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Post -Launch Performance Analysis of SCATSAT -1 Payload

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Space-borne Scatterometer missions are used to provide near sea surface ocean wind vector at global scale from radar backscatter measurements. Scatterometer data is used in numerical weather prediction models for weather forecasting, tracking of cyclones, various marine and costal applications. Scatterometer measures the backscatter power from the wind induced roughness in ocean surface. Geophysical model functions that relate normalized radar cross section ($\sigma 0$) and ocean wind vectors are used to estimate the near surface wind velocity and direction.

ISRO's second Scatterometer mission "Scatsat-1" a Ku-band pencil beam scatterometer has been launched in 2016 to provide continuity to OSCAT along with the aim of providing climate quality data. Scatsat-1 mission inherits all specifications from its predecessor with improved wind vector product specification to 25 x 25 Km from 50 x50 Km of OSCAT. Characterization has been carried out of integrated payload in radar (transmit and receive path) and radiometer mode during pre-launch phase to estimate sensor's performance

This paper briefly highlights the sensor configuration and modifications in hardware as well as in on -board programmable parameters carried out in Scatsat –1 mission from its precursor mission. This paper discusses the pre -launch system linearity established using noise subtraction principle of scatterometer along with post launch results of in orbit data. Comparison of noise equivalent sigma naught, a figure of merit parameter of radar, negative sigma zero statistics estimated from pre –launch and post launch data for both the polarization has been discussed. Deep space calibration has been performed at every six months and sensor's performance has validated from the deep space data.