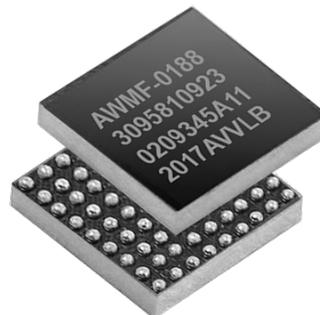


## Product Features

- Single-chip frequency up/down-conversion
- 24 to 30 GHz multi-band RF operation (3GPP n257, n258, n261)
- Wideband IF range
- Fully integrated sideband and image rejection
- Integrated Tx/Rx half duplex switch
- Active Tx/Rx conversion gain
- Tx/Rx half duplex operation
- On-chip x4 LO frequency multiplier
- High Rx linearity
- Single 1.8V supply operation



## New Updates

- Flat wideband IF and RF response
- Industry leading spectral purity
- Autonomous temperature telemetry and rejection
- Power detectors on all ports
- RF Bypass mode enabling scalable antenna arrays
- WLCSP package for easy flip chip installation in planar phased array antennas

## Related Parts

- See [AWMF-0165](#) for n258 and [AWMF-0200](#) for n258/n261 beamformer ICs
- See [AWMF-0161](#) for n260 IF up/down converter

## Description

The AWMF-0188 is a highly integrated silicon frequency-conversion IC intended for 5G phased array applications. When used together with Anokiwave's beamformer IC products, this device enables low-cost, high-performance, and feature-rich 5G phased array systems.

The half-duplex IC integrates Tx single-sideband up-conversion and Rx image-reject down-conversion functionality with programmable high side or low side LO. An on-chip frequency multiplier simplifies board-level integration with external PLLs. The multi-function device also includes an RF bypass mode in which the frequency-conversion function is bypassed, and the IC effectively functions as an RF gain block. This feature enables a scalable phased-array architecture without the use of numerous discrete amplifier and switch components.

The IF up/down converter ICs are fully compatible with the respective Anokiwave Beamformer ICs, sharing common mechanical and electrical interfaces, and designed for cascade integration from IF to antenna and back.



Anokiwave, Inc.  
5355 Mira Sorrento Pl  
San Diego, CA 92121

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www.anokiwave.com  
1-858-792-9910  
innovation@anokiwave.com

## AWMF-0188 Developer Kit

The developer kits (AWMF-0188-DK, AWMF-0188-DL) include all hardware and software required to interface to the AWMF-0188. The kits enable full evaluation and RF testing of the converter IC with user-friendly interfaces, including off chip baluns to present a single ended IF input and output. The test board has been carefully designed to demonstrate the performance of the device and to provide the necessary port to port isolation. Calibration data is included to enable the removal of test board line losses. The SPI control is supported through a high-speed cable, interposer board, and USB interface module. Driver software and GUI are supplied to provide control from a PC. DC power is supplied to the test board through a separate cable assembly also included in the kit. A full set of measured data is included to provide reference performance for each Developer Kit. Evaluation of the AWMF-0188 with the Developer Kits will significantly shorten the time to become familiar with the operation and performance of the product, thereby reducing system development time and cost.

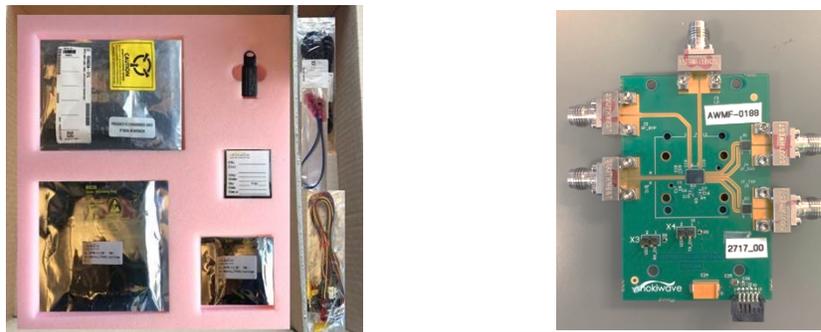


Figure 1: AWMF-0188-DK Contents and Evaluation Board

### Developer Kit Contents

- 1 x Test board with 5 x RF connectors, 1 x DC connector, and 1 x SPI connector
- 1 x DC power cable assembly
- 1 x high speed SPI cable assembly
- 1 x SPI interposer board
- 1 x USB-SPI interface module
- SPI driver software
- Control software with User Guide, full test results, and board calibration
- 1 x Software Installation and Control Software User's Guide
- 10 extra ICs (AWMF-0188-DK only)
- Gerber files, PCB layout support, and Anokiwave design assistance (AWMF-0188-DK only)

## Ordering Guide

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Model	Package	MSL Rating	Package Description	Package Option	Package Marking
AWMF-0188	WLCSP		WLCSP		AWMF-0188 ZZZZZZZ YYWWGHIJ KLMNOP_X
AWMF-0188-DK			Developer's Kit for evaluation (includes 10 extra ICs + support)		
AWMF-0188-DL			Developer's Kit Lite (without additional ICs or support)		