**ATA Cooled, Antonio Feed**

**Development History**

**Matt Fleming, Minex Engineering, Ver 01**

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Comment | Initials |
| Version 0 | 2014-11-08 | Preliminary. | MCF |
| Version 01 | 2019-03-17 | Incomplete, but distributed. | MCF |

**Table of Contents**

[Summary: 1](#_Toc3728974)

# Summary:

This document will give information on the installation operation and maintenance of the ATA Cooled Feed. This feed design was originally started with funds from the SKA TDP program in 2010. Information on the various designs leading to the current design can be found in Table X. The current design identified as 5C4 has gone through several iterations. Some highlights of the design are listed below.

* Frequency range 0.9 to 16 GHz.
* Noise temperatures of 21 K at 2 GHz sloping to 60 K at 14 GHz measured on the telescope Sept, 2014.
* LNA & feed arms cooled to between 65 and 70 Kelvin.
* Vacuum chamber under Borosilicate glass radome at about 1.0 E-6 mbar.
* Vacuum maintained by Pfeiffer Hi Pace 80 turbo pump.
* Cooling provided by Sunpower GT sterling cycle cooler.

The feed is dimensionally the same length from the arm vanishing point to the focus mechanism mounting plate.

|  |  |  |
| --- | --- | --- |
| **ATA Feed Design History and Designations** | | |
| **Design Names**  **Serial Numbers** | **Dates** | **Description** |
| 1A  2A  3A |  | Early concept designs. |
| 4A  4B  4C  4D2 SB-018 |  | ATA Ambient Feed 0.5 to 10.5 GHz, installed on ATA 42. ( SB nums ) |
| 5A |  | SKA TDP Cooled Feed 0.9 to 18 GHz, early concepts, fully cooled feed arms. |
| 5B |  | SKA TDP built for testing at Caltech, removable forward section. |
| 5C1 |  | SKA TDP outfitted with quartz radome, no support chassis ( balun ?? )no vac?? |
| 5C2 |  | SKA TDP with quartz radome, preliminary long support chassis & housing. LNA on cone end ? ( SETI prototype 1? in contracts ) |
| 5C3-000 | 2014- | SETI Antonio with quartz & composite radome & square housing. (on ant 2e ) |
| 5C4B-018 | 2015-03-17 | SETI Antonio production model, borosilicate radome, step housing.  Drawing numbers 30-29-200 through 30-29-500  5C4 is now at rev B for most parts, E for tip. |
|  |  |  |

|  |  |
| --- | --- |
| DSC00949.JPG  2003-09 design 2 | tn_DSC00961.JPG  2003-09 design 2 |
| DSC01299.JPG  design 3 |  |
| 5b-091005b.jpg  design 5B | 5b-100316_1579a.JPG  design 5B1 Cal Tech |
|  | IMG_2329.JPG  2010-08-18 5C1 maybe. |
| DSC04178.JPG  2011-01-05 design 5C1 | IMG_2635.JPG  2010-10-24 design 5C1 |
|  |  |
| IMG_5428.JPG  2012-08-22 HCO 5C2 | 2011-09-16 build up(4) .JPG  2011-09-15 Minex 5C2 |
| IMG_6141.JPG  external controls & quartz dome 5C3 | IMG_7189.JPG  with control & composite dome 5C3 |
| 5C4 |  |