



Advanced Technology Applications

**Q4 2024**

***Product Catalogue***

Wave Advanced Technology Applications S.r.l.

[www.wave-srl.com](http://www.wave-srl.com)

## Company Profile

The core business of Wave S.r.l. is the development of radiofrequency and microwave electronic circuits targeted to the space, telecommunication and defence markets.

Wave S.r.l. was born in 2005, in Rome, Italy. During more than 18 years Wave has developed specific competences both in the design of Monolithic Microwave Integrated Circuit (MMIC) and Hybrid Integrated Microwave Modules (HMIC). Wave know-how and experience spans from UHF to 60GHz. Since 2007 the company manufactures and sells wireless devices for telecommunication network in urban and rural scenarios.



Company competences span through different sectors, the most significant are:

- Solid State Power Amplifier (SSPA) for space, defence, radar and telecommunication applications
- Datalink (UAV, Defence, Mobile) RF modules, channel emulators, 5G, IoT and ISM applications
- Microwave Modules: Low Noise Amplifiers, Synthesizers, Mixer ecc.. dedicated to: automatic test equipment (ATE), SATCOM, 5G, IoT
- SATCOM Applications: Receivers, LNAs, BUC and SSPAs for fixed and mobile terminals
- GaN and GaAs MMICs for space, defence and telecommunication markets

Wave is fully equipped with a manufacturing and testing microwave facility. The Facility is composed by two main working centers: precision mechanics CNC and microelectronics/RF PCB qualified for production, reworking, testing and tuning of complex microwave modules operating in space and defence markets.

Since 2018 Wave has been ISO9001:2015 qualified for both mechanics and electronics design and manufacturing.

Since 2017 Wave is has been appointed by the Analog Device as a certified design center and has been accepted in the ADI Alliance group being able to access all the forefront technologies for wireless applications.

Wave works mainly in the Aerospace and Defence markets with a residual presence also in the Telecommunication market for 5G and IoT applications specific equipment.

## Quality and Security Certifications

Since 2018 Wave has completed the ISO 9001:2015 certifications for:

- RF, microwave and millimetre wave module development for the space, defence and telecommunication markets.
- Electronic modules and precision mechanics production and prototyping.



## Certificate

The SQS herewith attests that the organisation named below has a management system that meets the requirements of the normative base mentioned.

### Wave Advanced Technology Applications s.r.l.

Via Adriano Olivetti, 24/26  
00131 Roma (RM)

Italy

#### Scope

RF, microwave and millimeter wave module development for the space, defence and telecommunication markets. Electronic modules and precision mechanics productions and prototyping

#### Normative base

ISO 9001:2015

Quality Management System

Reg. no. 52005  
Page 1 of 1

Validity 13.06.2024 – 12.06.2027  
Issue 13.06.2024

7801.../J/Verf.03.2022/Wave.2.0



  
A. Grisard, President SQS

  
F. Müller, CEO

Swiss Association for Quality and Management Systems (SQS)  
Bernstrasse 103, 3052 Zollikofen, Switzerland



## Security Clearance

In 2021 Wave has acquired the Italian art.28 TULPS security clearance and it has been authorized to design, manufacture and manage classified and armament related electronic equipment.

## Product Overview

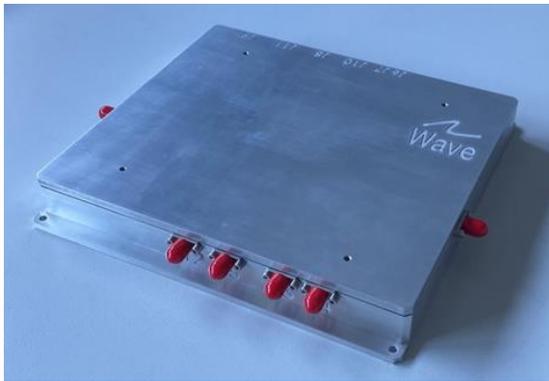
Wave products can be grouped into four categories, depending on the main function.

### Frequency Converters

Wave manufactures UP and DOWN converters covering the 2-18GHz frequency band.

The converters are full IP based Microwave equipment giving the user a total freedom of use inside Automatic Test Equipment or measurements labs.

Ranging from S band to Ku Wave converters can be used for 5G, Defence and Aerospace equipment.



Frequency Converter							
PN	Function	RF Band [MHz]	IF Band [MHz]	Integrated Synthesizer	STRATUM Level OCXO	RF Variable Filter	IF Variable Filter
AS-00099-A	Down Converter	2000-18000	2500-3500	YES	YES	YES	YES
AS-00098-A	UP Converter	2000-18000	1000-2000	YES	YES	YES	-
AS-00094-A	SATCOM UHF UP/Down Converter	230-297 DWN 257-357 UP	70 +/- 400KHz	YES, DUAL	YES	-	-
AS-00122-A	MOD - DEMOD Testing System	400-6000	DC-600	YES	YES	-	-

Table 1: Up and Down Converters

### Modular Datalink System

Wave Modular Datalink System is an innovative Datalink eco-system which enables the customer to define the ideal Datalink device from the FPGA up to 40GHz.

Fully configurable Wave Modular Datalink System is composed by different building blocks: power and signal processing, UP/DOWN converters, Transmit-Receive modules.

The system is a full MIMO 2x2 equipment, able to work in half duplex and full duplex applications.

Plenty of user space is left for custom signal processing in order to totally customize the Datalink device to the specific application.

With a minimal size: just 6,5cm diameter, the Wave Modular Datalink System can be used in the most space constrained applications.



Modular Data Link Unit System						
PN	Function	RF Band [MHz]	RF Chains	Integrated Synthesizer	Frequency Hopping	RF Variable Filter
AS-00115-A	Power Unit Block					
AS-00116-A	System on Module Block MIMO 2x2 Digital Trasceiver	30 - 6000	N.2 TX N.2 RX	NA	NA	NA
AS-00117-A	Dual UP/DWN Converter Block	2000-18000	N.2 TX N.2 RX	YES, DUAL	YES	YES
AS-00118-A	Dual TRM Block	2000-18000	N.2 TX N.2 RX	NA	NA	NA
AS-00119-A	Dual Ka Band UP/DWN Converter Block	20000-40000	N.2 TX N.2 RX	YES, DUAL	YES	YES
AS-00120-A	Dual Ka TRM Block	20000-40000	N.2 TX N.2 RX	NA	NA	NA
AS-00143-A	Dual TRM 18-26GHz Block High Power - Modular DLU	2000-18000	N.2 TX N.2 RX	NA	NA	NA

Table 2: Modular Data Link Building Blocks

## Digitally Tunable Filters

The AS-00104-A is the first member of the digitally tunable filters developed by Wave. It covers the entire 2-18GHz perfect suited for ATEs integrations and EW equipment. The filters are fully controlled via IP over ethernet. This unique feature enables a seamless integration of the filters inside an exiting test lab environment or ATE equipment.



Digitally Tunable Filters							
PN	Function	RF Band [MHz]	Min % Bandwidth [MHz]	Max % Bandwidth [MHz]	Min Gain [dB]	Min Noise Figure [dB]	Amplitude Control Step [dB]
AS-00104-A	Digitally Tunable Filter	2000-18000	9	147	7,6	5,5	0,5

Table 3: Digitally Tunable Filters

## Miscellaneous

Complimentary to the other product families the Miscellaneous product are used as expansions, developing platforms or feature enabling modules. Typical example are the AS-00145-A and AS-00146-A developing platforms for the Modular Datalink. They have been designed as a test bed to study and fine tune the use of TRM modules, mainly the AS-00118-A and AS-001143-A, inside a phased array antenna covering the X and K band.

Miscellaneous	
PN	Description
AS-00100-A	Development Kit for AS-00094-A
AS-00145-A	X Band TRM Beam Forming Development Platform
AS-00146-A	K Band TRM Beamforming Development Platform

Table 4: Miscellaneous Products

## Contacts

Wave Advanced Technology Applications S.r.l.

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## Sales Agents

ITALY



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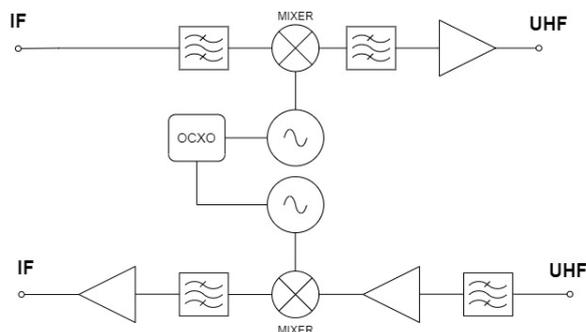
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# *Frequency Converters*

# *Frequency Converters*

### Functional Diagram



### Features

UHF SATCOM Up/Down Converter

RX: 230-297 MHz

TX: 257,2-357,2 MHz

IF: 70MHz

Full Duplex

Dual Integrated Synthesizer

### Description

The UP/DOWN CONVERTER module is designed for the conversion of UHF SATCOM signals to/from an IF of 70 MHz. The module features two independent chains for UP and DOWN conversion, enabling full duplex operation; each chain is supported by a low-spur synthesizer, programmable across the entire RX/TX UHF SATCOM band.

With a noise figure (NF) of 3 dB and a gain of 32 dB, the DOWNCONVERTER can operate without an LNA. The transmitter section, with a conversion gain of -5 dB, allows for output power levels exceeding 24 dBm at 1 dB compression point. The module is thus ready to drive an HPA directly.

The AS-00094-A is the ideal solution for creating a full-duplex front end associated with an LNA and an HPA. With direct conversion to 70 MHz, the module enables the use of low-cost SATCOM modems.

### RX Specifications

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Frequency Range - RX	230 - 297	MHz
IF Frequency Range	70 +/- 0,4	MHz
RX Gain	32	dB
Noise Figure	3,5	dB
Input P1dB	24	dBm

**TX Specifications**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Frequency Range - TX	257,2 – 357,2	MHz
IF Frequency Range	70 +/- 0,4	MHz
TX Gain	-5	dB
Output P1dB	24,4	dBm

**Dimensions and Interfaces**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF/IF connectors	SMPM Fem	
Power	Custom	
Data	Custom	
Control Protocol	SPI	
Supply Voltage	+7V	
Dimensions	60 x 60 x15	mm

*Specifications may change without notice*

**Picture****Features**

- Wideband Downconverter: 2-18GHz
- Image Reject Conversion
- NF = 3.5dB
- Gain = 6.5dB
- IIP1dB = -11.7dBm
- Tunable RF and IF filtering
- Variable Attenuation
- IP controlled
- Low-Spur integrated synthesizer
- OCXO reference

**Description**

The AS-00099-A is a wideband Downconverter integrating a low noise amplifier in order to reduce the impact of the frequency conversion over the noise figure of the system in which the converter is integrated.

A digitally controlled attenuator is present before the frequency conversion in order to control and optimize the converter linearity as a function of the input power.

The AS-00099-A is equipped with a digitally tunable pass band filter before the mixer in order to limit the bandwidth of the input signal and reduce the unwanted spurs and mixing products at the IF frequency.

After the image rejection conversion another digitally tunable filter is used to remove all the unwanted spurs on the IF port.

La conversione è effettuata ad opera di un mixer a reiezione di immagine ed il segnale a IF emergente è filtrato per mezzo di un filtro tunable.

LO signal is internally generated by a wide band low-spur synthesizer driven by a temperature stabilized reference (OCXO). The AS-00098-A can use an external LO source instead of the internal synthesizer.

The AS-00098-A can be used as a wide-band RF/microwave synthesizer (100MHz – 22GHz) since the internal synthesizer output can be deviated to the LO OUT connector.

The AS-00098-A is fully configurable via IP with a serial protocol. The whole module configuration can be saved and stored in order to be ready to operate on the next power on.

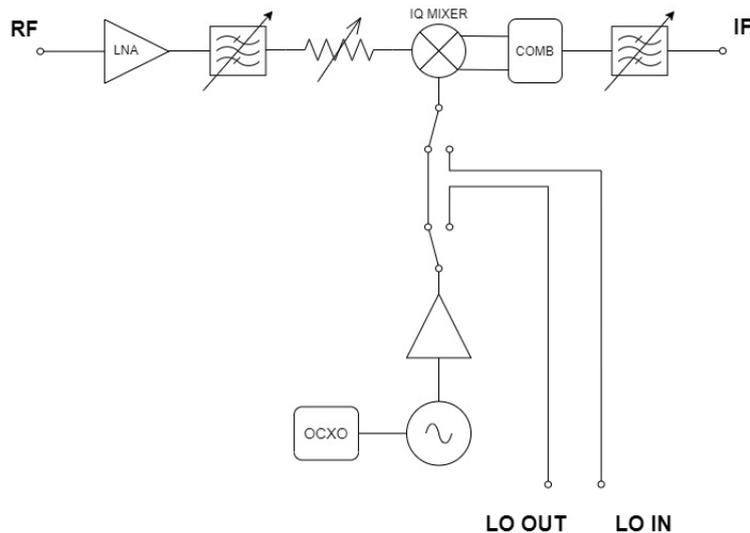
**Specifications\***

<b>Parameter</b>	<b>Tip.</b>	<b>Unità</b>
RF Frequency Range	2 - 18	GHz
IF Frequency Range	1 – 2	GHz
Gain	6.5	dB
Noise Figure	3.5	dB
Input 1dB Comp. Point	-11.7	dB
Supply Voltage	+5	V
RF/IF Connectors	SMA Fem	
Power Connector	Custom**	
Data Cable	RJ45	
Dimensions	10x8x2.5	cm

\*: Specification may change without notice

\*\* : Power cable is supplied with the module

**Functional Diagram**



## Picture



## Features

- Wideband Upconverter : 2 – 18 GHz
- Image Reject Conversion
- RF Output variable filter
- Low-Spur integrated synthesizer
- OCXO reference
- Gain: 6 dB
- Noise Figure: 15 dB
- Input P1dB: 2.5dBm

## Description

The AS-00098-A is a wideband UPconveter operating an image rejecting frequency conversion. The upconverted signal is filtered via a software tunable passband filter to select the desired mixing product and rejecting all the unwanted spurs. After the tunable filter the signal is amplified in order to recover the conversion losses and deliver a quite good power signal to drive an HPA. The amplification level can be fully customized with a digitally controlled step attenuator: 0,25dB step up to 31dB of total attenuation.

LO signal is internally generated by a wide band low-spur synthesizer driven by a temperature stabilized reference (OCXO). The AS-00098-A can use an external LO source instead of the internal synthesizer.

The AS-00098-A can be used as a wide-band RF/microwave synthesizer (100MHz – 22GHz) since the internal synthesizer output can be deviated to the LO OUT connector.

The AS-00098-A is fully configurable via IP with a serial protocol. The whole module configuration can be saved and stored in order to be ready to operate on the next power on.

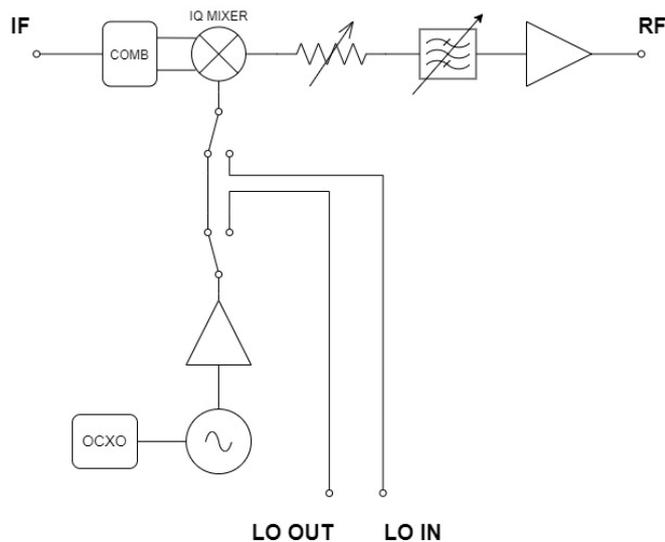
### Specifications\*

<i>Parameter</i>	<i>Typ.</i>	<i>Unit</i>
RF Frequency Range	2 - 18	GHz
IF frequency Range	1 - 2	GHz
Gain	6	dB
Noise Figure	15	dB
Input P1dB	2.5	dBm
OIP3	22.8	dBm
Supply Voltage	+5	V
RF/IF Connectors	SMA Fem	
Power Connector	Custom**	
Data Cable	RJ45	
Dimensions	10x8x2.5	cm

\*: Specification may change without notice

\*\* : Power cable is supplied with the module

### Functional Diagram





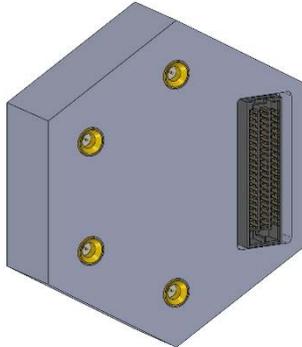
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# ***Modular Datalink System***

# ***Modular Datalink System***

### Block Diagram



### Features

- 20-49GHz Dual TRM
- Support 2x2 MIMO transceiver
- Up to 25dBm over full band

### Description

AS-00120-A is a state-of-the-art dual TRM covering the 20-40GHz frequencies. Internally 2 x RX chain and 2 x TX chain are singularly connected to 4 antennas connectors.

The AS-00120-A is equipped with GaAs power amplifier delivering up to 25dBm over the full band with an efficiency of more than 20%. A NF of 5.5dB with an RX gain of 19dB guarantees very good receiving performances over the full band.

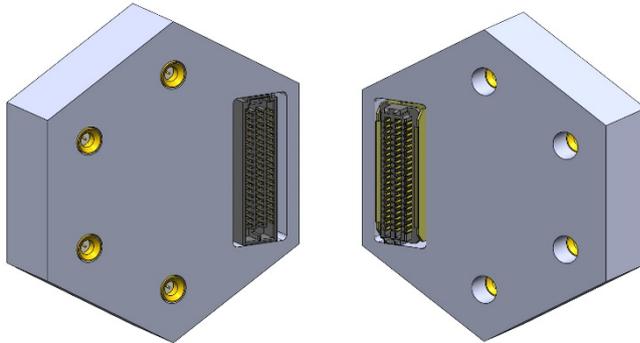
The AS-00120-A is designed to be used together with AS-00119-A, transceiver module to realize a full equipped MIMO fronted.

### Module Specifications \*

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Operating Frequencies	20 ÷ 40	GHz
Pout	25	dBm
NF	5.5	dB
RX Gain	19	dB
TX Gain	14	dB
RF I/O Interfaces	8 x SMP	
Data / Power Input Interface	SAMTEC SEAM 120pin	
Dimensions	7 x 7 x 1,5 (L x W x H)	cm

\*Specification may change without notice

**Block Diagram**



**Features**

- 20-40GHz Dual Up/DWN Converter
- Support 2x2 MIMO transceiver
- Designed for Fast Frequency Hopping
- On board ultra-stable Synthesizer

**Description**

AS-00119-A is a state of the art dual (2xRX, 2xTX) frequency converter covering 20-40GHz.

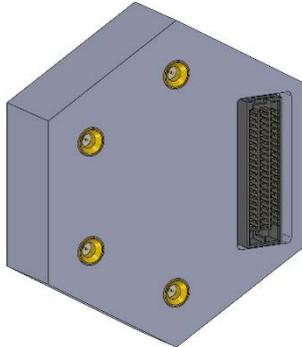
The AS-00119-A is equipped with two ultra-stable Synthesizer which can support the most demanding applications. The AS-00117-A support frequency hopping applications both in RX and TX.

The AS-00117-A is equipped with a preselector tunable filter both in the RX and TX paths for an enhanced interference resilience in RX and extra cleanness in TX.

**Module Specifications**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Operating Frequencies	20 ÷ 40	GHz
MIMO Support	2 RX x 2 TX	
RF I/O Interfaces	8 x SMP	
Data / Power Input Interface	SAMTEC SEAM 120pin	
Data / Power Output Interface	SAMTEC SEAF 120pin	
Synthesizer	Dual, Internal	
Dimensions	7 x 7 x 1,5 (L x W x H)	cm

**Block Diagram**



**Features**

- 2-18GHz Dual TRM
- Support 2x2 MIMO transceiver
- Up to 2W over full band

**Description**

AS-00118-A is a state-of-the-art dual TRM covering the 2-18GHz frequencies. Internally 2 x RX chain and 2 x TX chain are singularly connected to 4 antennas connectors.

The AS-00118-A is equipped with GaN power amplifier delivering up to 2W over the full band with an efficiency of more than 20%. A NF of 5dB with an RX gain of 21dB guarantees very good receiving performances over the full band.

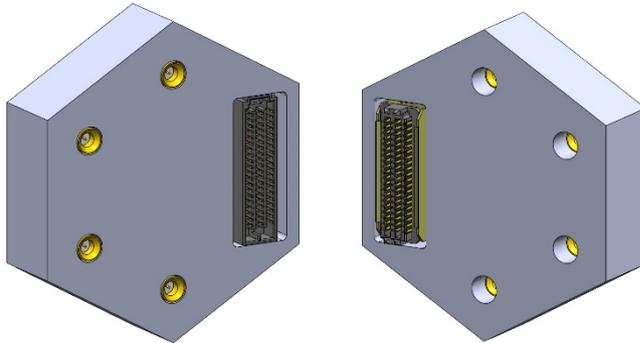
The AS-00118-A is designed to be used together with AS-00117-A, transceiver module to realize a full equipped MIMO fronted.

**Module Specifications \***

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Operating Frequencies	2 ÷ 18	GHz
Pout	Up to 2W	
NF	5	dB
RX Gain	21	dB
TX Gain	19	dB
RF I/O Interfaces	8 x SMP	
Data / Power Input Interface	SAMTEC SEAM 120pin	
Dimensions	7 x 7 x 1,5 (L x W x H)	cm

\*Specification may change without notice

**Block Diagram**



**Features**

- 2-18GHz Dual Up/DWN Converter
- Support 2x2 MIMO transceiver
- Designed for Fast Frequency Hopping
- On board ultra-stable Synthesizer

**Description**

AS-00117-A is a state of the art dual (2xRX, 2xTX) frequency converter covering 2-18GHz.

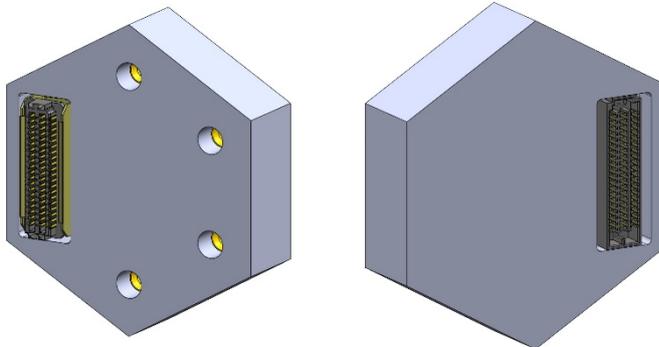
The AS-00117-A is equipped with two ultra-stable Synthesizer which can support the most demanding applications. The AS-00117-A support frequency hopping applications both in RX and TX.

The AS-00117-A is equipped with a preselector tunable filter both in the RX and TX paths for an enhanced interference resilience in RX and extra cleanness in TX.

**Module Specifications**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Operating Frequencies	2 ÷ 18	GHz
MIMO Support	2 RX x 2 TX	
RF I/O Interfaces	8 x SMP	
Data / Power Input Interface	SAMTEC SEAM 120pin	
Data / Power Output Interface	SAMTEC SEAF 120pin	
Synthesizer	Dual, Internal	
Dimensions	7 x 7 x 1,5 (L x W x H)	cm

**Block Diagram**



**Features**

- 30MHz – 6GHz System-on-Module
- 2x2 MIMO transceiver
- ADRV9002 Agile Transceiver™ with the Xilinx ZYNCR®-UltraScale+ SoC
- Instantaneous channel bandwidth up to 40MHz

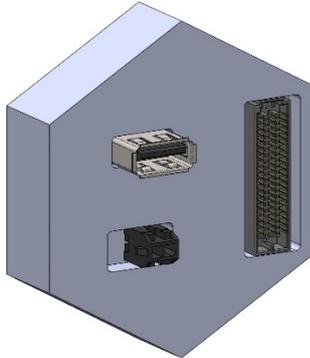
**Description**

AS-00116-A is a powerful System-on-Module operating from 30MHz up to 6GHz. The RF heart of the AS-00116-A is the Analog Device ADRV9002 Agile Transceiver equipped with two RX and TX path, integrated LO synthesizer and high speed digitizer. The AS-00116-A is equipped with a Xilinx ZYNCR®- UltraScale+ SoC fully configurable to control the ADRV and to manage the digitalized data. The AS-00116-A is fully controllable via Linux, using a shell or via MATLAB, Simulink, GNU Radio. Dedicated Board Support packages are available to simplify the FW/SW development setup.

**Module Specifications**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Operating Frequencies	40 ÷ 6000	MHz
MIMO	2 RX x 2 TX	
RF I/O Interfaces	4 x SMP	
Data / Power Input Interface	SAMTEC SEAM 120pin	
Data / Power Output Interface	SAMTEC SEAF 120pin	
System Common Interface	SAMTEC SEAF 120pin	
Dimensions	7 x 7 x 1,5 (L x W x H)	cm

**Block Diagram**



**Features**

- Power Unit Module of the Modular Data Link Unit system
- USB Data Interface
- Wide input power range: +12V ÷ 24V

**Description**

AS-00115-A is the founding module of the DLU Modular system. The module takes care of the power generation of the SoM and RF modules which compose the Modular DLU. The AS-00115-A module takes care to interface the whole DLU with the external power and data sources.

Equipped with high efficiency DC/DC converter and Low Drop Out regulators AS-00115-A is able to generate ultra clean power rails for sensitive RF Modules.

USB interface enable UART data exchange with many different controller: PC, emedded controller, MCUs.

**Module Specifications**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
Input Voltage	12 ÷ 24	V
Input Power	20 Typ	W
Data Input Interface	USB 2.0 TypeB	
Power Input Interface	Molex Multi-pin	
System Common Interface	SAMTEC SEAF 120pin	
Dimensions	7 x 7 x 1,5 (L x W x H)	cm

**Specifiche TX**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
Range di frequenza RF - TX	257,2 – 357,2	MHz
Range di frequenza IF	70 +/- 0,4	MHz
Guadagno TX	-5	dB
Output P1dB	24,4	dBm

**Dimensioni ed Interfacce**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
Connettori RF/IF	SMPM Fem	
Connettore di alimentazione	Custom	
Connettore dati	Custom	
Control Protocol	SPI	
Supply Voltage	+7V	
Dimensioni	60 x 60 x15	mm

*Le specifiche possono subire modifiche*



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# ***Digitally Tunable Filters***

# ***Digitally Tunable Filters***

**2 – 18 GHz Digitally Tunable Filter****Picture****Features**

- Digitally Tunable Filter: 2 – 18 GHz
- Band Pass, Low Pass, High Pass, Notch
- Flat response over the 2-18GHz bandwidth, independently from central frequency
- Central frequency and bandwidth independently controllable
- User selectable Low Noise Amplification
- 30dB amplitude control range
- Full IP controllable via ethernet

**Description**

AS-00104-A is an innovative full-digital filter which can be configured in any of these configurations: band-pass, low-pass, high-pass, notch.

Totally controlled via IP over ethernet, AS-00104-A is dedicated to ATE, laboratory equipment, telecom and electronic warfare systems.

Equipped with proprietary WAVE technology the user can selected the desired filter bandwidth and then move the filter center frequency, the AS-00104-A will take care to equalize filter response over each and every central frequency. This way the user can move the filter frequency and bandwidth being sure that the insertion losses won't change.

This proprietary WAVE technology makes the AS-00104-A a unique solution for frequency hopping ATE or telecom/EW systems.

AS-00104-A is not just that since it's equipped with an input Low Noise Amplifier which can be activated to enhance the noise figure and gain in high sensitivity demanding applications.

The user has the possibility to control the amplitude of the filter in a 30dB range to fine tune the filter response to its requirements.

AS-00104-A is controlled via IP protocol over ethernet for seamless integration in a distributed testing environment. IP over ethernet greatly simplifies the remote control since a standard PC with an ethernet port can control the filter.

**Specifications**

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
Frequency Range	2 - 18	GHz
Typical insertion loss	7 Flat over the full band	dB
Amplitude Control Range	30	dB
Noise Figure	6	dB
Input P1dB	-8	dBm
RF Connectors	SSMA Fem	
Power Connector	Custom	
Data Connector	RJ45	
Dimensioni	12,2x12,4x2.5	cm

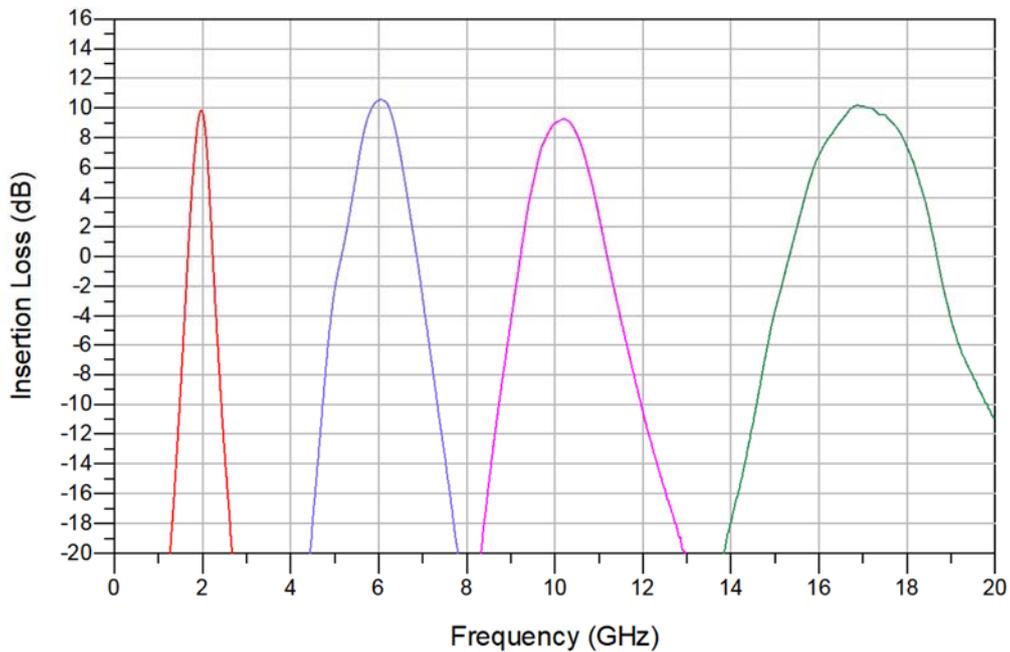


Figure 1: Insertion Loss vs Frequency at 11% constant Bandwidth and Various Center Frequency.

## 2 – 18 GHz Digitally Tunable Filter

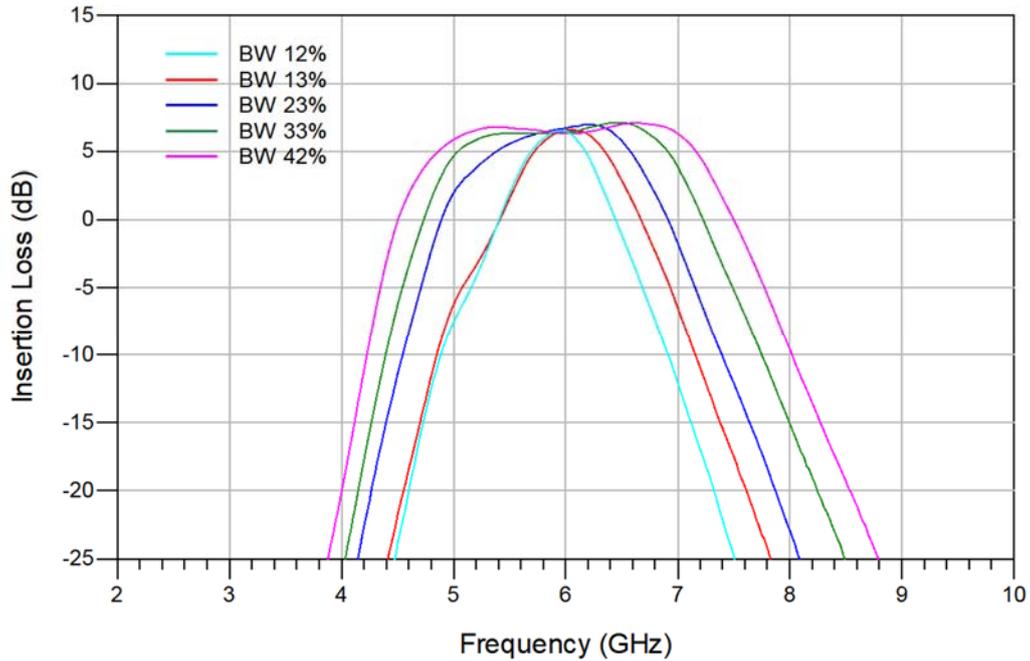


Figure 2: Insertion Loss vs Frequency. Constant Insertion loss at 6 GHz for various 3dB bandwidth values.

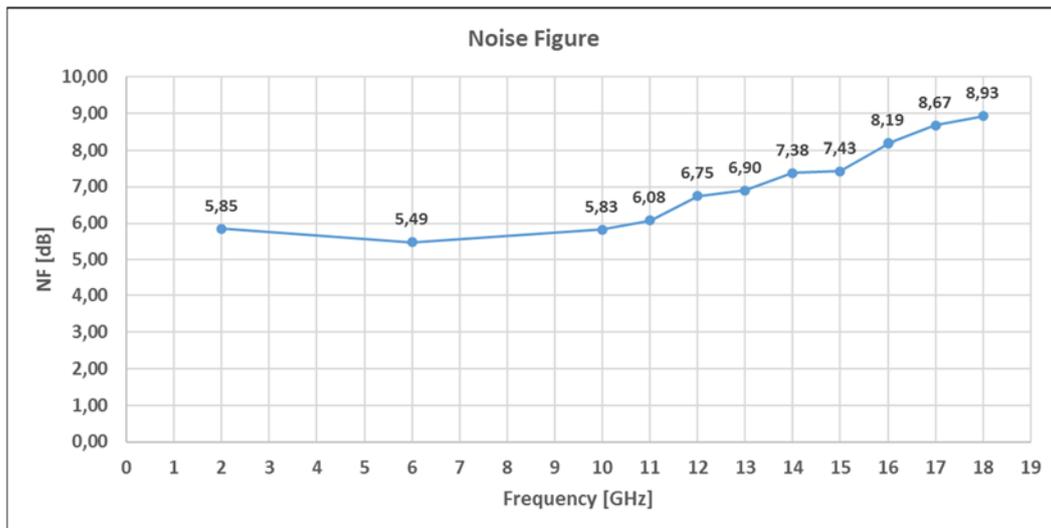


Figure 3 Noise Figure over frequency -LNA activated

## 2 – 18 GHz Digitally Tunable Filter

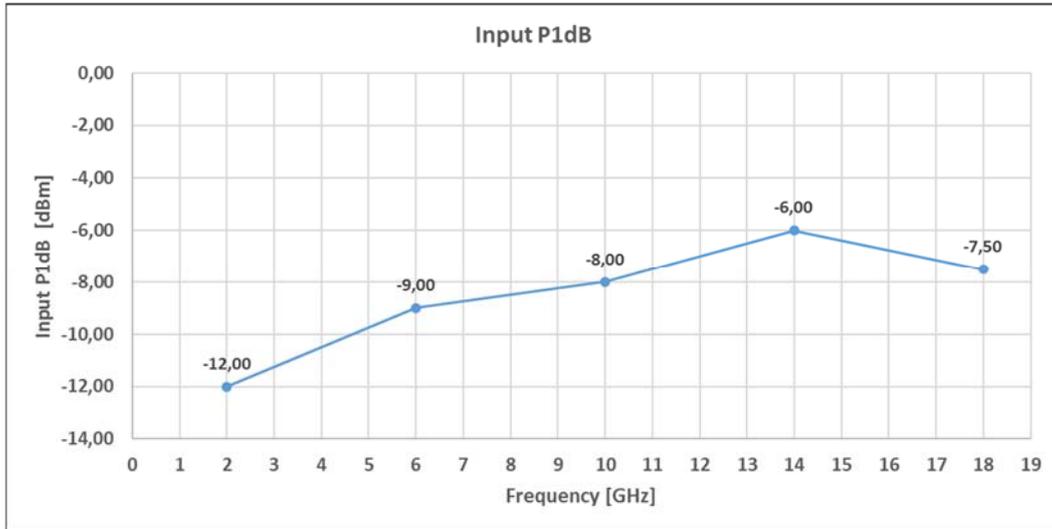
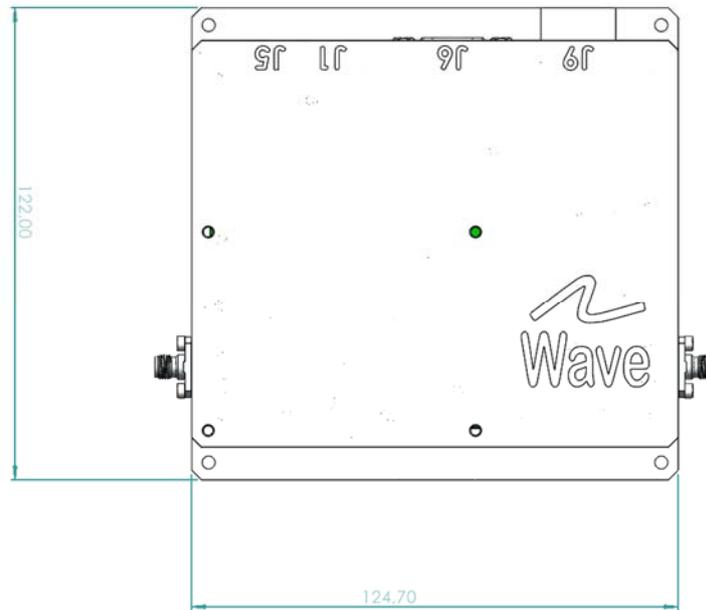


Figure 4: Input 1dB Compression Point – LNA de-activated

### Mechanical Drawing





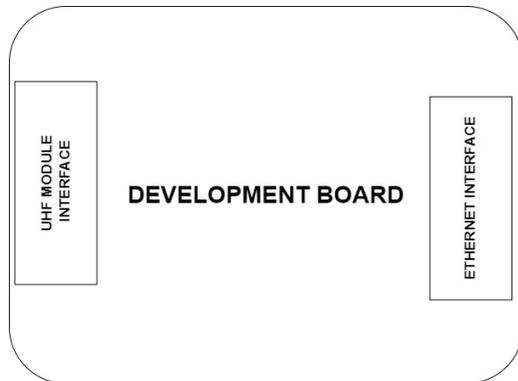
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# *Miscellaneous*

# *Miscellaneous*

### Functional Diagram



### Features

- Ethernet interface, control via PC
- Serial Over IP
- Ready to be connected with UHF UP/DOWN converter AS-00094-A
- Single Supply: +5V

### Descrizione

The Development Kit for the AS-00094-A module adds RF functionality to the module when integrated with the AS-00101-A Interface Board, allowing control of the module via PC.

Specifically, the kit includes:

- Variable filtering in the 230-297 MHz band (RX) and in the 257.2-357.2 MHz band (TX)
- Control board for the AS-00094-A module via PC, using serial over IP

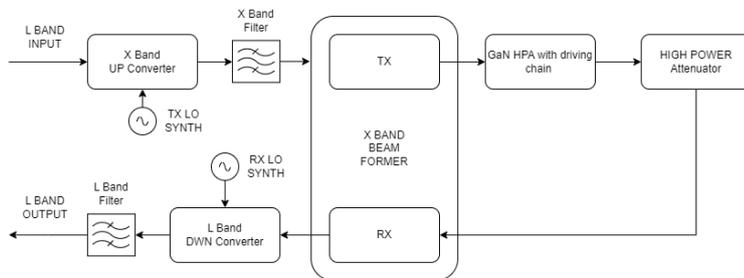
The Development Kit must be ordered together with the AS-00101-A Interface Board to enable the control of the UP/DOWN Conversion module from the PC. The order for this code also includes an upgrade for the AS-00101-A with variable filtering functionality for both the RX and TX bands.

Filtering is controllable via SPI serial communication to implement a preselection function associated with the AS-00094-A UP/DOWN Conversion module. Control of the AS-00094-A UP/DOWN Conversion module is performed via Ethernet interface using the TCP protocol. With the Development Kit, the AS-00094-A module (along with its control board) acquires an IP address and is fully controllable via LAN or WAN.

### Tunable Filter Specifications

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Frequency Range - RX	230 - 297	MHz
RF Frequency Range - TX	257,2-357,2	MHz
Insertion Loss	4	dB
Input IP3	+42	dBm
% 3dB bandwidth	5	%

### Picture



### Features

- TX and RX X Band Beamformer
- 8W HPA
- Fully featured HPA driving chain
- Compatible with TRM AS-00118-A, Modular DLU
- High Power Attenuator included

### Description

AS-00145-A is a development platform to prototype and study X Band phased array antennas. Equipped with the Renesas F6415 Beam former, the platform is capable to manage amplitude and phase of the transmitted and received signal.

The AS-00145-A is equipped with GaN power amplifier delivering up to 8W over the full band with an efficiency of more than 10%.

The AS-00145-A is fully compatible with the Modular Datalink High Power HPA AS-00118-A which can replace the HPA and its driving chain. This way the AS-00145-A platform can also be used to study the AS-00118-A behaviour in future phased array Modular Datalink applications.

The AS-00145-A is equipped with two independent low spur synthesizers in order to have different IF frequencies for the TX and RX chains.

Effective X band (TX) and L band (RX) filtering will guarantee an optimal spectral purity both in RX and TX.

The platform is fully configurable via USB and equipped with an high efficiency heatsinks system in order to cool the HPA and its driving chain.

### Module Specifications\*

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Operating Frequencies	8 ÷ 12	GHz
IF Operating Frequencies	0,95 – 2	GHz



**AS-00145-A**  
**X Band TRM Beamforming**  
**Development Platform**

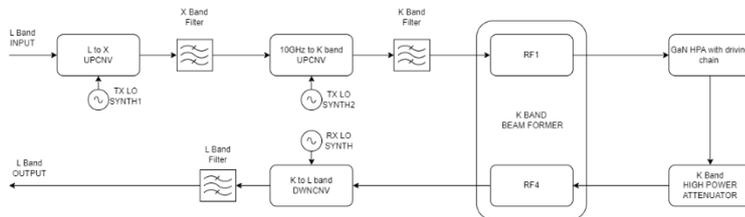
Pout	Up to 8W	
RX Gain	24	dB
TX Gain	40**	dB
RF I/O Interfaces	2 x SMA Female	
Data / Power Input Interface	USB / Banana Multiple Connections	
Dimensions***	Custom Plate or 19" rack – 3U	
Channel Attenuator	Pin = 10W, 50dB Attenuator SMA-F / SMA-F	

*\*Specification may change without notice*

*\*\*Small Signal*

*\*\*\*Customer may choose at the order*

### Picture



### Features

- TX and RX K Band Beamformer
- 8W HPA
- Fully featured HPA driving chain
- Compatible with TRM AS-00143-A, Modular DLU
- High Power Attenuator included

### Description

AS-00146-A is a development platform to prototype and study K Band phased array antennas. Equipped with a K band Beam former, the platform is capable to manage amplitude and phase of the transmitted and received signal.

The AS-00146-A is equipped with GaN power amplifier delivering up to 8W over the full band with an efficiency of more than 10%.

The AS-00146-A is fully compatible with the Modular Datalink High Power HPA AS-00143-A which can replace the HPA and its driving chain. This way the AS-00145-A platform can also be used to study the AS-00143-A behaviour in future phased array Modular Datalink applications.

The AS-00146-A is equipped with a superheterodyne transmitter for enhanced spectral purity. A first X band upconversion and a second K band conversion delivers the lowest output spur content. The RX chain is equipped with a fully integrated K to L band downconverter to optimize output spurs and spares.

The AS-00146-A uses three low spurs synthesizers to optimize spectral purity.

Effective K band (TX) and L band (RX) filtering will guarantee an optimal spectral purity both in RX and TX.

The platform is fully configurable via USB and equipped with an high efficiency heatsinks system in order to cool the HPA and its driving chain.



**Module Specifications\***

<b>Parameter</b>	<b>Typ.</b>	<b>Unit</b>
RF Operating Frequencies	18 ÷ 26	GHz
IF Operating Frequencies	0,95 – 2	GHz
Pout	Up to 8W	
RX Gain	15	dB
TX Gain	40**	dB
RF I/O Interfaces	2 x SMA Female	
Data / Power Input Interface	USB / Banana Multiple Connections	
Dimensions***	Custom Plate or 19" rack – 4U	
Channel Attenuator	Pin = 10W, 50dB Attenuator SMA-F / SMA-F	

\*Specification may change without notice

\*\*Small Signal

\*\*\*Customer may choose at the order