IAF GmbH
Berliner Straße 52j
38104 Braunschweig
Germany

Phone.: ++49 531 379 88-0
Fax: ++49 531 37988-30
e-mail: info@iaf-bs.de
www.iaf-bs.de

Analog IQ-Modulator / Demodulator Board (Rev. 1.0)

(Data Sheet Rev. 1.1 October 2005)

The Analog IQ Modulator / Demodulator board was designed for easy conversion of high bandwidth baseband signals (B = 100 MHz) to RF domain.
The main components of the Analog IQ - Board are one IQ-Modulator device (AD8349/Anlog Devices) and one IQ-Demodulator device (AD8347/Analog Device). Four low pass filters (baseband signal) and two voltage regulators are integrated on board too.
The IQ- modulator und -demodulator devices are supplied via separate local oscillator (LO) inputs. The LO frequency can be varied in the range from 0.8 to 2.7 GHz.

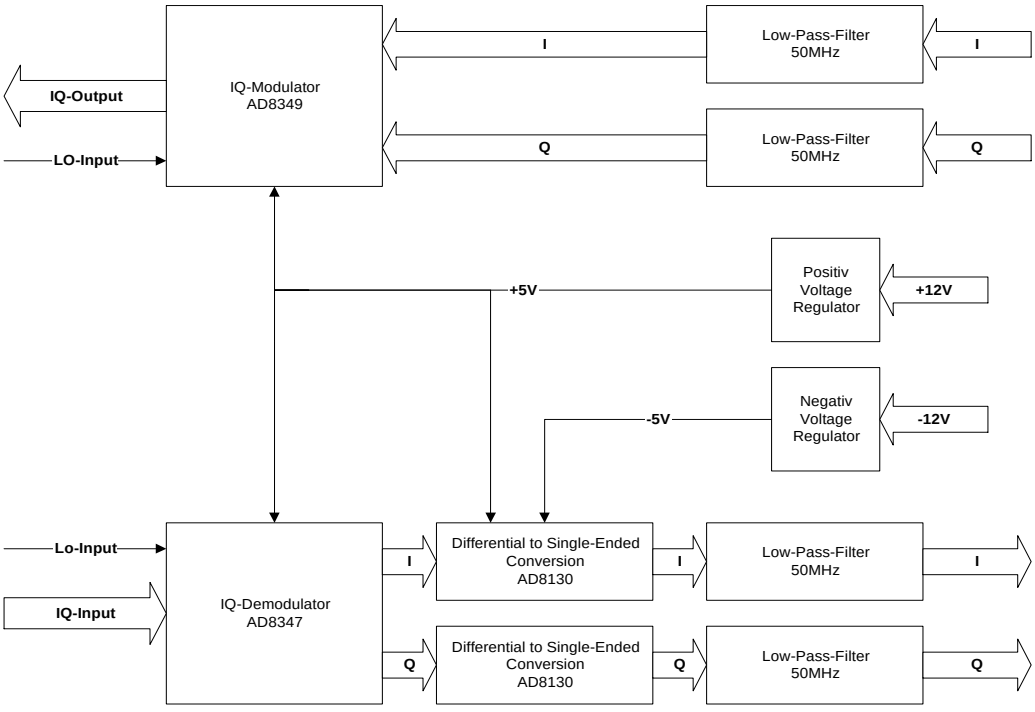

Fig. 1: Blockdiagram Analog IQ – Modulator /Demodulator Board

Many variable capacitors and resistors are used to allow easy tuning of IQ imbalance, carrier suppression, phase correction and amplification (see figure 3).
The board can be delivered with RF housing or as single PCB.

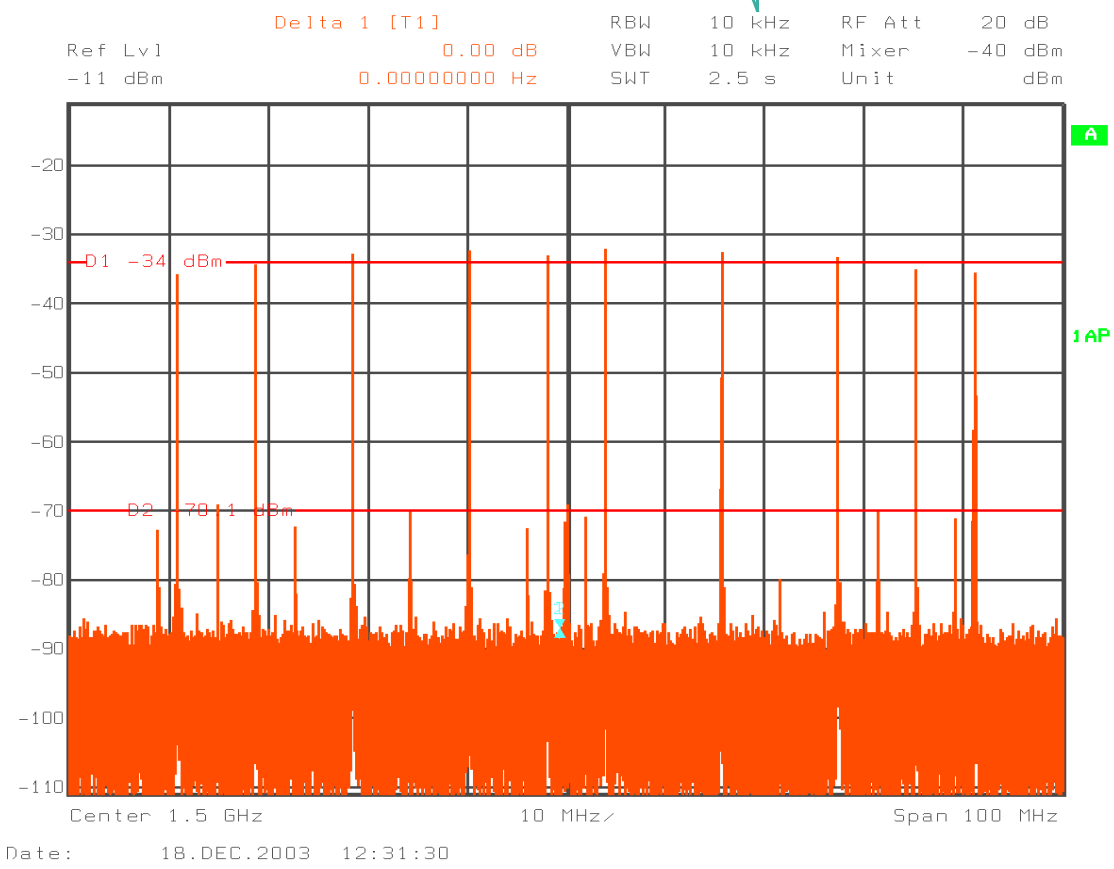

Fig. 2: IQ-Modulator-Output (LO=1.5GHz , 0dBm ;testsignal ⇔ 10 sine carrier unsymmetrical

Figure 2 shows the output of IQ Modulator. The testsignal consists of 10 sine wave carriers, which are spread over the total bandwidth of 85 MHz. The IQ modulator was driven with LO-frequency=1.5GHz und LO-input level = 0dBm. A mirror frequency distance of min. 36 dB was achieved.
Generation of testsignal was processed with an universal FPGA platform board. Digital to analog conversion was performed with 12 bit resolution and 200 MHz sample rate (see AD/DA Conversion Board).

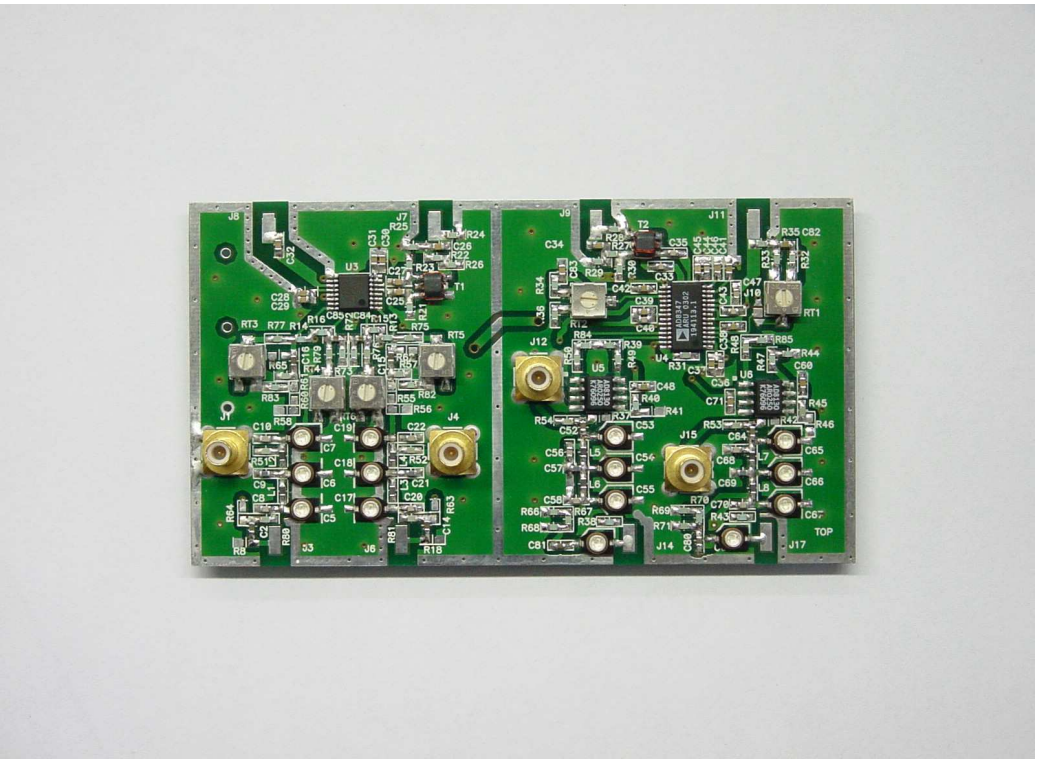

Fig. 3: IQ – Board / Top

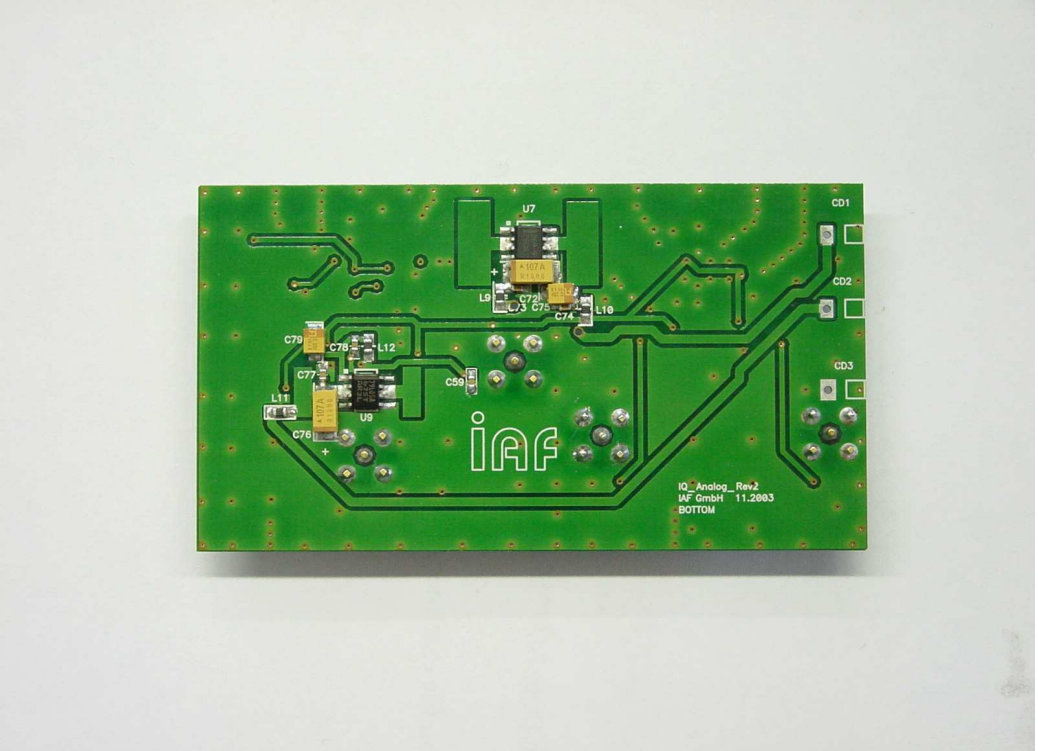

Fig. 4: IQ – Board / Bottom

DC-Specification:	**Min**	**Typ**	**Max**
Positiv Power Supply Voltage Range:	+9V	+12V	+13V
Negativ Power Supply Voltage Range:	-9V	-12V	-13V
Positiv Power Supply Current:	-	80mA	150mA
Negativ Power Supply Current:	-	25mA	50mA

AC-Specification:			
LO Frequency Range:	800MHz	1.5GHz	2.7GHz
LO Level:	-	0dBm	-
IQ-Input-Level	-	0dBm	4dBm
IQ-Output- Level	-	0dBm	4dBm
RF-Output- Level	-2dBm	-	6dBm
RF-Input- Level	-	-	-10dBm
Input Impedance:	-	50Ω	-

Board -Dimensions: 52mm x 92mm