

S2-LP: Ultra-low-power, high-performance, sub-1GHz RF transmitter and transceivers



The S2-LP are ultra-low-power, wireless, sub-1GHz proprietary RF transmitter and transceivers

Designed principally for the ISM frequency bands, it shows top-notch RF performance and unparalleled energy efficiency extending battery life from months to more than 10 years. The embedded radio guarantees an RF link budget in excess of 145 dB in addition to a compelling output power up to +16 dBm, resulting in a reliable long-distance RF link. It is ready for SIGFOX, KNX-RF, Wireless M-Bus, 6LowPAN and WiSUN networking connectivity, simplifying the design of IoT applications and enabling remote sensors to the Cloud.

KEY FEATURES

- Ultra-low power consumption
 - 600 nA in Sleep mode
 - 7 mA in Receive mode*
 - 10 mA in Transmit mode @ +10 dBm
 - Sniff mode*
- RF link budget higher than 145 dB*
- Up to +16 dBm output power
- Frequency bands:
 - 413-479 MHz (S2-LPQTR and S2-LPTXQTR)
 - 452-527 MHz (S2-LPCBQTR)
 - 826-958 MHz (S2-LPQTR and S2-LPTXQTR)
 - 904-1055 MHz (S2-LPCBQTR)
- Modulation schemes: 2(G)FSK, 4(G)FSK, OOK, ASK
- On-chip DC/DC step-down converter and linear regulator
- Fully integrated ultra-low power RC oscillator
- 128-byte Receive* and Transmit FIFO
- Robust CSMA/CA engine based on listen-before-talk systems*
- Embedded flexible packet handler
- Suitable for SIGFOX™ connectivity
- IEEE 802.15.4g packet handler
- Wireless M-BUS, KNX-RF, 6LowPAN and WiSUN ready
- Suitable for building systems targeting world-wide regulatory standards

*RX Feature only available on transceivers: S2-LP and S2-LPCB

Sub-1GHz transmitter and transceivers connect smart things to the cloud

KEY BENEFITS

- Extended battery life up to 10 years
- Long distance and reliable RF connections
- Connects smart things to the Cloud without a local gateway

KEY APPLICATIONS

Smart metering, Industrial monitoring and control, Home energy management systems, Smart parking, Wireless alarm systems, Asset tracking devices

Order Code	Description
S2-LPQTR	Transceiver for 413-479 MHz and 826-958 MHz Bands
S2-LPCBQTR	Transceiver for 452-527 MHz and 904-1055 MHz Bands
S2-LPTXQTR	Transmitter for 413-479 MHz and 826-958 MHz Bands



Available tools and technical documentation

Evaluation kit	STEVAL-FK1433V2	Sub-1GHz transceiver development kit tuned for 430-470 MHz based on S2-LPQTR
	STEVAL-FK1868V2	Sub-1GHz transceiver development kit tuned for 860-940 MHz based on S2-LPQTR
	STEVAL-FK1915V1	Sub-1GHz transceiver development kit tuned for 860-940 MHz allowing to reach +27 dBm based on S2-LPQTR
	STEVAL-FK1512V1	Sub-1GHz transceiver development kit tuned for 452-527 MHz based on S2-LPCBQTR
	X-NUCLEO-S2868A2	Sub-1 GHz 868 MHz RF expansion board based on S2-LP radio for STM32 Nucleo
	X-NUCLEO-S2915A1	Sub-1 GHz 915 MHz RF expansion board based on S2-LP radio for STM32 Nucleo allowing to reach +27 dBm
HW resources	Schematic pack	Evaluation kit: schematics
	BOM	Evaluation kit: bill of material
	Gerber pack	Evaluation kit: board manufacturing specification
SW resources	GUI	Graphical user interface for driving by PC evaluation kit
	Library	Library drivers
	Examples	Embedded examples
Documentation	AN4190	Antenna selections guidelines
	AN4947	PCB design guidelines for the S2-LP transceiver
	AN4949	Using the S2-LP transceiver under FCC title 47 part 15 in the 902 – 928 MHz band
	AN4953	Using the S2-LP transceiver under ARIB STD-T108 in the 920 MHz band
	AN4962	S2-LP ETSI compliance test at 868 MHz SRD band
	AN4997	FCC part 15 @433 MHz compliance
	AN5008	ARIB STD-T67 @ 449 MHz compliance
	AN5009	FCC part 90 in 450-470 MHz band masks D and E compliance
	AN5029	Using the S2-LP transceiver with FEM at 500 mW under FCC title 47 part 15 in the 902 – 928 MHz band
	UM1904	Getting started with X-CUBE-SUBG1, Sub-1 GHz RF software expansion for STM32Cube
	UM2669	Getting started with X-CUBE-SUBG2, Sub-1 GHz RF software expansion for STM32Cube
	UM2149	Getting started with the S2-LP development kits
	UM2169	Getting started with the SIGFOX S2-LP kit
	UM2173	SIGFOX firmware library user manual
	UM2211	BLE-Sub1GHz development kit
	UM2638	Getting started with the X-NUCLEO-S2868A2 Sub-1 GHz 868 MHz RF expansion board based on S2-LP radio for STM32 Nucleo
	UM2641	Getting started with the X-NUCLEO-S2915A1 Sub-1 GHz 915 MHz RF expansion board based on S2-LP radio for STM32 Nucleo

