|  |
| --- |
| Max Planck Institut für Radioastronomie |
| Measuring the RFI Signals with a Real-Time Spectrum Analyzer |
|  |
|  |
| **Geomarr van Tonder** |
| **7/31/2018** |

|  |
| --- |
| Power spectrum is calibrated, gain and losses incorporated, in order to arrive at the electrical field strength incident at the receiver antenna. Electrical field intensity [dBuV/m] is independent of: frequency, receiving antenna gain, receiving antenna impedance and transmission line loss. |

Contents

1. Overview and Scope
2. Using the RSA306 Voltage IQ Data
3. Measurement Setup
4. Measurement Results
5. Overview and Scope

Calculate the SNR to get the chamber’s efficiency. Extract the IQ Voltage from Tektronix Gui calculate the Power spectrum and calibrate the data.

1. Using the GUI RSA306 Voltage IQ Data exported

Using the RSA306B Real-Time Spectrum Analyzer to collect the IQ voltage and applying a Fats Fourier Transform (FFT) on the data obtained. The power spectrum is calculated as follow:

Calculate the Signal to Noise Ratio

1. Measurement Setup

Set up Tek SignalVu - GUI

Acquisition bandwidth = 40 MHz

Sample rate of 56 Msps

Resolution bandwidth (RBW) = 107 Hz

Number of samples 373852 => L = Fadc/ Bch

Trace point = 64001

Samples = 374k

Acq length = 6,679 ms

A signal generator and a variable attenuator was used at the sending antenna to illustrate

Prfi = Ptx + Gtx.

The receiving captures the data using Tek GUI and saves the Acq BW, therefor the Signal was injected at interval of 1 GHz from 1 GHz – 6 GHz, for now. The signal data is extracted at 20 MHz below and 20 MHz above the injected RF frequency.

At the receiving antenna the power of the received signal referenced at the input to the LNA.

ERROR:

At the moment, when I plot the data it gives me a wrong plot but when I only use the noise then I get the right plot.