



**Added Value RF & Microwave Solutions**

# About Vectria Ltd.

## About us

**Vectria Technologies** specializes in RF to mmWaves design and manufacturing, delivering state of the art added value products and solutions.

**Vectria** was founded in 2002 to deliver innovative Microwave solutions along with cost effective high repeatability implementations. This was achieved by a highly experienced engineering team combining technologies and disciplines from both the military and the commercial domains. Vectria developed unique design tools and methodologies to enable the use of new technologies and implementation methods.

**Vectria** has a vast experience base enabling it to offer a wide range of products such as: Transmitters, SSPAs, Tuners, Receivers, Exciters, Signal Sources, T/R modules, Beam Forming Networks, high power low loss as well as fast low power control/passive components (phase shifters, attenuators, switches, limiters, filters, etc.), along with special components such as ultra wide band amplifiers, very low noise amplifiers, highly selective or linear phase filters and multiplexers, and much more.

**Vectria Ltd.** is ISO-9001 approved, and is an authorized supplier for major military system integrators, as well as supporting RoHS directive whenever applicable.

## Challenge us !

**Reviv Levin**  
**Managing Director**  
**Vectria Ltd.**



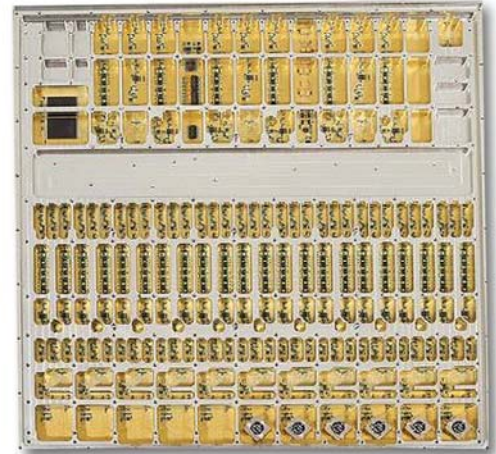


# Added Value Technologies

## HF-SoB

Vectria's unique HF-SoB (High Frequency System on a Board) methodology enables to integrate large system portions on a single board to substantially reduce system volume, complexity and cost, while enhancing system repeatability.

Vectria's technology uses multilayer SMT solutions up to mmwaves, for both low and high power functions, integrating digital and analog circuitry with all RF/Microwave functions on a single board, saving considerable space and eliminating most interconnecting cables and harnesses.



## EE-SMD

Vectria's EE-SMD : End to End Surface Mount Device technology enables to use SMT devices for implementation of almost all possible functions, from Small Signal to High Power: HP-SMT, DC to mmWaves, Large (hundreds of ports BGA or similar) to Chip Scale and 0201 devices, from Standard attenuators to High Precision phase shifters, from limiters to low phase noise synthesizers, and much more!

## HP - Design

Unique High Power design tools and capabilities up to KWatts power, Pulse to CW, for fabrication of switches, limiters, Amplifiers, filters and more, using chip and wire or SMT technologies.

High Voltage analog drivers and switching circuitry.

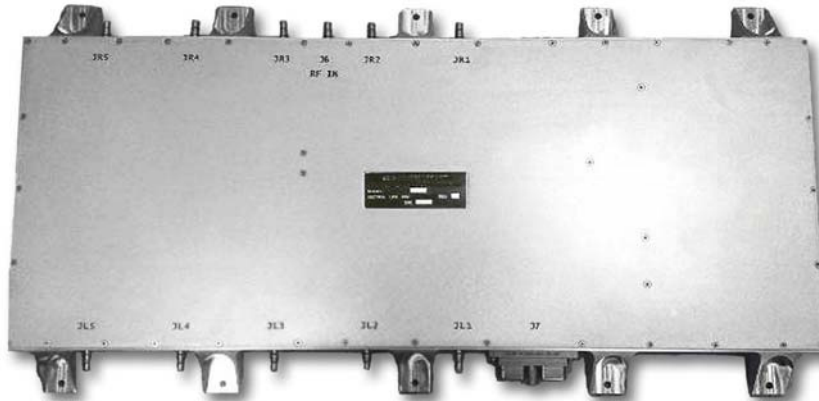
HP-SMT techniques for heat dissipation of both series and shunt devices.

Fail Safe or NO external control TX-SW-Limiter technology.

## Custom Products

### Beam Control Networks

L to X bands passive/active Beam control networks.  
6 bit phase and amplitude control.  
Either active or extremely low loss passive implementations.  
Cost effective low volume single board SMT solutions.



### T/R Modules Technology

L and S band cost effective, 400W and 200W peak power respectively.  
X band low cost SMT solutions.



### Ultra Low Loss High Power Digital Phase Shifters

IFF band: above 1KW 4bit at less than 1dB of insertion loss, 6 bit below 1.5dB insertion loss.  
Typical applications: • Quazi active phased array antennas for IFF systems.  
• Electrically scanned UMTS/LTE/WiMax BS sector antennas.



# Custom Products

## High Power Communication Front Ends

S band power amp 100W CW.  
Receive NF 3db.  
Custom designs UHF to Ku Bands,  
half/full duplex, up to 1KW front ends.



## SSPA

Solid State Power Amplifiers for either pulsed or CW operation.  
Frequency band: HF to Ku, in specific bands.  
Power Supply: 18-32V isolated input or custom defined regulated voltages.  
With or without harmonics filtering.  
Output Power - up to 4GHz: to 2KW peak power  
C, X Ku bands: to 500W peak power  
Multiple Monitoring and Control interface.  
Baseplate, Air flow or special intermittent cooling options.

## High Power Switches and Limiters

Pulsed or CW beyond 1kW.  
20MHz to mmwaves.  
Quasi Active low flat / spike leakage high power limiters.

# Custom Products

## Wideband Tuners

### Applications

Multi band dual diversity tuners/receivers, custom bands optional.  
Fast hopping smart and compact SIGINT broadband tuners/receivers.  
Data Reception and General purpose wideband tuners.

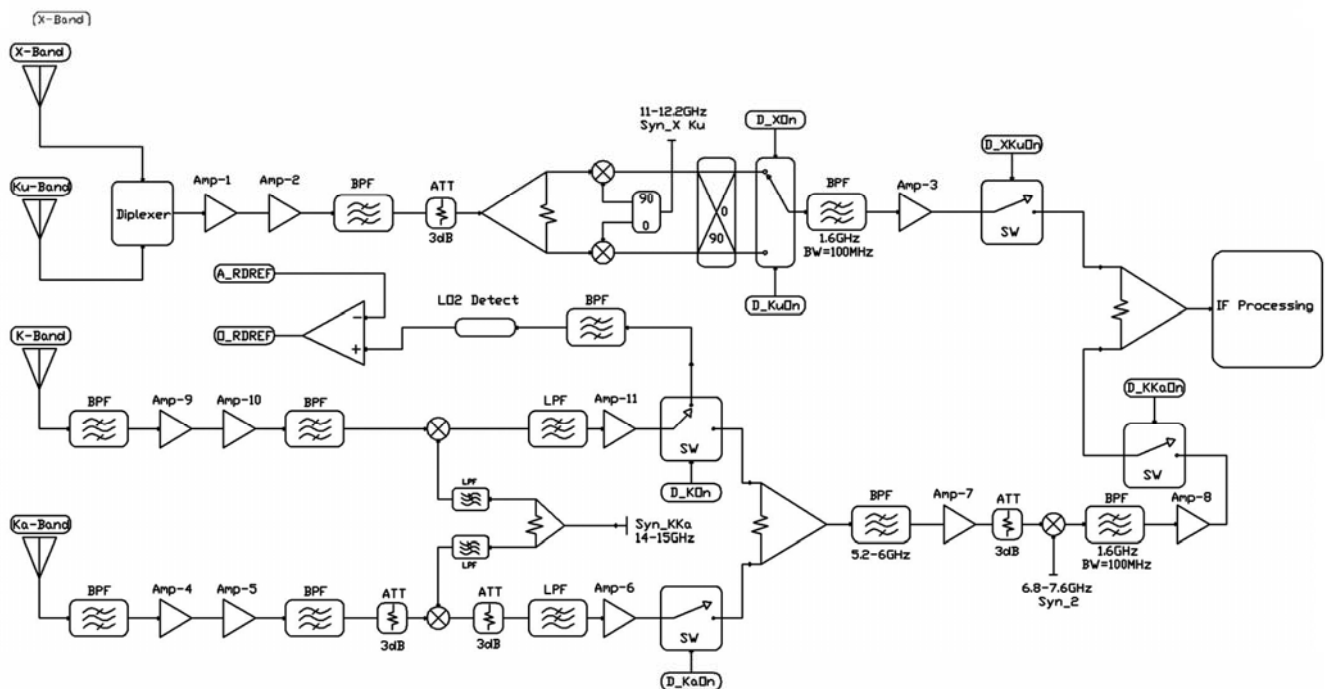
### Features

RS-422 rich control protocol including remote firmware update and scheduled freq. scan (other comm. Interfaces optional).  
Real Time frequency setting strobe.  
Internal AGC or remote gain setting modes.  
High stability low phase noise 10MHz reference (1ppm including 10 year aging), Ext. ref. optional.



## RF Subsystems Innovation and Optimization

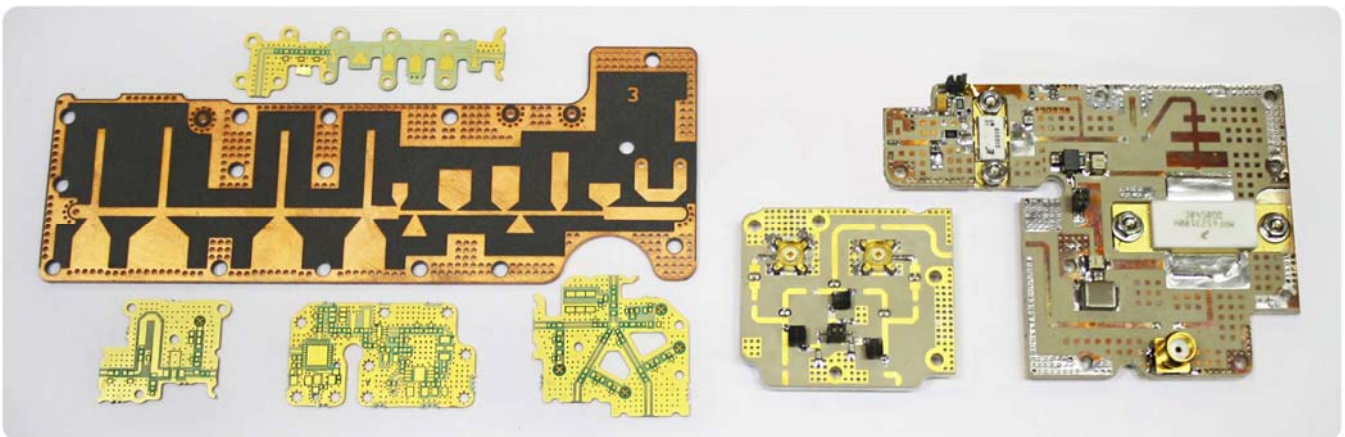
RF subsystem innovations, partition and technology optimization, enables significant system cost reduction as well as increased reliability and repeatability, thus delivering the overall system a substantial marketing edge.





## Custom Design of Special Components

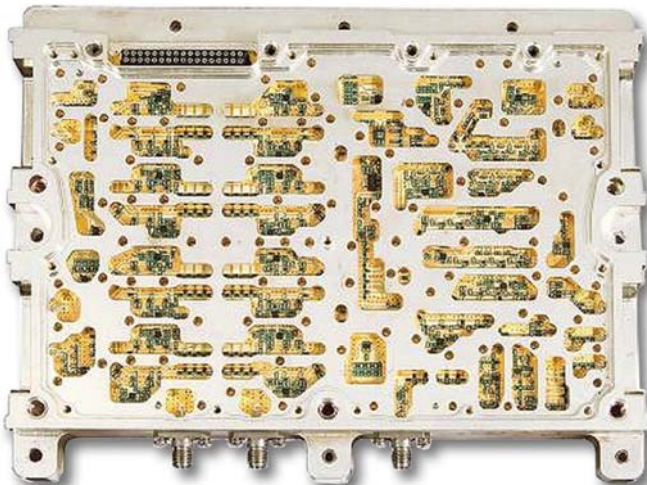
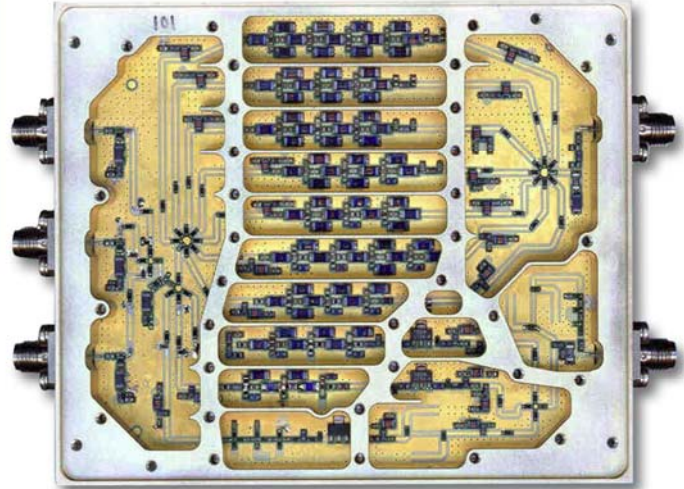
- Distributed, lumped elements and mixed high / low power filters.
- Highly selective, linear phase, and arbitrary transfer function filters.
- Ultra low noise and high linearity amplifiers.
- Broadband and high power control and passive components.
- Passive, quasi active and nonreflective high power limiters.
- High power high efficiency GaAs, LDMOS and Gan amplifiers.
- Multiplexers and fast switched multiplexers.
- Switch bank filters and Wideband high linearity Preselectors.
- Temperature compensation attenuators (passive and active).
- Fast ac/dc coupled detectors.
- Frequency multipliers / dividers.
- High linearity, image rejection and harmonic mixers.
- Any shape absorptive equalizers.



# Custom Products

## High Linearity 20-3000MHz Preselector

High Linearity 20-3000MHz Preselector  
Up to 12 channels  
With / without LNA  
Very high IP2

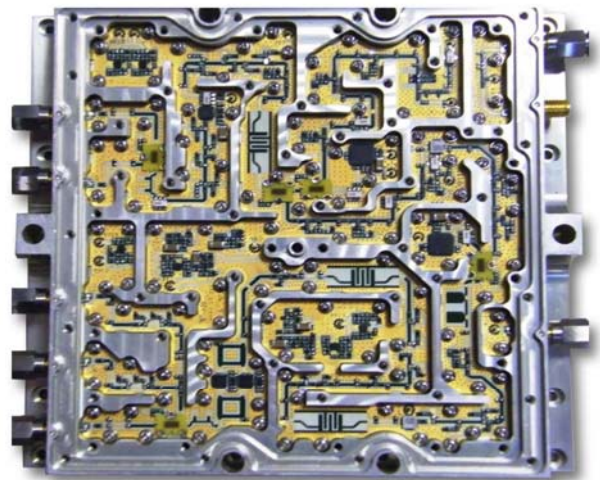


## Ultra Fast Direct Synthesizers

Ultra Fast Direct Synthesizers  
Sub 50nsec speed  
50dB spurious level  
(60dB opt)>Octave bandwidth.

## Low Phase Noise Hopping PLL Synthesizers

Low Phase Noise Hopping PLL  
Synthesizers & Up / Down Converters  
HF through Ku bands X band Radar Exciters





# Standard Products

## Wideband SMT / Coaxial Digital Phase Shifters

### Features

3 Models : 0.8- 1.8GHz, 1.6 to 2.7 GHz, 2.4-4.2GHz

(Semi custom frequency bands are optional)

6 Bit SMT Phase Shifter with Driver

P1dB > +30 dBm, IP3 > +40dBm

+5V or +3.3V Vcc/Logic Operation

GaAs based, Fast switching

SMT Package : 1.5"×0.75"×0.2"

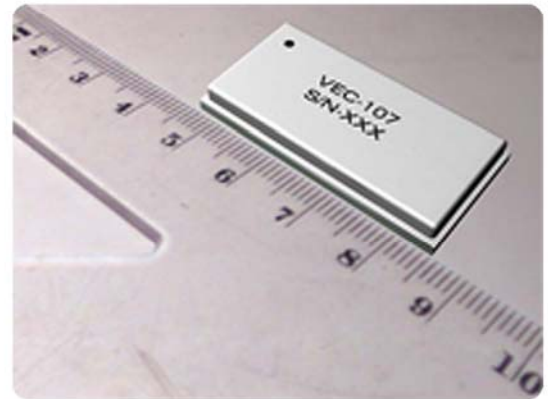
Coaxial SMA Package : Optional

### Applications

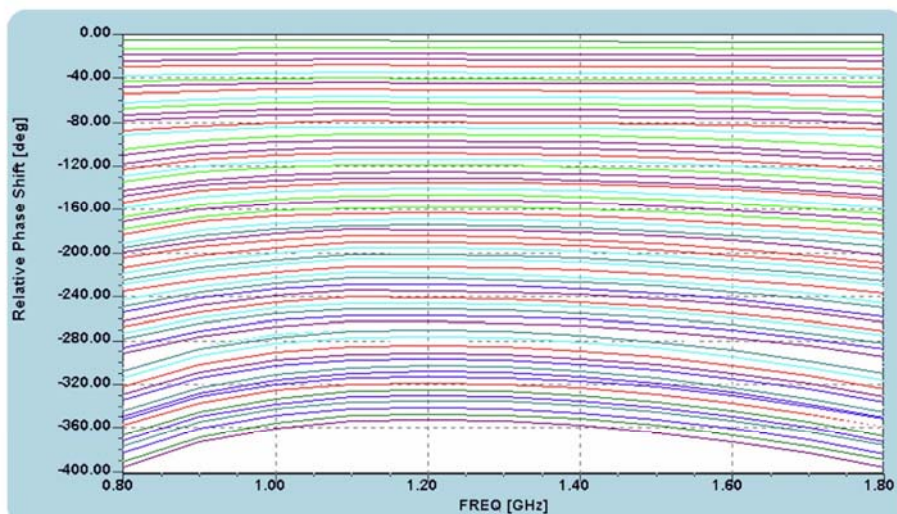
Phased Array Antenna

Satellite Communication

Smart Antenna Systems



Part Number	Freq. Range [MHz]	Sw. Speed [nsec]	Phase Stability Over Temp. [Deg.]	RMS Phase Error [Deg.]	Insertion Loss @ Ref. State [dB]	Notes
VEC-106	800-1800	500	±0.25	5.5 1.9*	5±0.4 5±0.1*	(*)1000MHz-1500MHz
VEC-107	1600-2700	500	±0.25	3.4 1.8**	5.3±0.4 5.3±0.1**	(**)1800MHz-2500MHz
VEC-108	2400-4200	500	±0.25	5.0 1.8***	6.9±1.2 6.5±0.3***	(***)3000MHz-3600MHz



VEC-106  
Accumulated  
Phase Shift

# Test Equipment

## RealProbe: The Ultimate High Impedance In Circuit Probes

The "RealProbes" are a high Impedance RF probes family which deliver unmatched high impedance in-circuit measurement performance from 300KHz till 18GHz.

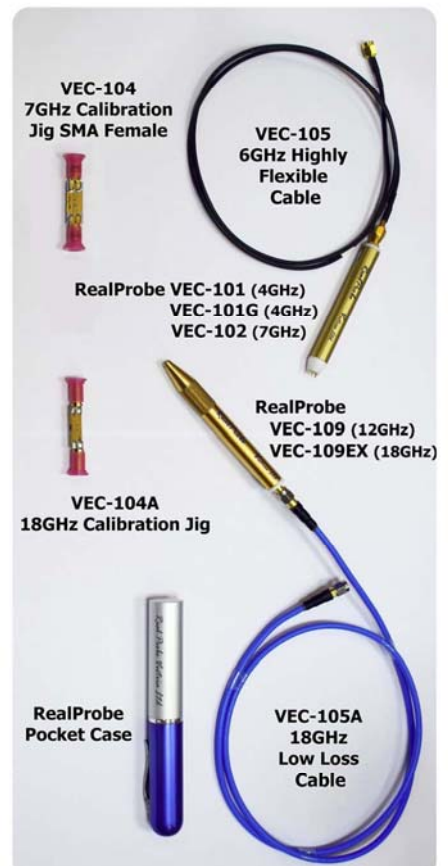
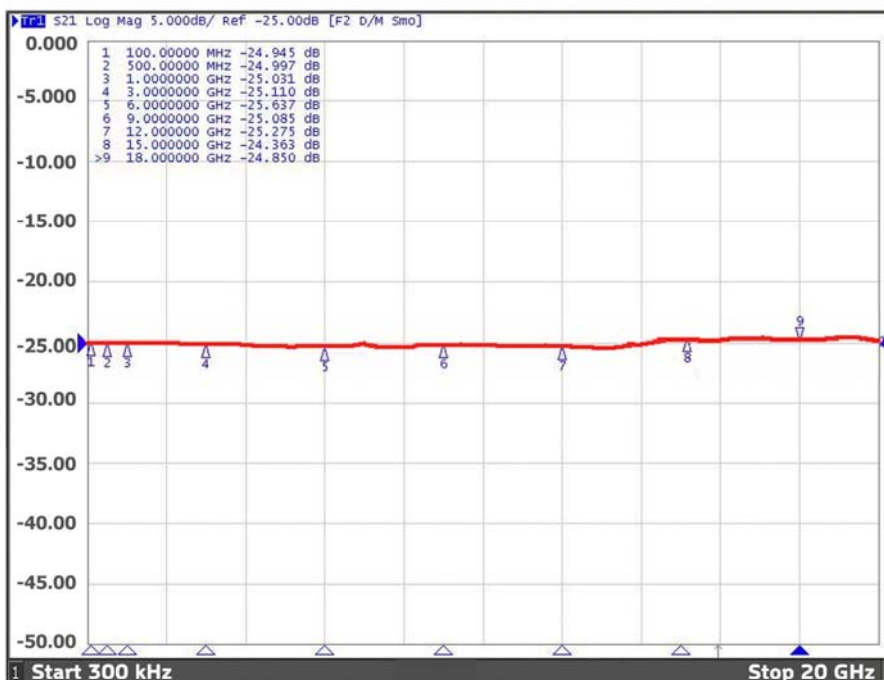
The RealProbe is a must tool for any in-circuit testing and troubleshooting, it helps shorten your development cycles as well as accelerate the debugging process in production.

### Features

- Broadband Flat response
- Accurate coupling factor
- Negligible effect on measured channel
- High power measurement capability
- High linearity passive device (No external bias required)
- High Impedance, no need for neighbors disconnection
- DC blocked Input / Output
- Integrated matched ground return
- Standard SMA output for High testing flexibility



### VEC-109EX Probing Performance





# Test Equipment

RealProbe Selection Table

Part Number	Freq. Range [MHz]	Probing Factor [dB]	Max Avg. Input Power [W]	Max Peak Input Power [W]	Max Input DC Voltage [V]	No. of Gnd. Pins	Pins Pitch	Test in canal capab.	Related Accessories
VEC-101	10* - 4,000	25 ± 0.5	2	25	30	2	100mil	low	VEC-104 Cal. Jig VEC-105 Flex. Cable
VEC-101G	10* - 4,000	25 ± 0.5	2	25	30	1	100mil	med	VEC-104 Cal. Jig VEC-105 Flex. Cable
VEC-102	10* - 7,000	25 ± 0.5	2	25	30	2	100mil	low	VEC-104 Cal. Jig VEC-105 HF Flex. Cable
VEC-109	10 - 12,000	25 ± 1	2	25	35	1	30mil	high	VEC-104A HF Cal. Jig VEC-105A HF Flex. Cable
VEC-109EX	10 - 18,000	25 ± 1	2	25	35	1	30mil	high	VEC-104A HF Cal. Jig VEC-105A HF Flex. Cable

\* Actual range from 300KHz with minor degradations.

## Innovative ATE Solutions

Innovative multiport input / output and multiple measurement equipment calibration and testing.

Fully Automatic Test Equipment including RF High Power CW and Pulsed sources.

## RF Modules for Simulators

Wideband Amplitude modulation

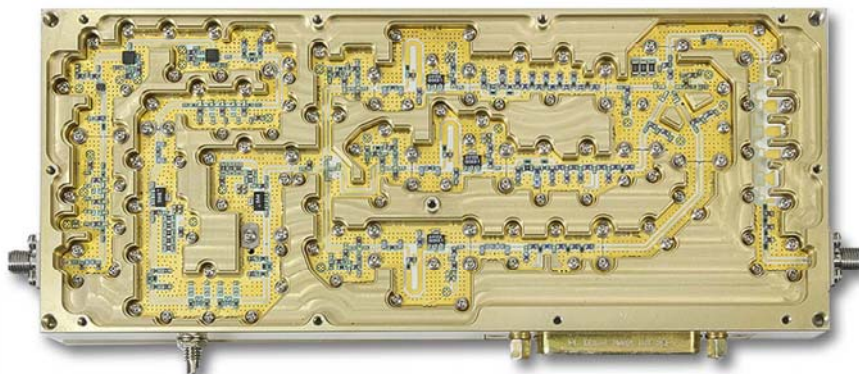
0.5 - 2 GHz coverage

60 dBc spur / harmonics till 8 GHz

100 dB amplitude control range in 0.1 dB resolution

80 dB fast pulse modulation (20 nsec)

Full band Gain flatness: +/- 1 dB



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