

# PRODUCT SERIES DATA SHEET

## S-Band Transmit Upconverter

OMP designs and builds a wide range of RF & Microwave Subsystems and Antennas.

This product series data sheet is one in a number of publications where we present general specifications of product series that we have developed.

These documents are intended to give you an overview of the type of work we do and they will help you in determining your requirements for a specific application.



### Application

This unit converts an industry standard 70, 140 or 160 MHz IF signal to S-Band. One or more RF filters (SAW or ceramic type depending on the requirements) reject the unwanted image and local oscillator signals.

This front end is part of a MIMO system and is 802-11g compliant.

While this converter operates at S-Band, similar systems have been developed for L, C, X and Ku-Band.

### Configurations

After a single up conversion and filtering, the RF output signal is amplified to 10 dBm. The converter can be set to deliver 20 or 30 dBm and other power output levels can be easily accommodated for.

A programmable attenuator provides output power control.

Channel bandwidth is 22 MHz.

### Filtering

A SAW filter at the input IF port serves as a channel shaping filter. A wide range of IF filter -3 dB bandwidths is available in between 1 and 75 MHz.

The standard output filter is an off-the-shelf SAW type. Ceramic or mechanical filters and duplexers can be integrated to meet stricter filtering requirements.

### KEY FEATURES

- Series RF frequency transmit upconverters
- Receive converters available
- Full duplex converters available
- Available for L, S, C, X, Ku-Band
- Wide range of IF input frequencies and bandwidths
- Internal or external power supplies
- TCXO or OCXO on board frequency reference
- Internal frequency reference output available
- Local oscillator can be locked to external frequency reference
- Stand alone units or integrated in a 19" IF subsystem

# PRODUCT SERIES DATA SHEET

## S-Band Transmit Upconverter

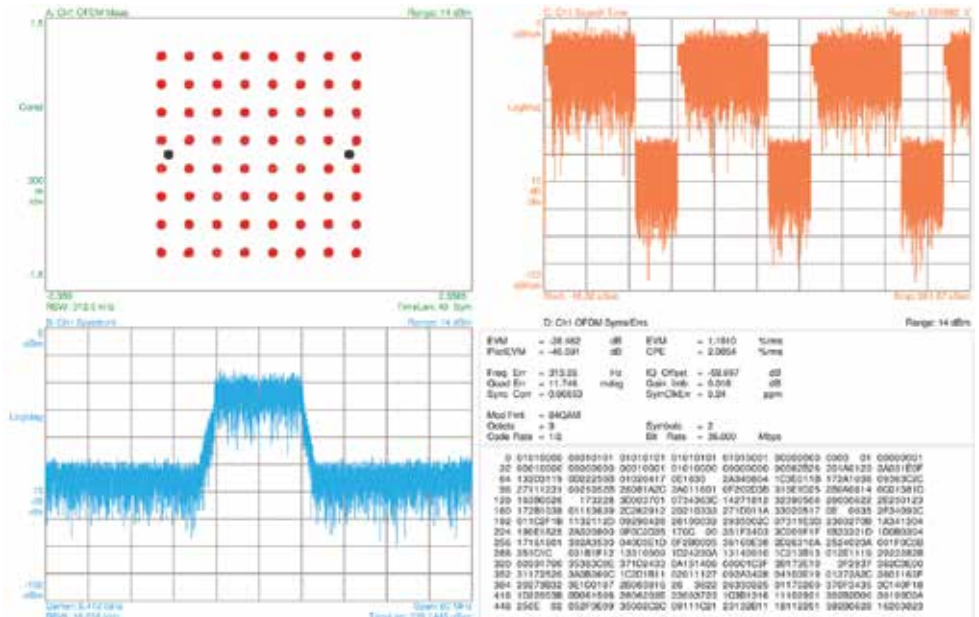


### Local Oscillator

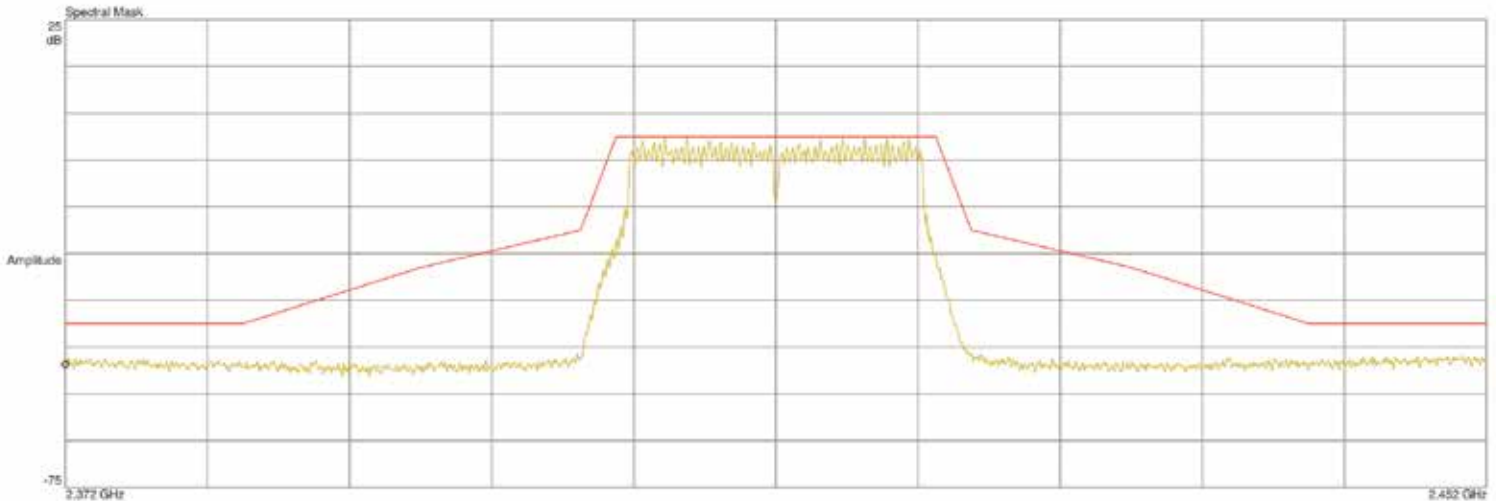
The Local Oscillator uses an industry standard PLL, VCO and a precision OCXO for high frequency stability and low local oscillator phase noise. LO phase noise is better than -85 dBm/Hz @ 10 KHz. LO step size is 5 MHz. The local oscillator can be built with DRO's for an extremely low phase noise.

### Interface

Output frequency and power can be controlled through an industry standard RS232 serial port. Settings are stored in non-volatile memory. An on board processor monitors the unit and allows programming of frequency and output power level.



EVM plot of L-Band converter in an OFDM setup



L-Band upconverter spectral mask

# PRODUCT SERIES DATA SHEET

## S-Band Transmit Upconverter



### Specifications

Parameter	Value
<b>Converter</b>	
Output RF frequency range	2.4 GHz to 2.484 GHz
Maximum output power level	11 dBm
Minimum output power level	-20 dBm
IF input frequency	140 MHz
IF input power level	-10 dBm
IF bandwidth	16 MHz
Minimum system gain	21 dB
Output power control range	31 dB
Power control range resolution	1 dB
Spurious	< -36 dBm (< 1 GHz) > -30 dBm (> 1 GHz)
OIP3	45 dBm
Intermodulation	-50 dBc
<b>Local Oscillator</b>	
Phase noise	< -90 dBc/Hz @ 10kHz
Reference frequency	10 MHz OCXO
Stability	±20 ppb
Accuracy	±100 ppb

### Optional Custom Modifications:

Other frequency bands: L, C, X, Ku-Band

Full duplex up and downconverter

IQ modulator/demodulator

Higher output powers

Additional filtering

LO with extremely low phase noise

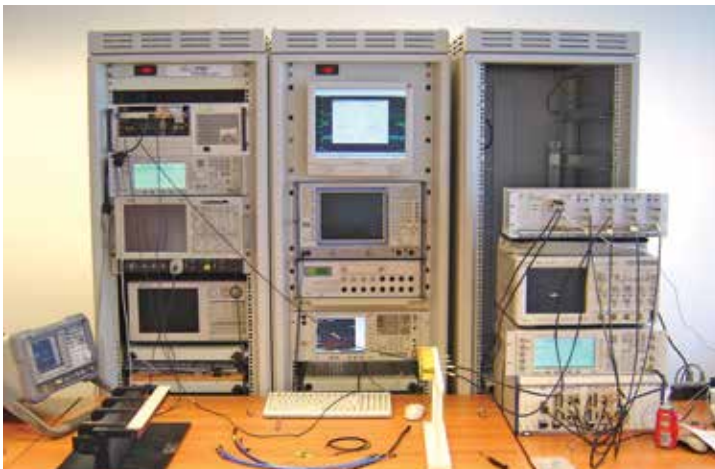
Custom channel spacing

Other IF SAW filter bandwidths: 1, 2.5, 5, 10, 20, 40, 60 and 75 MHz

Custom IF frequencies

Local oscillator with integrated direct digital synthesizer (DDS)

If you have different requirements for a similar design or a completely new set of requirements, please contact us at the numbers listed below or via mail.



4 Upconverters in a MIMO test setup

# PRODUCT SERIES DATA SHEET

## S-Band Transmit Upconverter



OMP was established in 1996 and specializes in the design, manufacture and support of a wide range of RF & Microwave and Antenna Subsystems.

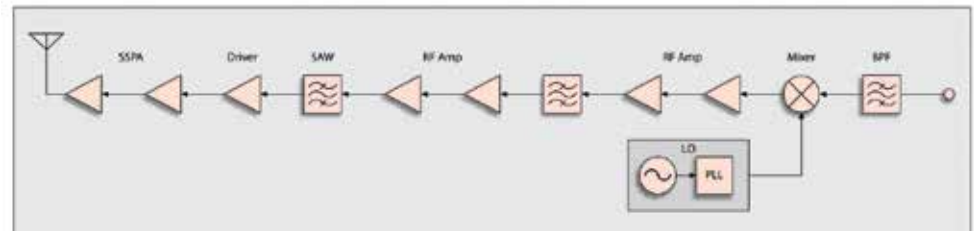
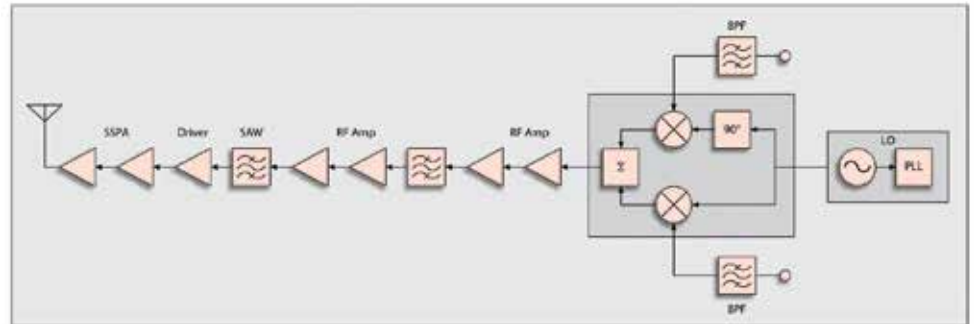
Our products are integrated in a wide range of applications serving various markets.

Our typical customer is unable to locate a standard product to fit his requirements or may not have an in house design and build capability.

We are an economic, complete and quick answer to this need.

Since we are not a catalog manufacturer who depends on high volume production, your custom requirement is our only priority. We have been exclusively making specials for years, we have produced numerous variations and we draw on that experience to reduce design cost and lead times.

- OMP designs and builds to customer's specifications
- We support products through their entire product lifecycle
- An extensive library of designs is used to create custom products
- OMP uses state-of-the-art circuit and 3D electromagnetic simulations tools
- OMP uses rapid prototyping for fast turnaround
- We will work with our customers on the integration of products designed
- We work with selected partners for agency approval.



Upconverter block diagrams

### Our Contact Info

Orban Microwave, Inc.  
1834 N Alafaya Trail, Suite B  
Orlando, FL 32826  
321-200-0080

Orban Microwave Products N.V.  
Remylane 4c, Box 6  
3018 Leuven, Belgium  
+32-16-294953

© 2014 Orban Microwave Products. All rights reserved.  
005-105-002