Deutsches Elektronen-Synchrotron
Ein Forschungszentrum der Helmholtz-Gemeinschaft

Projekt/*Project*: AP 1.1.1

Titel/*Title*

DRTM DWC10 - SIS8300L2

Results summary for publication:
10 channel receiver: DRTM DWC10 – SIS8300L2

Dokument Nummer/*Document Identification*: **2015_10_03_DRTM_DWC10_SIS8300L2.DOCX**

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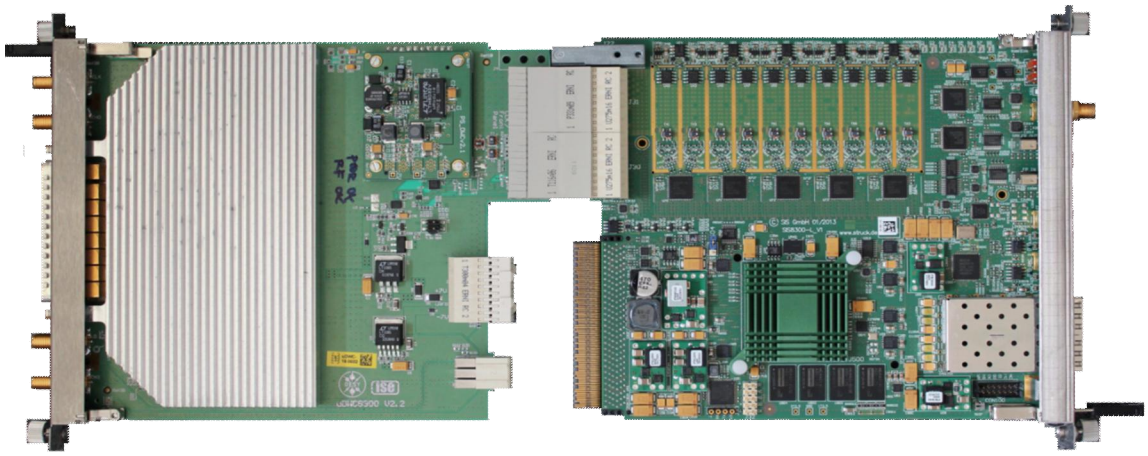
Project status: **FOR PUBLICATION**

DRTM -DWC10 – SIS8300L2 : 10-channel high frequency receiver



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Organisation	Verteilername Name of distribution	Adresse *Address*	Überprüft durch (Name): Approved by (name):	Datum Date
DESY DESY Struck Struck	Uros Mavric Frank Ludwig Andreas Grüttner Matthias Kirsch			
			Dokument Status *Status of document*	1.0 (10.03.2015)
			Anzahl Seiten *Number of pages*	Xx
			Datum *Date*	10.03.2015
FileServer FileName	2015_10_03_DRTM_DWC10_SIS8300			

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1. Performance summary of the DRTM-DWC10 - SIS8300L2

The performance of a modular MTCA.4 compatible receiver consisting of the multi-channel down-converter (DRTM-DWC10) and digitizer (SIS8300L2) is shown by the broadband raw data digitizer FFT spectra in figure 1. For this a 1.3GHz high frequency signal is down-converted to an intermediate frequency of 54MHz, which is sampled by the digitizer. All channels of the SIS8300L2 digitizer provide an excellent noise floor and spectral purity of smaller than -112dBFS.

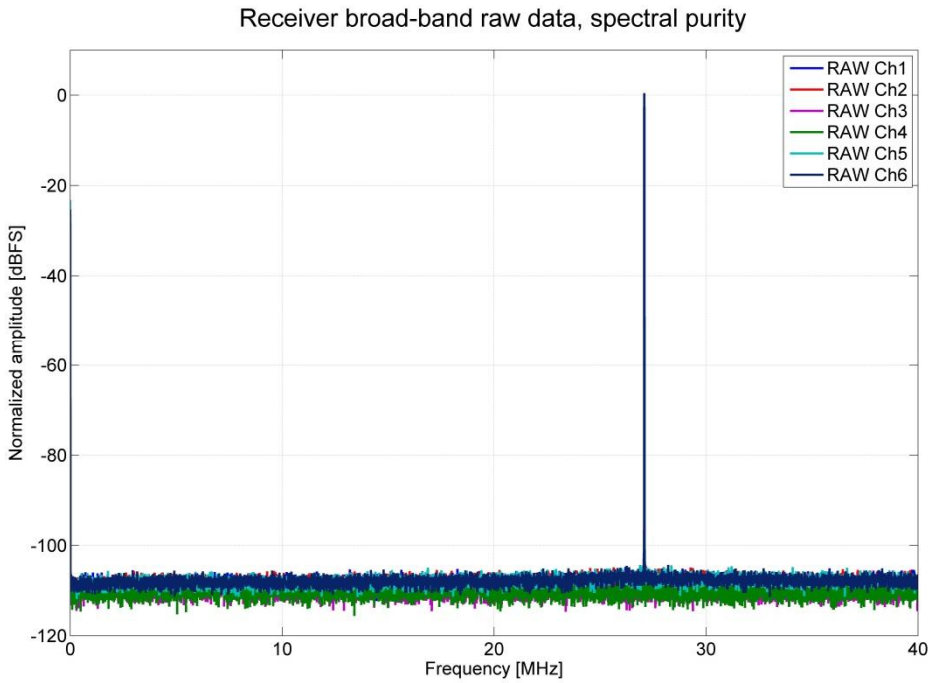

Figure 1: Receiver broad-band raw data FFT

Down-Converter RF-input signal 1.3GHz, IF-output signal 54MHz
Digitizer Sample rate 81MHz
(Test condition: 16K sample points, 30 averages, DRTM-DWC10 - SIS8300L2 version)

The receiver narrow-band amplitude and phase noise spectra using the non-IQ sampling scheme are shown in figure 2. All channels are spurious free. According to figure 3 the cumulative time jitter within the frequency range of [100Hz, 1MHz] is below 6.7fs, respectively <3.5fs in the range [100Hz, 200kHz], which is a typical maximum close-loop bandwidth for superconductive cavity regulation systems. The cumulative amplitude stability is smaller than 5.5E-6 in the range of [100Hz, 1MHz], respectively 3E-6 in the range of [100Hz,200kHz].

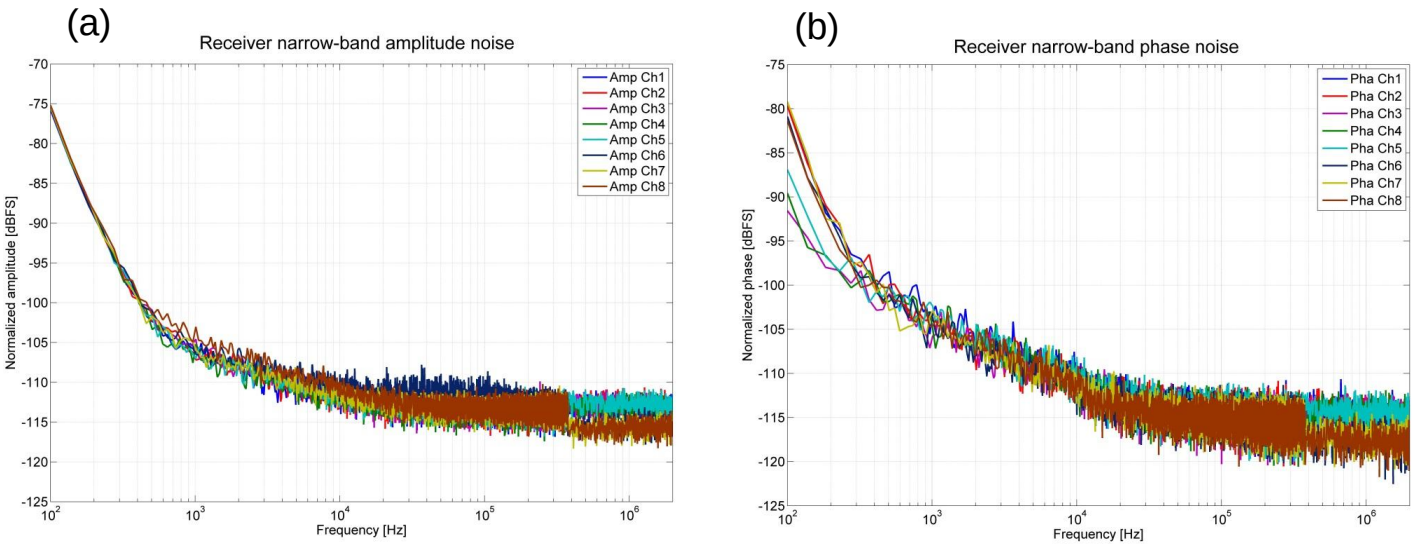

Figure 2: Receiver narrow-band (a) amplitude and (b) phase noise after non-IQ digital-down-conversion

Down-Converter RF-input signal 1.3GHz, IF-output signal 54MHz
Digitizer Sample rate 81MHz
(Test condition: 16K sample points, 30 averages, DRTM-DWC10 - SIS8300L2 version)

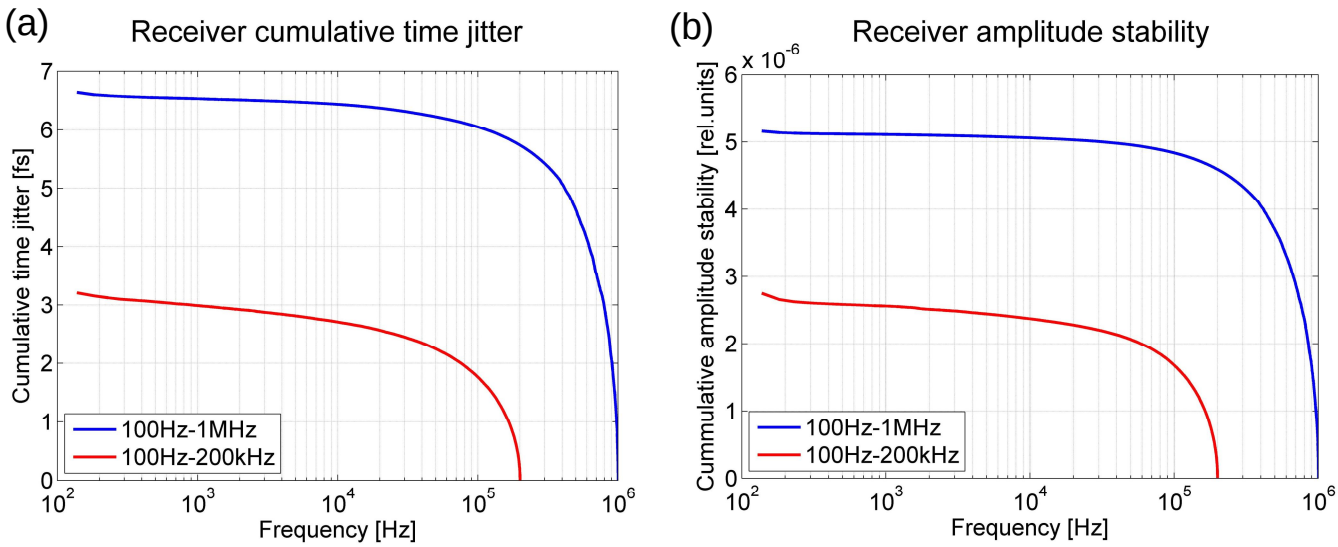

Figure 3: Receiver cumulative (a) time jitter and (b) amplitude stability after non-IQ digital-down-conversion

Down-Converter RF-input signal 1.3GHz, IF-output signal 54MHz
Digitizer Sample rate 81MHz
(Test condition: 16K sample points, 30 averages, DRTM-DWC10 - SIS8300L2 version)