range: 1.8V to 3.6V, -40C to +85C



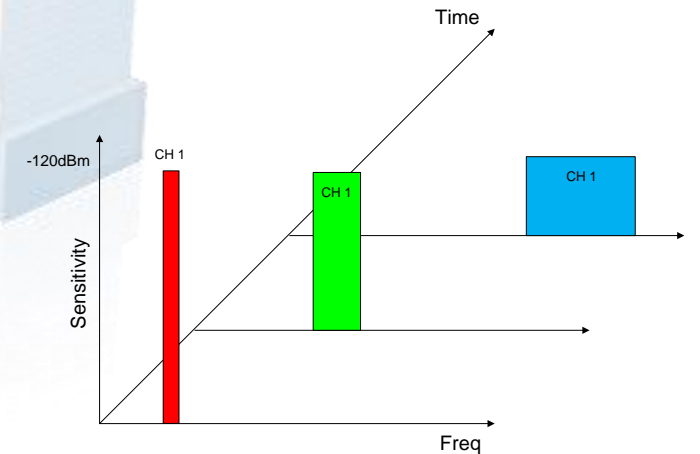
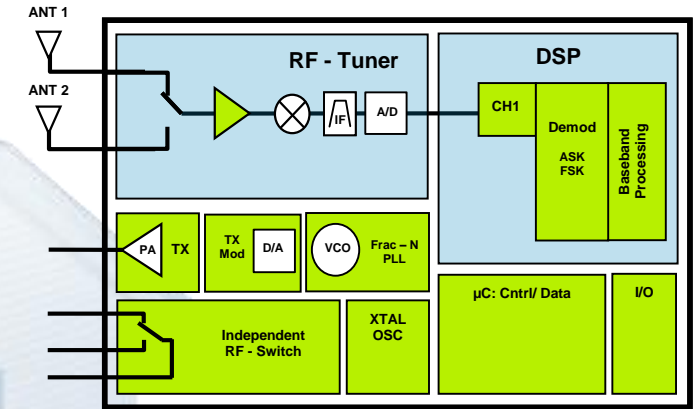
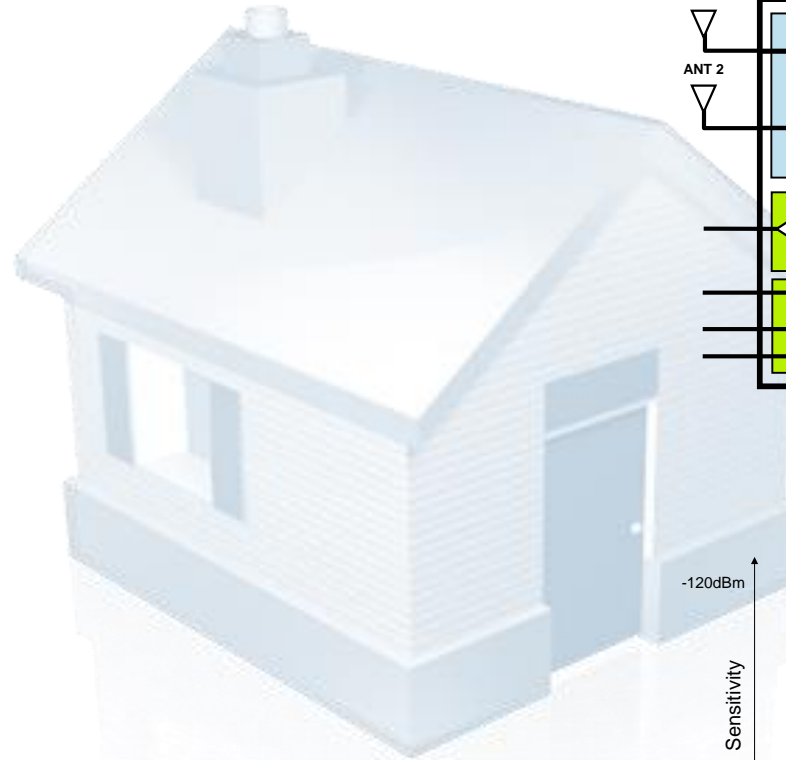
OL23XX

# ASK, FSK and 4FSK Multi Band RF Transceiver

## – OL2385

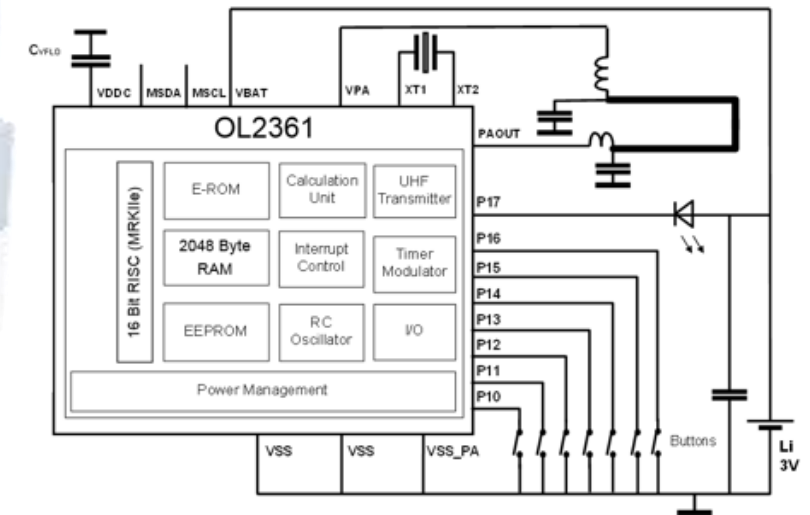


- ▶ One channel single sub GHz IC for all markets (160 - 960 MHz)
- ▶ -124 dBm FSK sensitivity @ 10 kHz BW
- ▶ 2 antenna inputs
- ▶ Ultra low power in receive mode
  - 11 mA
- ▶ Independent RF switch (TX/RX or RX/RX)
- ▶ Supply Voltage: 1.9 V – 5.5 V
- ▶ Up to +14 dBm output power
- ▶ 26 Channel Filter BW Options (4-360 kHz)
  - Japanese (12.5 kHz) ARIB compliant
- ▶ Smart polling
- ▶ 16-bit RISC integrated  $\mu$ C
  - 32 kB FLASH for program code, 7.25 kB RAM
- ▶ HVQFN48 package
- ▶ Temperature Range: -40 °C to + 85 °C
- ▶ Excellent Phase Noise
- ▶ Supported Standards:  
WMBus2013, 802.15.4g, T108, Sub-GHz ZigBee, SigFox & more



# RF Transmitter – OL2361 (TX only)

- ▶ Single-chip with on-chip multi-channel UHF Transmitter
- ▶ Carrier frequency 310 MHz – 915 MHz
- ▶ Multi Channel Fractional-N PLL
- ▶ One reference frequency (XTAL) for all bands
- ▶ Programmable FSK/ASK/OOK modulation characteristics
- ▶ Improved programmable and stabilized output power
- ▶ Low power consumption
  - ▶ TRANSMIT 868 MHz: 14 mA @ 10 dBm  
29 mA @ 14 dBm
- ▶ 16 Bit RISC Architecture
  - ▶ 16 K Byte E-ROM (FLASH), 2 K Byte RAM
  - ▶ 2048 Byte EEPROM for extended data storage
- ▶ Low power consumption
  - ▶ POWER DOWN: 0.5  $\mu$ A @ 3V
- ▶ Temperature Sensor
- ▶ Temperature Range -40°C to +85°C
- ▶ Single Lithium cell operation, 1.8V to 3.6V
- ▶ 24-pin extremely compact HVQFN package (4x4mm)







# Evaluation Kits & Boards



SECURE CONNECTIONS  
FOR A SMARTER WORLD

# Wireless Connectivity Portfolio - HW

## Dev boards

FRDM-Shield

FRDM-MCR20



FRDM-Board

FRDM-KW24D

USB-KW24D



Board & Shield

FRDM-KW40Z

USB-KW40Z



Board & Shield

FRDM-KW019032

USB-KW019032



## Part no

MCR20AVHM

MKW21D256VHA5  
MKW21D512VHA5  
MKW22D512VHA5  
MKW24D512VHA5

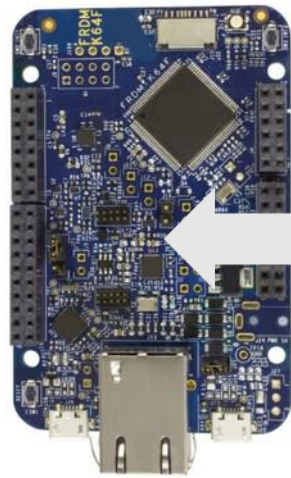
MKW40Z160VHT4  
MKW30Z160VHM4  
MKW20Z160VHT4

MKW01Z128CHN



# Target Development Systems: Gateways/Border Routers

**K64F**  
**RTOS Border Router**  
**(PN512)**



**K64F Freedom Board**

- 120 MHz Cortex-M4F
- Up to 1 MB Flash, up to 258 KB RAM
- Integrated Ethernet
- Thread and ZigBee
- Launching Oct. 6

**KW2x**



**i.MX6UL**  
**Linux Gateway/Border Router**  
**(PN7120)**



**i.MX6UI EVK**

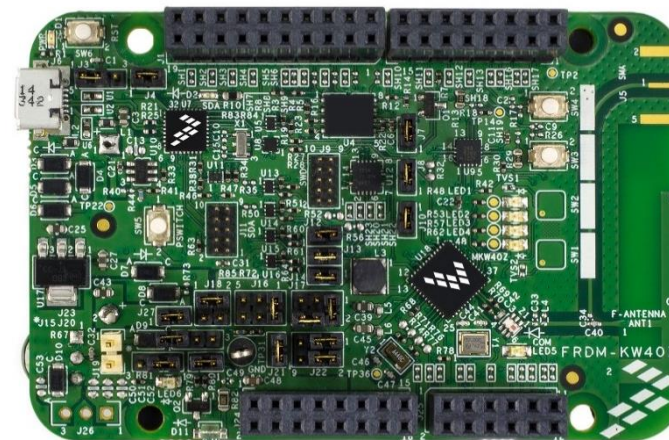
- 528 MHz Cortex-A7 CPU
- 4 GB DDR3L DRAM memory
- 256 MB Quad SPI Flash
- Arduino/Freedom connector
- Launching Oct 6th



# Kinetis KW40Z Tools and Software

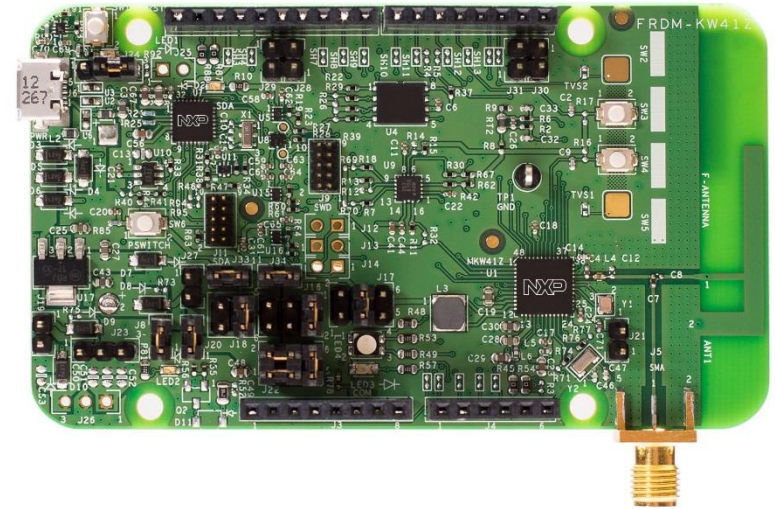
*will follow the same strategy for the KW41Z*

- **Easy-to-use Hardware**
  - **FRDM-KW40Z:** Freescale Freedom Development Platform
  - **USB-KW40Z:** Ideal for BLE/802.15.4 sniffer or connection to PC/Tablet
- **Robust Software**
  - Royalty-free Freescale BLE host stack with 20 GATT profiles, fully compliant to the BLE 4.1 spec
  - 802.15.4 MAC layer, as the foundation for ZigBee 3.0 and the highly anticipated Thread IP-based mesh networking protocol
  - All stacks support over-the-air firmware updates
  - Fully integrated into the Kinetis Software Development Kit (SDK) with support for multiple RTOS options, including FreeRTOS and bare-metal solutions



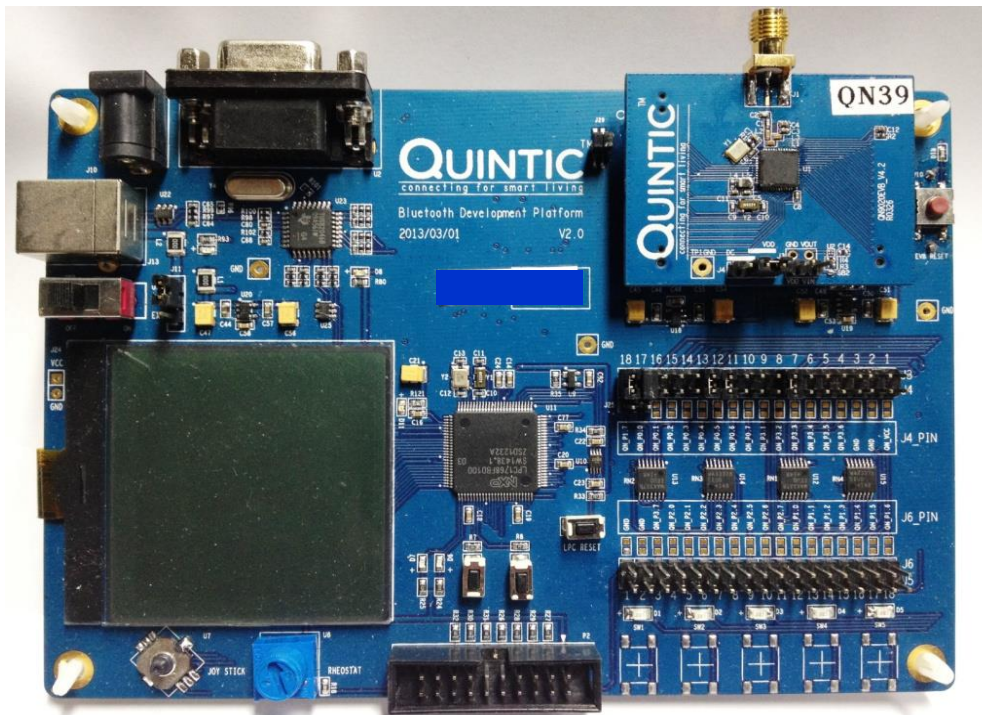
# KW41Z Development Hardware

- **FRDM-KW41Z** Freedom Development Hardware
  - Can be configured as Host or Shield for connection to Host Processor
  - Supports all DC-DC configurations
  - PCB inverted F-type antenna
  - Minimum number of matching components
  - FCC Part15 & EN300 328 compliant
  - Serial Flash for OTA firmware upgrades
  - On board NXP FXOS8700CQ digital sensor, 3D Accelerometer ( $\pm 2g/\pm 4g/\pm 8g$ ) + 3D Magnetometer
  - OpenSDA and JTAG debug
  - Full KSDK support
  - Resale \$145 (2 boards/kit)
- **USB-KW41Z** USB Dongle
  - Ideal for BLE/802.15.4 sniffer or connection to PC/Tablet
  - FCC Part15 & EN300 328 compliant
  - Resale \$60



# QN902x Evaluation And Design Kits

- **Full Software Package**
  - SDK and API, Support Keil or IAR
  - Full BT Profile offering
  - Software application package for OTA and QPP



**Evaluation board**  
for full RF performance evaluation



**Mini Design Kit with USB adapter**  
For customer application development





# Reference Designs



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# NXP Designs

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- Access to information such as software, schematics and user documentation for quick use and customization
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	NXP Design	Description	Quick Links
	<a href="#">Hexiwear - Complete IoT Development Solution</a>	Next generation IoT development platform designed to reduce time to market. Comes in compact form factor with on-boards MCUs, BLE Connectivity, sensors, OLED display, battery. Open source software package includes embedded software, cellphone apps and cloud connectivity. Expandable with 200 additional click boards™	<ul style="list-style-type: none"> <li>■ <a href="#">Fact Sheet</a></li> <li>■ <a href="#">Buy</a></li> <li>■ <a href="#">Software</a></li> <li>■ <a href="#">Schematic</a></li> <li>■ <a href="#">Design Files</a></li> <li>■ <a href="#">Bill of Material (BOM)</a></li> <li>■ <a href="#">iOS App</a></li> <li>■ <a href="#">Android App</a></li> </ul>
	<a href="#">Quadcopter Drone</a>	The powerful Electronic Speed Controller (ESC) solution combines four separate ESC boards into one and controlled by with a single Kinetis KV4x or Kinetis KV5x MCU.	<ul style="list-style-type: none"> <li>■ <a href="#">Software</a></li> <li>■ <a href="#">Schematic</a></li> <li>■ <a href="#">Design Files</a></li> <li>■ <a href="#">Bill of Material (BOM)</a></li> <li>■ <a href="#">Application Notes</a></li> </ul>
	<a href="#">Internet Radio Audio Streaming</a>	Demonstrate an easy-to-use internet-radio application.	<ul style="list-style-type: none"> <li>■ <a href="#">Software</a></li> <li>■ <a href="#">Application Note</a></li> <li>■ <a href="#">Brochure</a></li> </ul>
	<a href="#">BLE Controlled Robot</a>	The Bluetooth® Low Energy (BLE) controlled robot brings the robot control to your cellphone. Develop your own smart robot using FRDM-KW40 board and Pololu Zumo Robot.	<ul style="list-style-type: none"> <li>■ <a href="#">Software</a></li> <li>■ <a href="#">Schematic</a></li> <li>■ <a href="#">Design Files</a></li> <li>■ <a href="#">Bill of Material (BOM)</a></li> <li>■ <a href="#">Application Notes and</a></li> </ul>

# NXP Modular Gateway Solution Platform v1.0

## Value Proposition:

- Reduce time to market and development costs via modular design for Thread and ZigBee Gateway/Border Router customers
- Reduce project risk and uncertainty associated with wireless connectivity

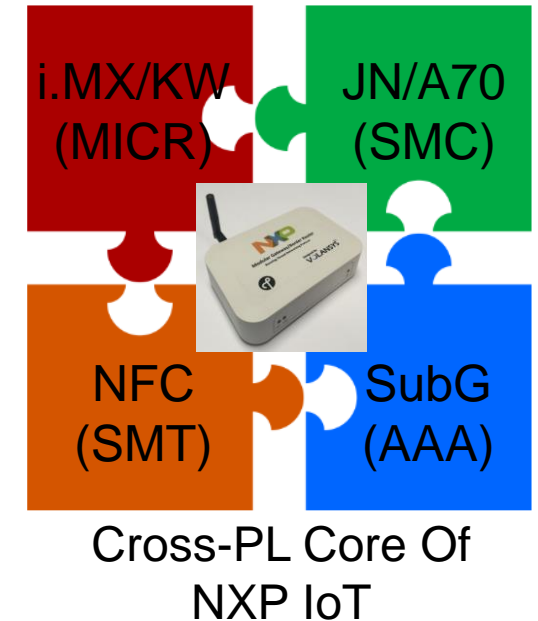
## Key NXP Content:

- Hardware, software & services, including all drivers, protocol stacks, and Linux BSP support
  - i.MX6UL SOM
  - Kinetis KW22D512/KW41Z Module, JN5169/JN5179 Module
  - Kinetis KW41Z Module (TBD)
  - PN7120 NFC, A70CM Sec Element
  - Professional Support and Services

## Target Segments/Applications:

- Commercial Building/Lighting
- Low Power WAN

**Availability:** Launch Nov 2016 (electronica)



## Key Features/Capabilities:

- Thread, ZigBee, WiFi, ENET
- Large Node Networks (>255 nodes)
- Over the Air Programming via Multicast
- Commissioning (BLE Demo, NFC Demo, Smart App)
- WiFi and Ethernet to Cloud
- Smart Phone Apps
- FCC/CE/IC\*







**THANK YOU!**



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