

Integrated multi-band RF synthesizers



The STW8110 cost-optimized integer-N series reduces RF BOM and footprint with top performances

ST's widely deployed STW8110 series of RF synthesizers are single-chip cost-optimized alternatives to discrete PLL and VCO solutions or other more expensive solutions.

Each of the three devices in the STW8110 series 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

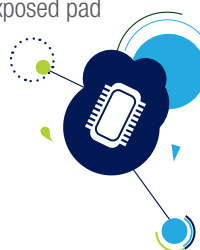
- Integer-N frequency synthesizer
- Dual differential integrated VCOs with automatic center frequency calibration
- Embedded dividers by 2 and by 4
- Fast lock time: 150 μ s
- Dual modulus prescaler
- Two programmable counters
- Programmable reference frequency divider
- Frequency comparator and charge pump
- Programmable charge pump current
- Digital lock detector
- Dual digital bus interface: SPI and I²C bus
- Package: VFQFPN28 exposed pad 5 x 5 x 1.0 mm

KEY BENEFITS

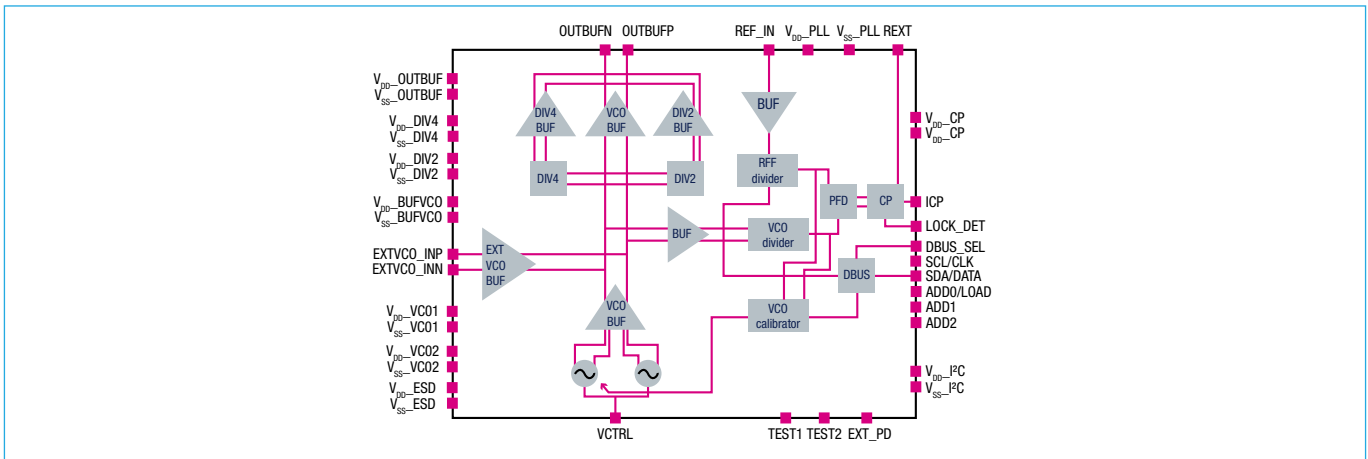
- High level of integration: single-chip PLL and VCOs leads to reduced BOM and footprint plus increased reliability
- Wideband coverage: single-chip synthesizers operating up to 5 GHz
- Multi-band support: multiple output options enable each synthesizer to address 1 GHz, 2 GHz and 4 GHz bands
- Excellent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

TARGETED APPLICATIONS

- Cellular 3G/4G infrastructure equipment
- Other wireless infrastructure equipment
- Satellite, cable modems and other communication systems
- Test and instrumentation equipment



STW8110 BLOCK DIAGRAM



EVALUATION KITS

Evaluation kits for the STW8110 series include:

- Evaluation board
- GUI (graphical user interface) software to program the device
- Measured S parameters of the RF output
- ADS2005 schematics providing guidelines for application board design
- STWPLLSim software to simulate PLL performance and loop filter design
- PC connection cable

Three evaluation board options are available for each STW8110 device, tuned for sub bands around 1GHz, 2GHz and 4GHz. See table below for order codes.

STW8110 SERIES

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)	Evaluation kit order codes
STW81101	825 to 1100 MHz 1650 to 2200 MHz 3300 to 4400 MHz				STW81101-EVB1G/2G/4G
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	STW81102-EVB1G/2G/4G
STW81103	625 to 762.5 MHz 1087.5 to 1525 MHz 2175 to 3050 MHz 4350 to 5000 MHz				STW81103-EVB1G/2G/4G

FOR FURTHER INTEGRATION

The STW8210 series of RF down-converters combines the STW8110's synthesizer core with a high-linearity RF mixer and an IF amplifier.



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