
RF Receiver Capability

Linwave Technology's extensive range of RF products and high-level integration has provided customers with unique solutions in the provision of RF and Microwave front end receivers including both traditional heterodyne techniques and more recent integrated digital approaches.

High Performance Analog Receiver

As an example of traditional receivers, Linwave manufactures a two channel dual down convert X band transceiver module with state of the art performance for airborne applications.



Utilising multiple PCAs in a clamshell type module with a VPX backplane connector, the receiver has a built-in best in class system clock, programmable gain and programmable filtering. The module complies with the 6U Vita 46 standard utilising conduction cooling on the edge mounting surfaces.

The system master clock is integrated into the transceiver with both backplane and front panel clock signals available providing class leading phase noise and jitter performance.

Linwave's design approach produces a highly integrated multifunction module using standard manufacturing techniques to provide a cost effective solution.

Basic Subsystem Parameters:

Parameter	Specification
Transmit bandwidth	>2GHz
Transmit power	>10dBm
Transmit mute	35dB
Receiver bandwidth	>2 GHz
Receive gain	40dB
Receive gain control range	30dB
Receiver noise figure	8dB
Reference phase noise performance (400MHz)	1kHz -146dBc/Hz
	100kHz -163dBc/Hz

Digital Receivers

Linwaves first generation digital product offers a signal conditioning and sampling subsystem which is ideally suited to front end applications in RF digitising systems such as RF demodulation, Software Defined Radio System, Digital Receivers, Radars and RF Test Systems.

The ultra-wideband RF input accepts signals in excess of 18 GHz. The input can either be buffered and sent directly to the output, or in hold mode sampled with an internally generated clock of up to 4 GHz. All that is required is an external clock of nominally 28MHz, although higher frequencies are possible. The external clock is scaled by internal programmable multipliers. The unit features a programmable attenuator which can be used to precondition the input.



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The unit is housed in a 3U VITA 46 card format and accepts signal up to +18 dBm whilst having a 1dB output compression point of +10dBm. A self-test function is also available for checking input to output operation.

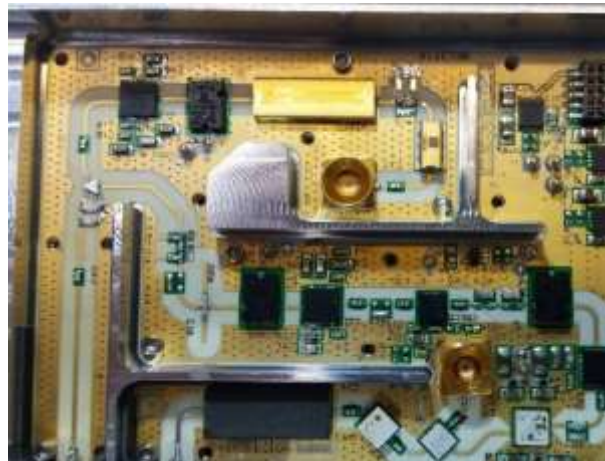
Basic Subsystem Parameters:

Parameter	Specification
Input Frequency Range	DC-18 GHz
Sampling Clock	Up to 4 GHz
RF Port Return Loss	<-15 dB
Acquisition time to 1 mV	150 pS
Attenuation Range	0-31 dB
Phase Noise @ 1KHz offset	-129 dBc/Hz
Package	3U VPX
Operating Temperature	0°C to +55°C

Digitisation.

Second generation product introduces the digitising stage so that either narrow band, or wideband operation using the previous sampling subsystem, can be realised. The use a wideband ADC can directly digitise the frequencies up to 9GHz and, with the aid of the subsystem digitise signals up to 18GHz.

Whilst it is possible to directly digitise the incoming pulses, some advantage is gained by providing a small amount of RF gain to optimise the balance between Noise Figure (NF) and Dynamic Range. These parameters are well understood by Linwave Technology and this understanding forms the basis of many of its products.



Populated Front End RF PCA

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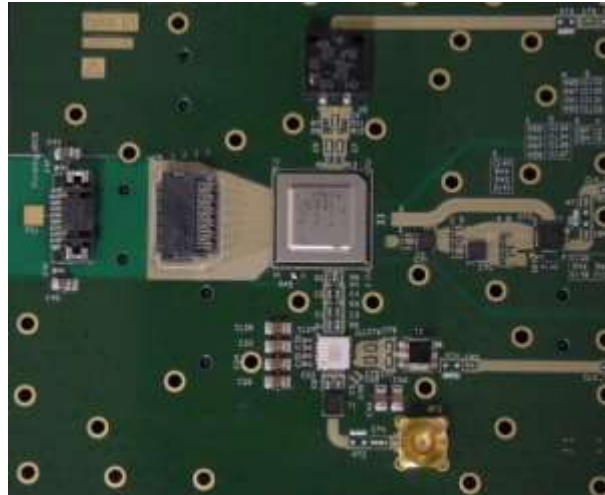
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Digitisation of the signals is performed by a high speed dual ADC which outputs its data on eight lanes to the JESD204B standard, each lane running at just under 10 Gbaud. To allow the data to be routed to remote signal processing, the signal medium is converted from copper to optical fibre using proprietary on cct conversion. This allows the data to be passed to the processor a multi-fibre fibre optic cable. Routing the data using this method has a significant saving in size, weight and cost over the more traditional coaxial cables used in such systems.



Populated Digitiser PCA

Linwave Technology: Supporting RF & Microwave applications from concept to manufacture

Linwave Technology is a supplier of RF & Microwave products for a wide range of applications. Our products are supporting customers in Defence, Avionics, Marine, Industrial, Satcom, Healthcare, Space, Wireless, Transport and Security.

We have a unique combination of broad market alignment and deep technology understanding that can help solve some of today's RF challenges. Linwave solutions can range from open die IC's -utilising on site wire bonding and clean room facilities, up to modules with integrated software GUI. Products can be subjected to environmental approval plans in association with appropriate market & legislative directives proving compliance ahead of further systems integration.



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