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DRTM -DWC10 – SIS8300KU : 10-channel high frequency receiver pair



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1. Performance summary of the DRTM-DWC10 - SIS8300KU (V1)

The performance of a modular MTCA.4 compatible receiver consisting of the multi-channel down-converter (DRTM-DWC10) and digitizer (SIS8300KU) 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 54.16MHz, which is sampled by the digitizer with 81.25MHz. All channels of the SIS8300KU digitizer provide an excellent noise floor and spectral purity of smaller than -115dBFS. For 1M sample traces the noise floor reduces to -130dBFS with minor spurs of both the SIS8300KU and SIS8300L2.

The receiver narrow-band amplitude and phase noise spectra using the non-IQ sampling scheme are shown in figure 2, respectively figure 3. All channels are spurious free. For 1M sample points the noise floor reduces to -130dBFS with minor spurs for the SIS8300KU and SIS8300L2.

The following devices were used for the measurements:

- 1.3GHz DRO source (Poseidon Scientific Instruments), +13dBm power level
- DRTM-DWC10 R1, nominal power level according to datasheet
- SIS8300KU V1, SIS8300L2S (Struck Innovative Systeme GmbH)
- 19" Schroff Crate, 12 Slots without RF-backplane
- MTCA.4 Wiener 1kW Power Supply, NAT MCH, AM91x/41x CPU
- Reference LO Generation Module 1.3GHz (DESY VN1521), -155dBc/Hz floor, 4.3fs[100Hz,1MHz]
- Test setup: EMI/EMC laboratory

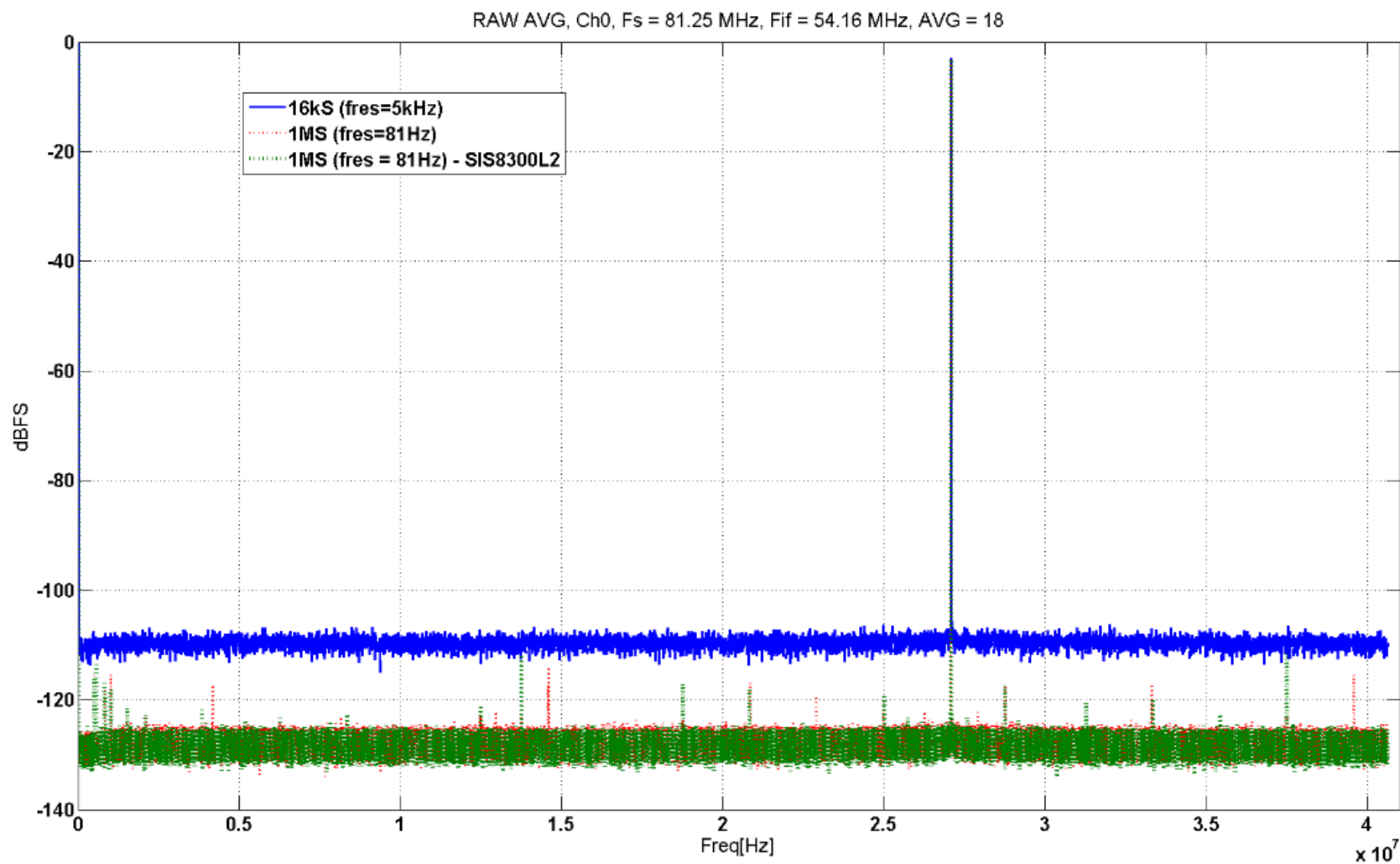


Figure 1: Receiver broad-band raw data FFT
Down-Converter RF-input signal 1.3GHz, IF-output signal 54.16MHz
Digitizer Sample rate 81.25MHz
(Test condition: 16K sample points, 18 averages, DRTM-DWC10 - SIS8300KU version)

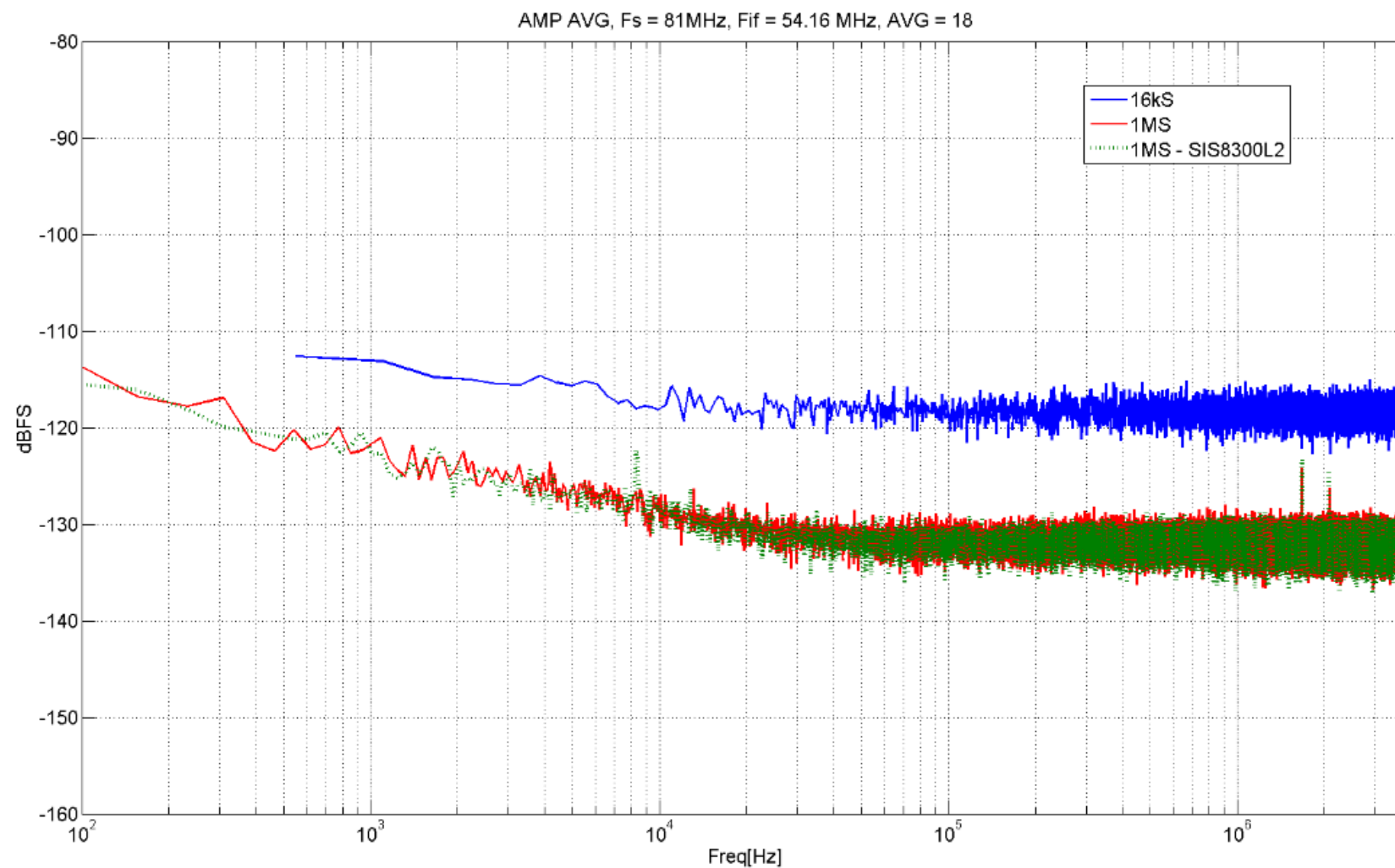


Figure 2: Receiver narrow-band amplitude noise after non-IQ digital-down-conversion
Down-Converter RF-input signal 1.3GHz, IF-output signal 54.16MHz
Digitizer Sample rate 81.25MHz
(Test condition: 16K sample points, 18 averages, DRTM-DWC10 - SIS8300KU version)

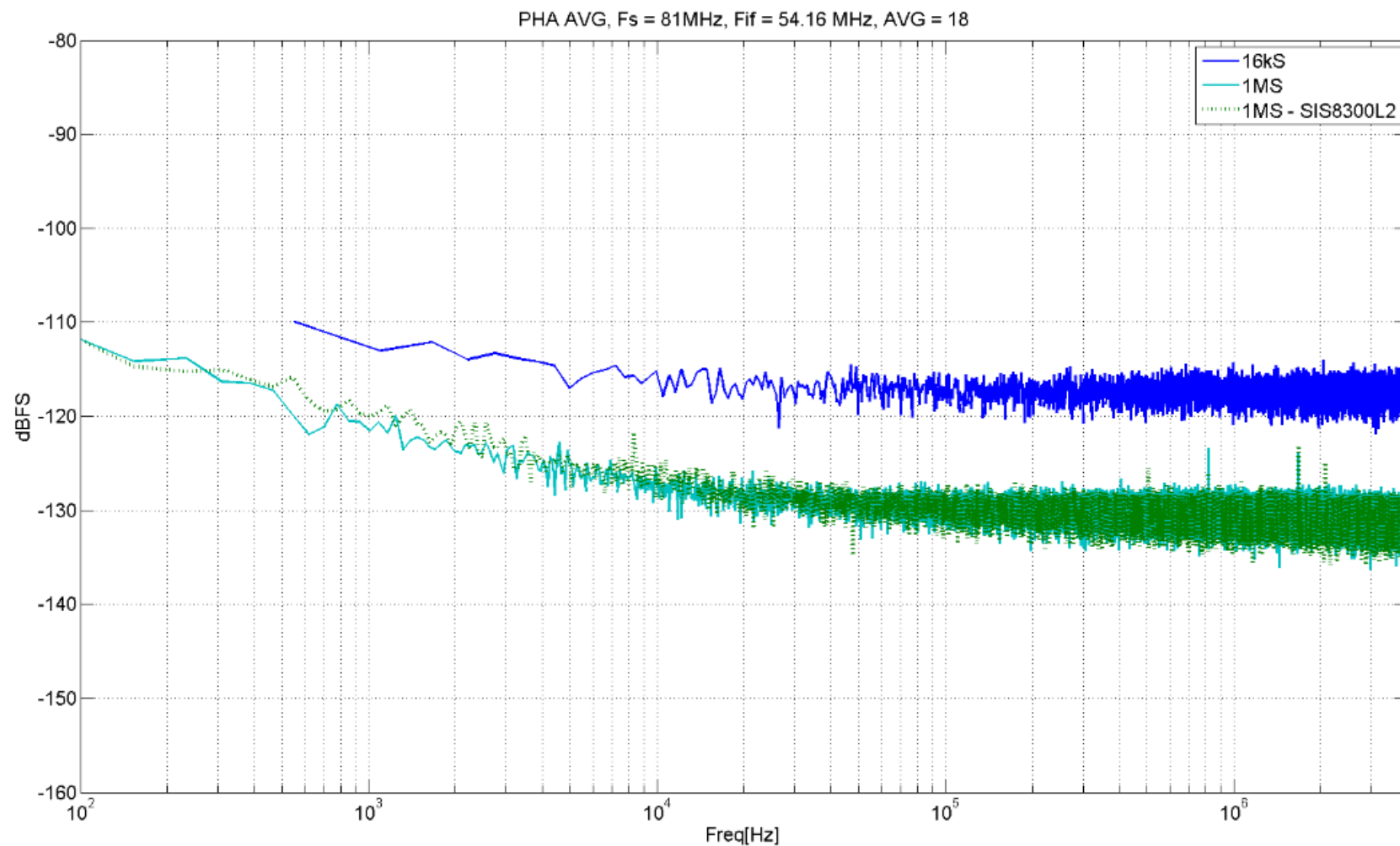


Figure 3: Receiver narrow-band phase noise after non-IQ digital-down-conversion
Down-Converter RF-input signal 1.3GHz, IF-output signal 54.16MHz
Digitizer Sample rate 81.25MHz
(Test condition: 16K sample points, 18 averages, DRTM-DWC10 - SIS8300KU version)