

Integrated multi-band RF synthesizers

The STW8110x family reduces RF BOM and footprint by up to 60% while increasing reliability



Demonstrating high performance, high integration, wideband and multi-band capabilities, **STMicroelectronics'** STW8110x RF synthesizers are single-chip alternatives to discrete, expensive and bulky PLL and VCO solutions.

Each of the three different versions of STW8110x include an integer-N frequency synthesizer and two fully integrated VCOs which feature low phase noise and a noise floor of -155 dBc/Hz. The combination of wide frequency-range VCOs and multiple output options (direct output, divided by two, or divided by four) allows the synthesizers to show multi-band features and frequency coverage up to 5 GHz.

Key features

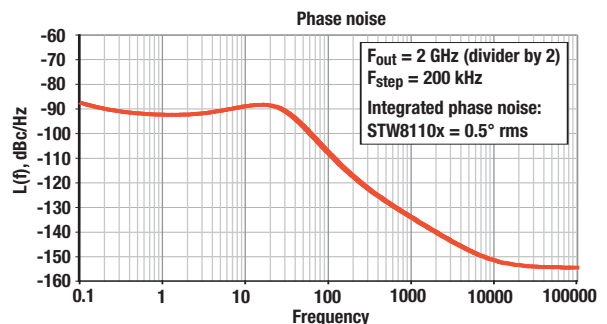
- Integer-N frequency synthesizer
- Dual differential integrated VCOs with automatic center frequency calibration
- Embedded dividers by 2 and by 4
- Fast lock time: 150 μ s
- Dual modulus prescaler
- Two programmable counters
- Programmable reference frequency divider
- Frequency comparator and charge pump
- Programmable charge pump current
- Digital lock detector
- Dual digital bus interface: SPI and I²C bus
- Evaluation kit includes:
 - Evaluation board
 - GUI (graphical user interface) to program the device.
 - Measured S parameters of the RF output
 - ADS2005 schematics providing guidelines for application board design
 - STWPLLSim software for PLL loop filter design and noise simulation

Main benefits

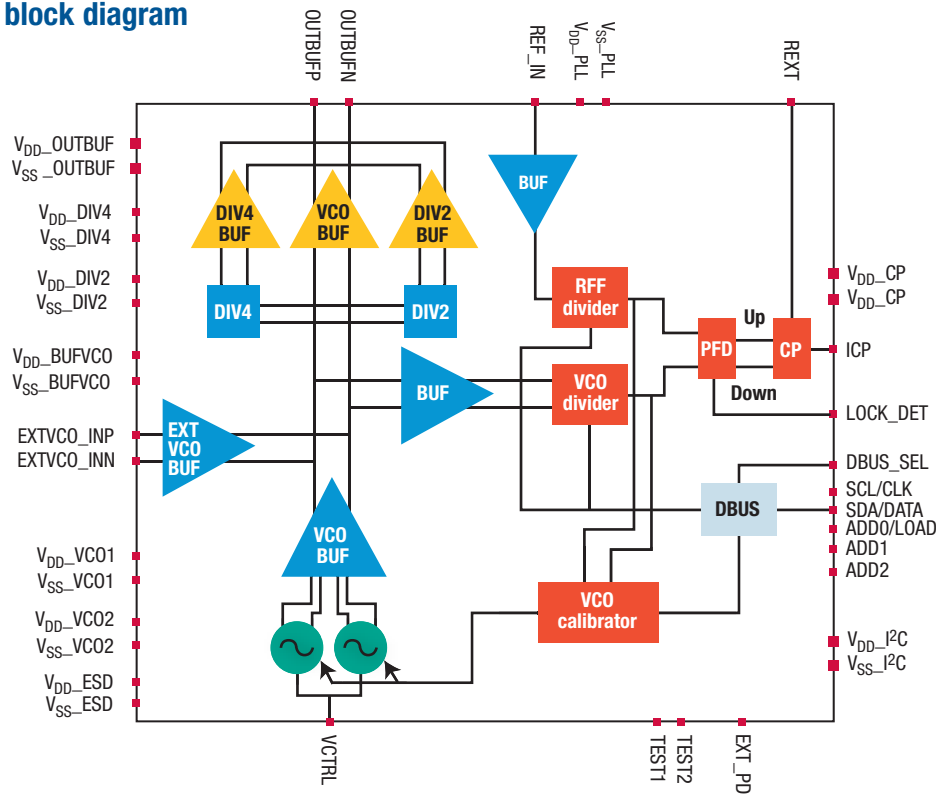
- High level of integration: single-chip PLL and VCOs leads to reduced BOM and footprint plus increased reliability
- Wideband coverage: only single-chip synthesizers operating up to 5 GHz
- Multi-band support: multiple output options enable each synthesizer to address 1 GHz, 2 GHz and 4 GHz bands
- Excellent PLL phase noise: best-in-class integrated phase noise performance

Typical applications

- Cellular 3G infrastructure equipment
- Other communication systems
- Test and instrumentation equipment



STW8110x block diagram



STW8110x family

Part number	Output frequency range	Closed loop phase noise (dBc/Hz) – typical values		
		1 GHz (with divider by 4, 100 kHz step)	2 GHz (with divider by 2, 200 kHz step)	4 GHz (direct output, 400 kHz step)
STW81101	825 to 1100 MHz 1650 to 2200 MHz 3300 to 4400 MHz			
STW81102	750 to 905 MHz 1000 to 1162 MHz 1500 to 1810 MHz 2000 to 2325 MHz 3000 to 3620 MHz 4000 to 4650 MHz	-67 @ 1 kHz -95 @ 10 kHz -114 @ 100 kHz -140 @ 1 MHz -154 @ 10 MHz -155 @ 40 MHz*	-61 @ 1 kHz -89 @ 10 kHz -112 @ 100 kHz -134 @ 1 MHz -152 @ 10 MHz -155 @ 40 MHz*	-55 @ 1 kHz -83 @ 10 kHz -106 @ 100 kHz -128 @ 1 MHz -149 @ 10 MHz -158 @ 40 MHz*
STW81103	625 to 762.5 MHz 1087.5 to 1525 MHz 2175 to 3050 MHz 4350 to 5000 MHz			

* Noise floor



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China +86 21 34054689; France +33 1 55489569; Germany +49 89 4605454; Italy +39 02 8250449; Japan +81 3 57838216; Singapore +65 6481 7771; Sweden +46 8 58774411; Switzerland +41 22 9292900; United Kingdom and Eire +44 1628 890391; USA +1 781 861 2678

Full product information at www.st.com

