

## DEVELOPMENT OF A LOW COST 4-BIT, 16 GIGA-SAMPLES PER SECOND ANALOG-TO-DIGITAL CONVERTER PRINTED CIRCUIT BOARD ASSEMBLY FOR RADIO ASTRONOMY

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In this study, a 4-bit, 16-Gsps analog-to-digital converter (ADC) printed circuit board assembly (PCBA) was designed, manufactured, and characterized for digitizing radio telescopes. For this purpose, an Adsantec ANST7123-KMA flash ADC chip was used. Because of this chip doesn't follow the JESD204 standard, a novel channel bonding method has been developed for alignment of the high-speed serial data input. The PCBA is equipped with a field-programmable gate array (FPGA) Mezzanine Card (FMC) connector. With FMC, it allows us to employ the field-programmable gate array evaluation board, VCU118, by Xilinx as the testing platform. The PCBA enables data acquisition with a wide bandwidth and simplifies the intermediate frequency section. In the current version, the PCBA and the chip exhibit an analog bandwidth of 10 GHz (3 dB loss) and 20 GHz, respectively, which facilitates second Nyquist sampling. Preliminary results of spurious-free dynamic range(SFDR), signal-to-noise and distortion ratio (SINAD) and effective number of bits (ENOB) will be presented.