

# SKA 中频望远镜单像素馈源接收机频段 4 和频段 5 接收采样器技术要求（英文）

SKAO will competitively procure a cash Tier 1 contract to deliver the RXS45 product for SKA-Mid.

The RXS45 contract consists of 80 RXS45 Packages plus spares.

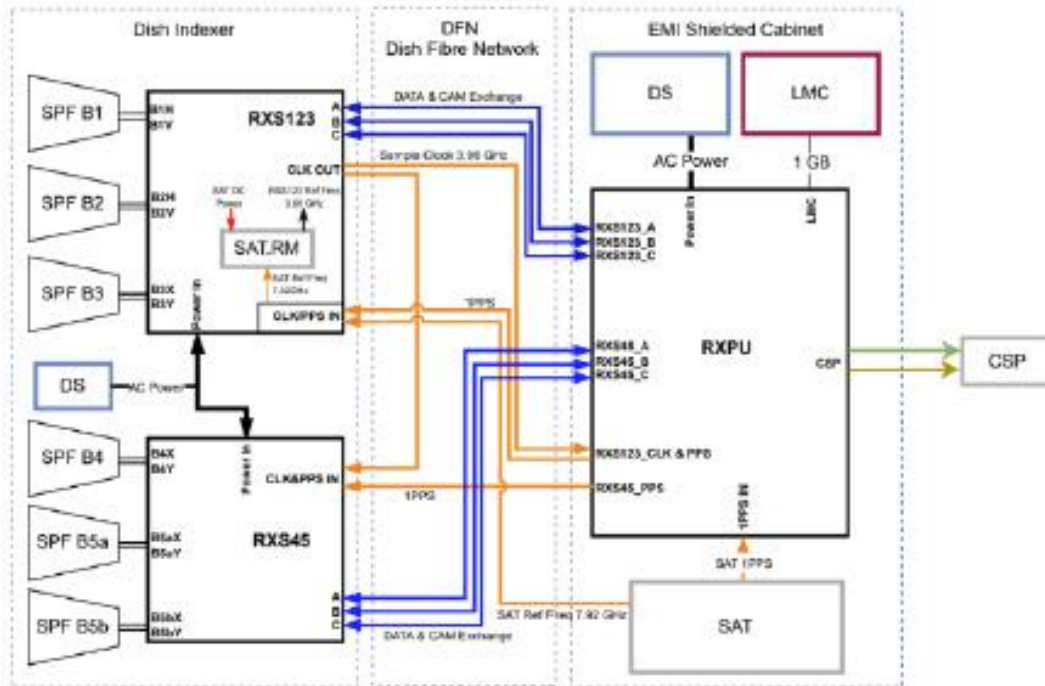
The RXS45 forms part of the modules of the Single Pixel Feed Receiver (SPFRx) system for the MID Telescope. The Single Pixel Feed Receiver (SPFRx) is a key performance-determining part of the SKA Mid telescope and its main functions are digitisation and conditioning of the RF output signals from Single Pixel Feeds (SPF), and forwarding the data to the Central Signal Processor (CSP).

The SPFRx consists of three main modules which are the RXS123 (Receiver Sampler for Band 1,2 & 3), RXS45 (Receiver Sampler Band for 4 & 5) and RXPU (Receiver Pedestal unit). The RXS45 is mounted on the SKA MID Dish Indexer while the RXPU is mounted inside the SKA MID Dish Pedestal.

The RXS45 receives radio frequency (RF) signals captured by the dish and pre-amplified by the Single Pixel Feed (SPF) Sub-Element components, when observing band 4 (2.8 – 5.18 GHz), 5a (4.6 – 8.5 GHz) or 5b (8.3 – 15.4 GHz).

The RF signals are delivered to SPFRx in two polarities on 50-Ohm coaxial lines, one pair of coaxial lines dedicated to each SPF Band.

The main tasks for the RXS45 is to perform analogue to digital conversion on the incoming RF and to send the digital RF samples to the RXPU for further digital signal processing. The RXS45 operation is controlled by the Dish Local Monitoring and Control (LMC) Sub-Element through the RXPU.



*Figure 1: A block diagram of the single pixel feed receiver system (SPFRx). The RXS123, the RXS45 and the RXPU blocks in black as well as the RF cables connecting it to each single pixel feed (SPF) make up the SPFRx. Of the items shown, only the RXS45 + SPF B4,5a, B5b RF Cables are deliverables of this ECC.*

SKAO seeks an RXS45 design solution that can meet the SKAO RSX45 requirements in the shortest time. The successful design must interface seamlessly with other products (i.e. RXPU, Dish and CSP) with minimal impact on their designs. SKAO seeks to enter into a NEC4 Engineering Construction Contract (ECC) with a Contractor to design, industrialise and manufacture 80 of the RXS45 systems plus a minimum of 6 spares and related external cables, based on the designs from SKAO. The manufacture and supply of the units will be in batches and delivered over 3 years, aligned with the SKAO rollout plan.

Once parties have registered their interest, a Pre-Qualification Document Pack will be issued to interested parties. The Pre-Qualification Document Pack will contain a Pre-Qualification Questionnaire (PQQ) which includes a Quality

Assurance Questionnaire, ISMS Questionnaire and a Health and Safety Questionnaire. Developed in order to accurately determine if the Supplier has the necessary financial, economic, quality, technical and professional capacity and competencies to perform the required scope of work in a manner compliant with SKAO expectations.