Satellite and Weather Information for Disaster Resilience in Africa

"A Contribution to Disaster Risks Reduction and Climate Resilience"

DESIGN, SUPPLY, INSTALLATION AND MAINTENANCE OF THE PAYLOAD DATA ACQUISITION AND PROCESSING (PDAP) SUB-SEGMENT OF THE SAWIDRA RARS GROUND SEGMENT

MAINTENANCE REPORT (SANSA)

Doc. Code :	SAWIDRA-MT-D-04
Version :	Ver. 1.0
Date :	16. August, 2023

Reported by SOLETOP engineers: Zee Seong Kang

SOLETOP

Table of Contents

1. Object....3
2. Place/Period....3
3. Participants....3
4. Maintenance Schedule....3
5. Reference Documents....4
6. System Configuration....5
   6.1 Hardware (Antenna and ICT)....5
   6.2 Software (FarEarth)....10
   6.3 Systems Access Information....11
7. Maintenance Result Summary....12
   7.1 Maintenance Pictures....13
8. Others....20
   8.1 D-300 Installation....20
   8.2 Internet Speed Test....22
   8.3 Network Configuration....23
   8.4 LRD-200B, HRD-200B recovered....24
   8.5 RF....25
9. Maintenance Result....26

Appendix 1. SAWDRA Maintenance Checklist 2022 (SANSA)
Appendix 2. 2.4XLC-3.0m Installation, Operation and Maintenance Manual
Appendix 3. D300 Installation, Operation and Maintenance Manual REV A.11
Appendix 4. D300 Software Update Procedure
Appendix 5. SAWIDRA - Overview Document v1.1
Appendix 6. FarEarth Acquisition System - User Manual v3.1
Appendix 7. FarEarth Acquisition System - Deployment and Configuration Manual v3.1
Appendix 8. FarEarth Director and Processing System - User Manual v4.1

1. Object

Since the system related to SAWIDRA project is established in 2021, SOLETOP performs maintenance for 3 years onsite. And this year, 2023, is the 2st year of maintenance. The maintenance tasks cover Hardware (Antenna, ICT & RF equipment), FarEarth software which performs receiving, processing, and distribution of satellite imagery.

2. Place/Period

- Place: South African National Space Agency (SANSA) Space Operation
  - Farm NO. 502JQ, Hartebeesthoek, Districk Krungersdorpp, 1740
- Period: From 14rd to 16th August 2023

3. Participants

- SANSA: Themba, MBULE
- SOLETOP: Zee Seong Kang
- Pinkmatter Solution (Online Support): Josef Hlawatschek

4. Maintenance Schedule

Date	Task
14rd, August	- SOLETOP installed Anydesk to get remote access from SOLETOP HQ to monitor de system - Hardware Maintenance(1/2) - 3.0m antenna system ✓ Antenna System Overview (Diagram) ✓ Antenna Positioner ✓ Antenna Control Unit (ACU) ✓ Feed & Downconverter ✓ Dehydrator
15th, August	- Re-configure the demodulator configuration file in FarEarth Acquisition Control S/W - D-300 OS root user password find & init
16th, August	- Software Maintenance - Hardware Maintenance (2/2) ✓ X/L-Band Datalink Demodulator(D-300) - LRD-200B, HRD-200B collection - Reporting Maintenance result

5. Reference Documents

Documents covers hardware (Antenna system and ICT Unit) and Software (Pinkmatter – FarEarth) components separated as below.

No.	Documents
[M-HW-01]	2.4XLC-3.0m Installation, Operation and Maintenance Manual
[M-HW-02]	D300 Installation, Operation and Maintenance Manual REV A.11
[M-HW-03]	D300 Software Update Procedure
[M-SW-01]	SAWIDRA - Overview Document v1.1
[M-SW-02]	FarEarth Acquisition System - User Manual v3.1
[M-SW-03]	FarEarth Acquisition System - Deployment and Configuration Manual v3.1
[M-SW-04]	FarEarth Director and Processing System - User Manual v4.1

6. System Configuration

6.1 Hardware (Antenna and ICT)

Division	Item
Antenna System	· 3.0 m Reflector Dish & Positioner · ACU · Feed & Downconverter · Dehydrator · X/L-Band Datalink Demodulator (D-300)
ICT System	· Server · Desktop PC & Monitor · UPS/AVR · Rack cabinet assembly

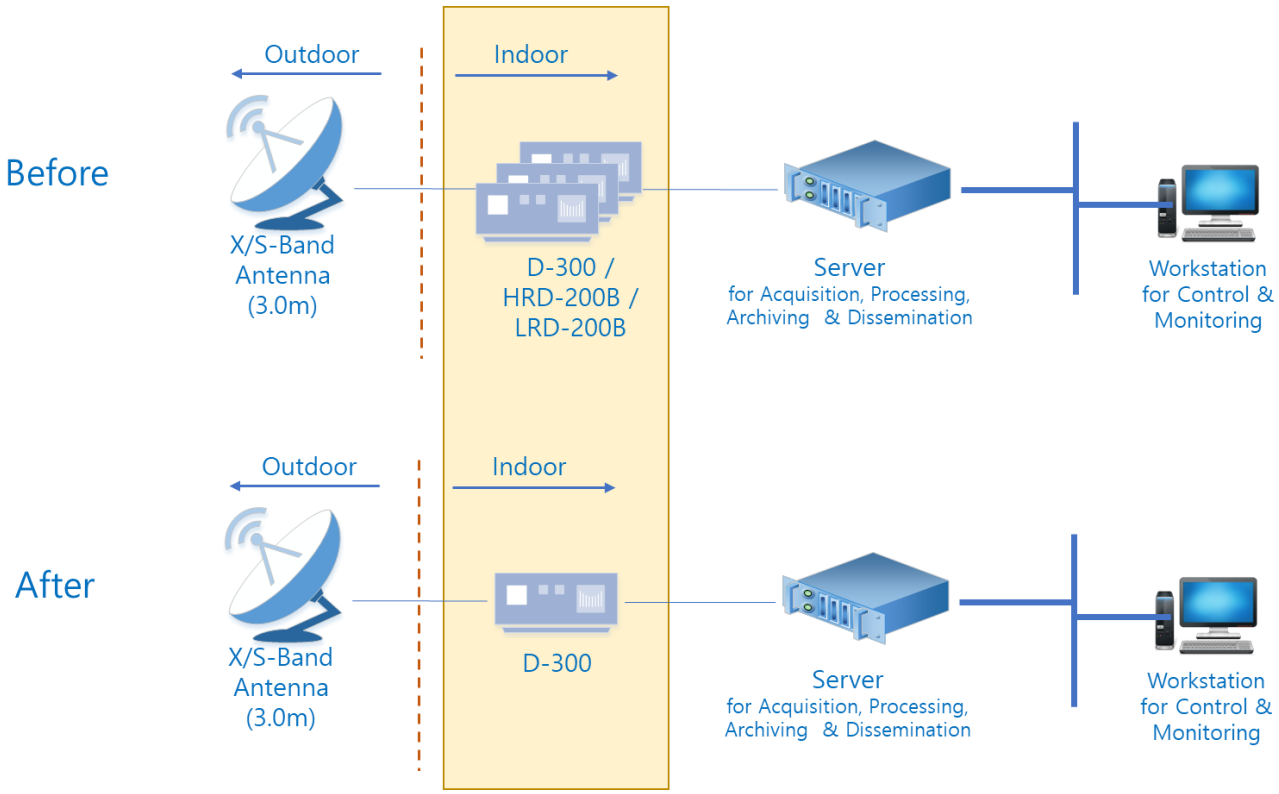


Figure 1. Hardware Configuration

Figure 2. Outdoor – 3.0m Antenna placement

Figure 3. Indoor - Rack cabinet & ICT equipment arrangement

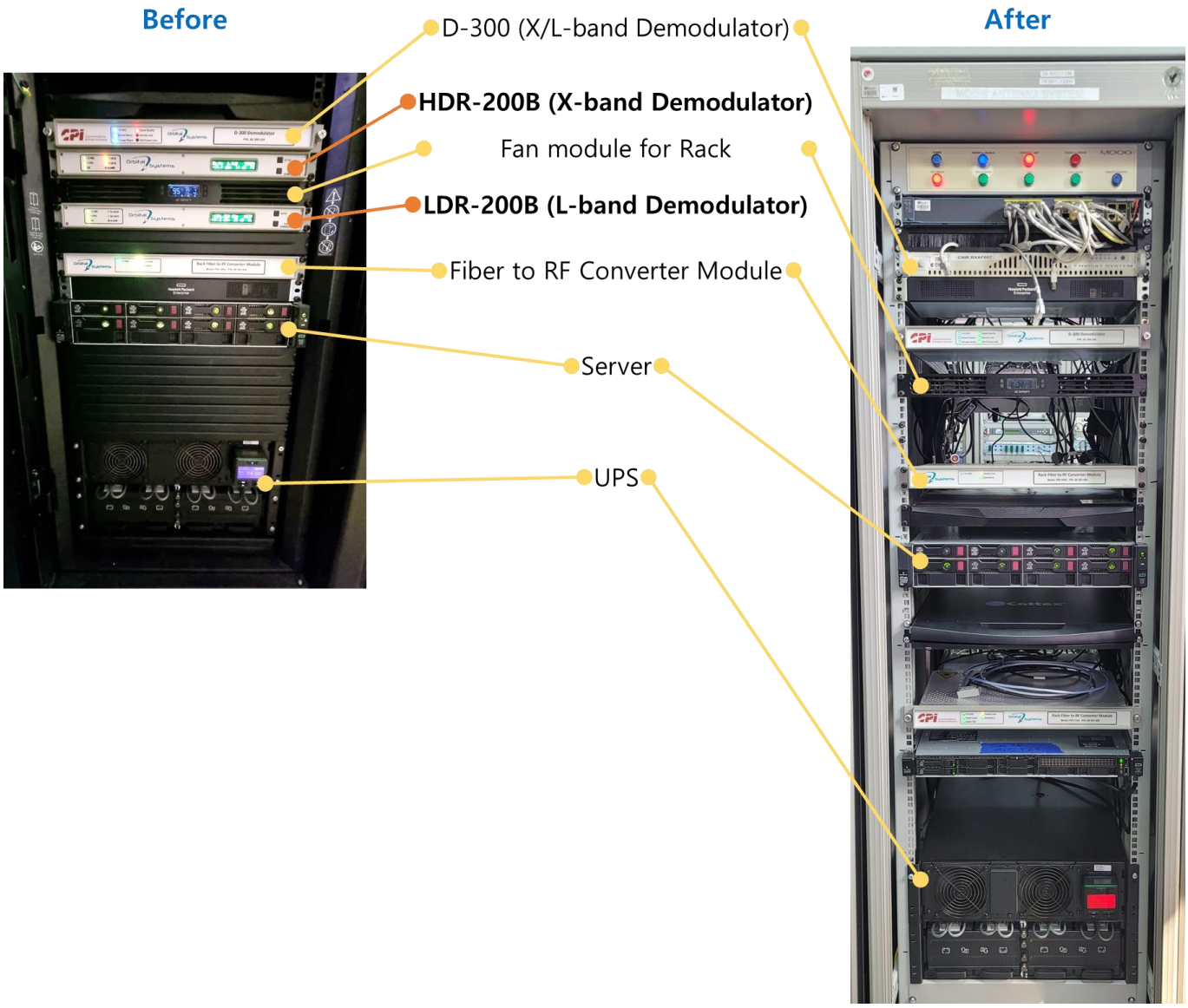


Figure 4. Rack configuration

SANSA moved the hardware from half rack to frame rack.LRD-200B and HRD-200B have been removed.

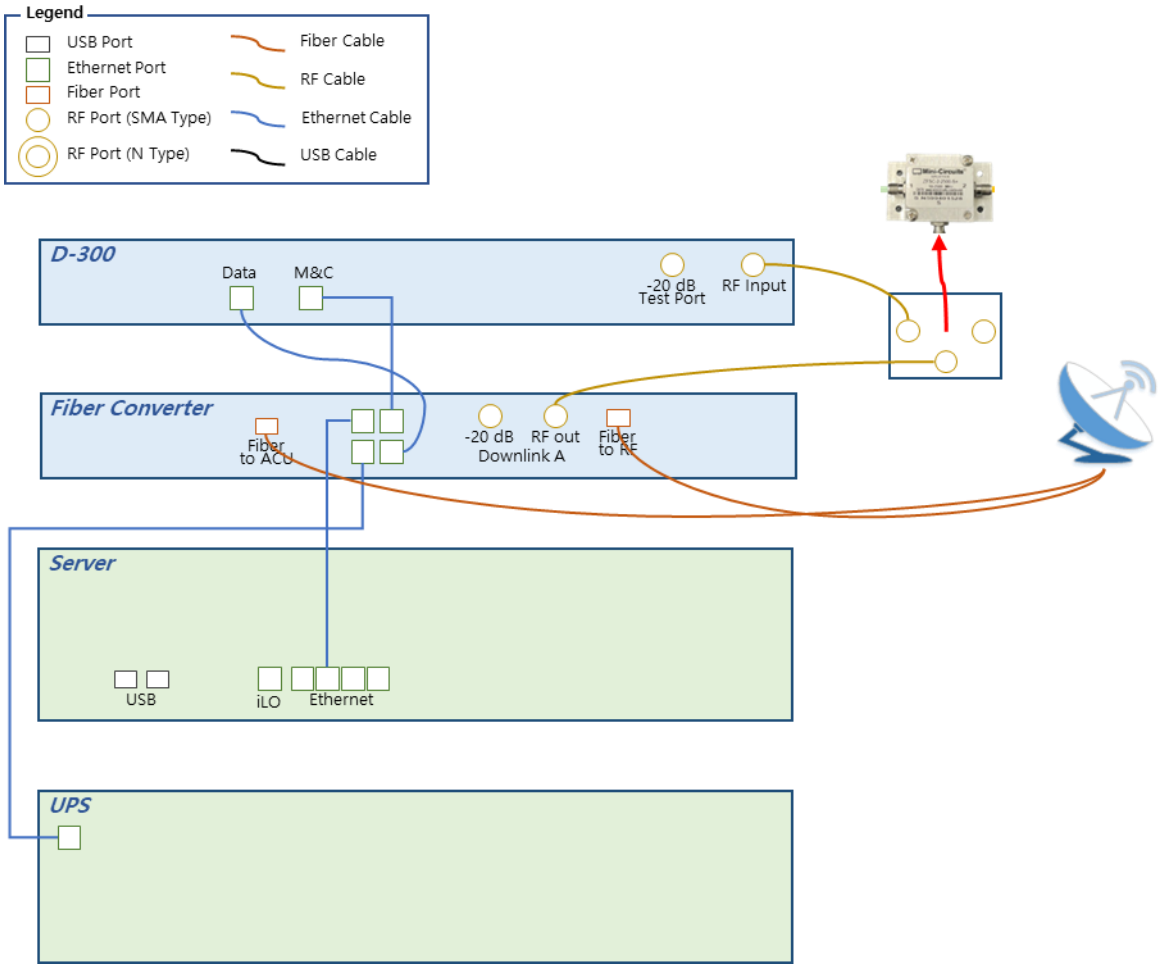


Figure 5. Rack Wiring Diagram #1

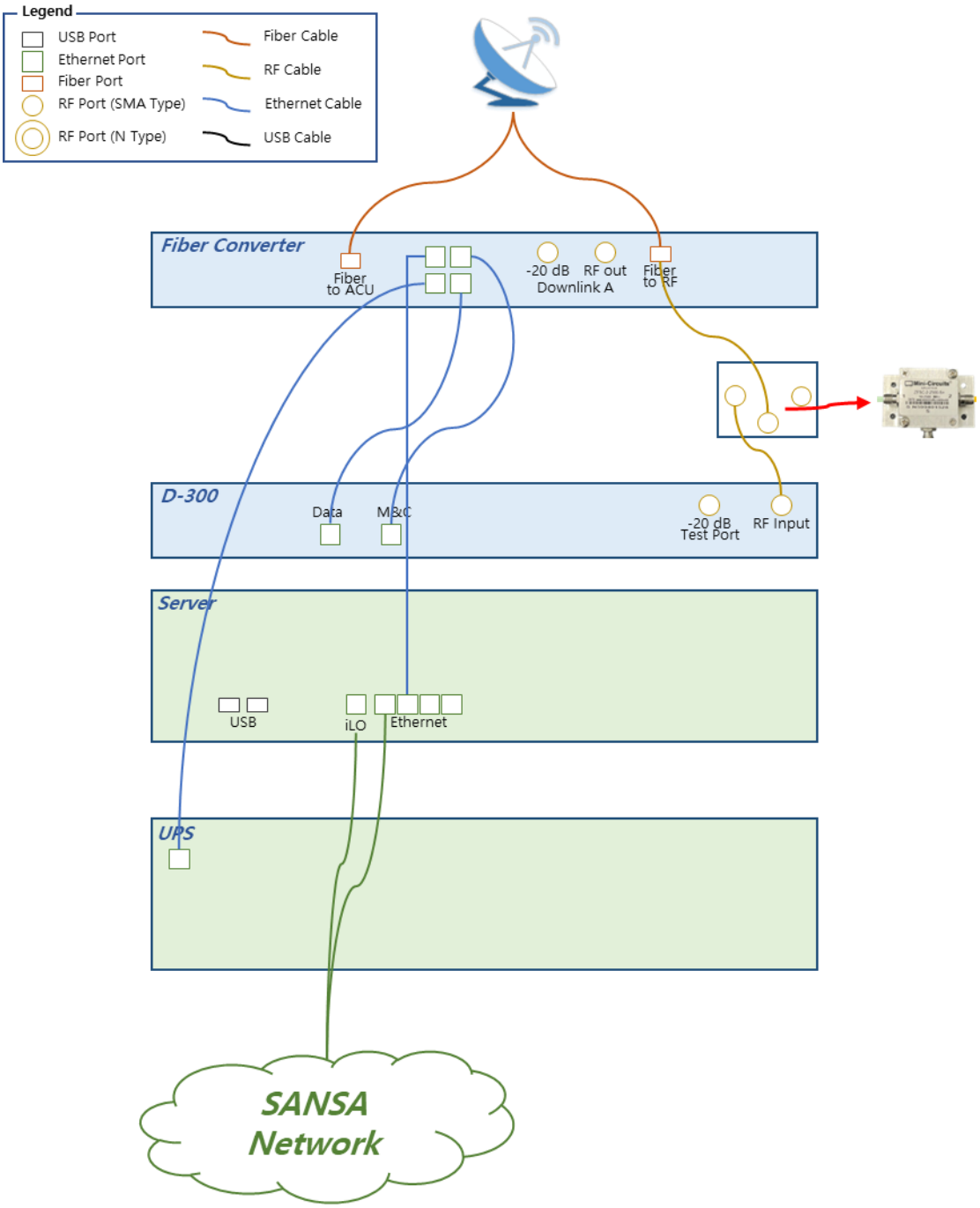


Figure 6. Rack Wiring Diagram #2

6.2 Software (FarEarth)

Division	Item
Satellite Ground Station Solutions	· Acquisition Management Software - FarEarth Acquisition System : Acquisition Controller, Observer · Processing Management Software - FarEarth Processing Automation System : DataPoint, Director, Processor

In Figure 7, the green colored items represent data flow and the Software components. Blue colored items represent Control flow and the items external to FarEarth software components. Yellow represent the external configured sources required.

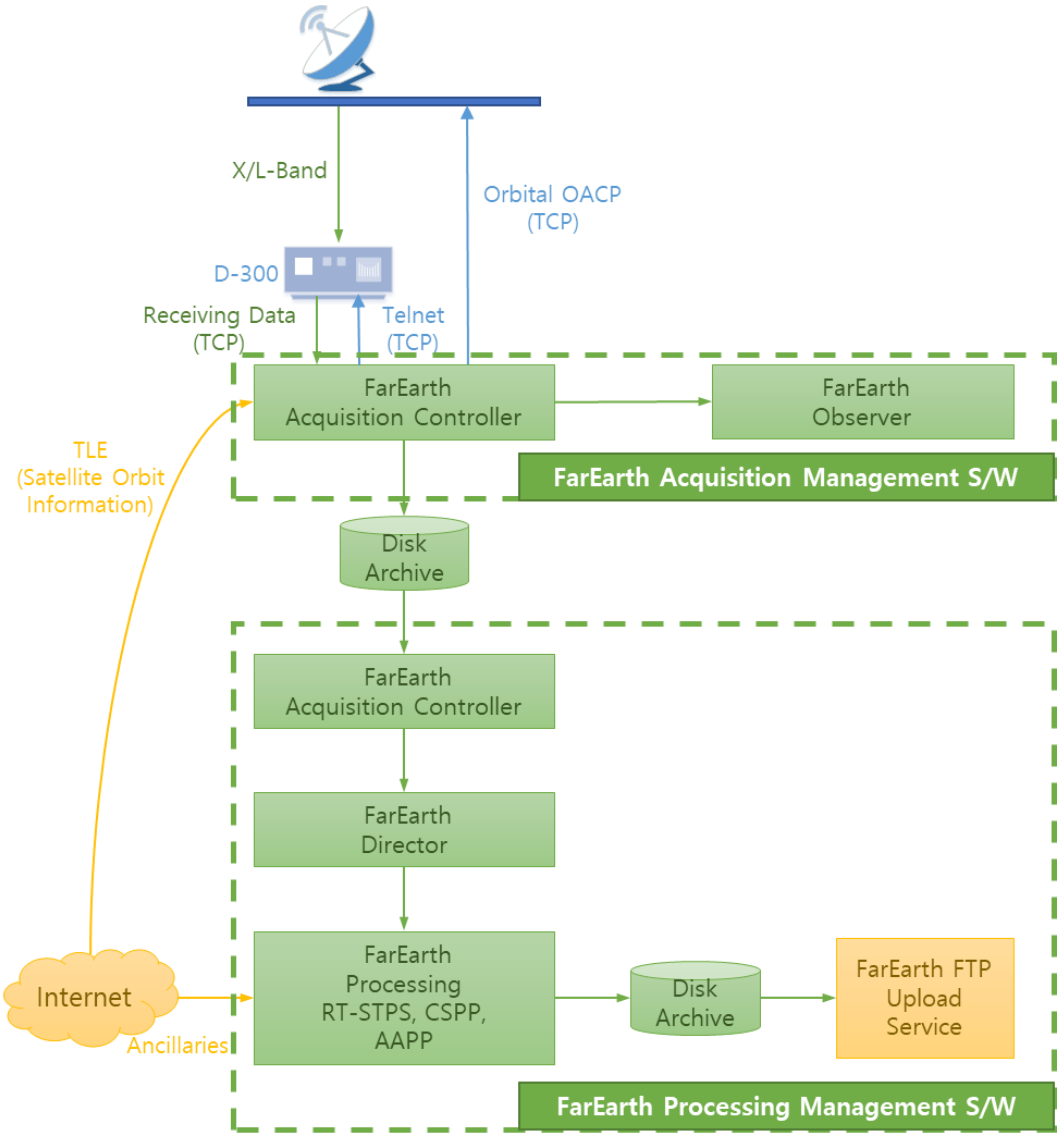


Figure 7. Software Configuration

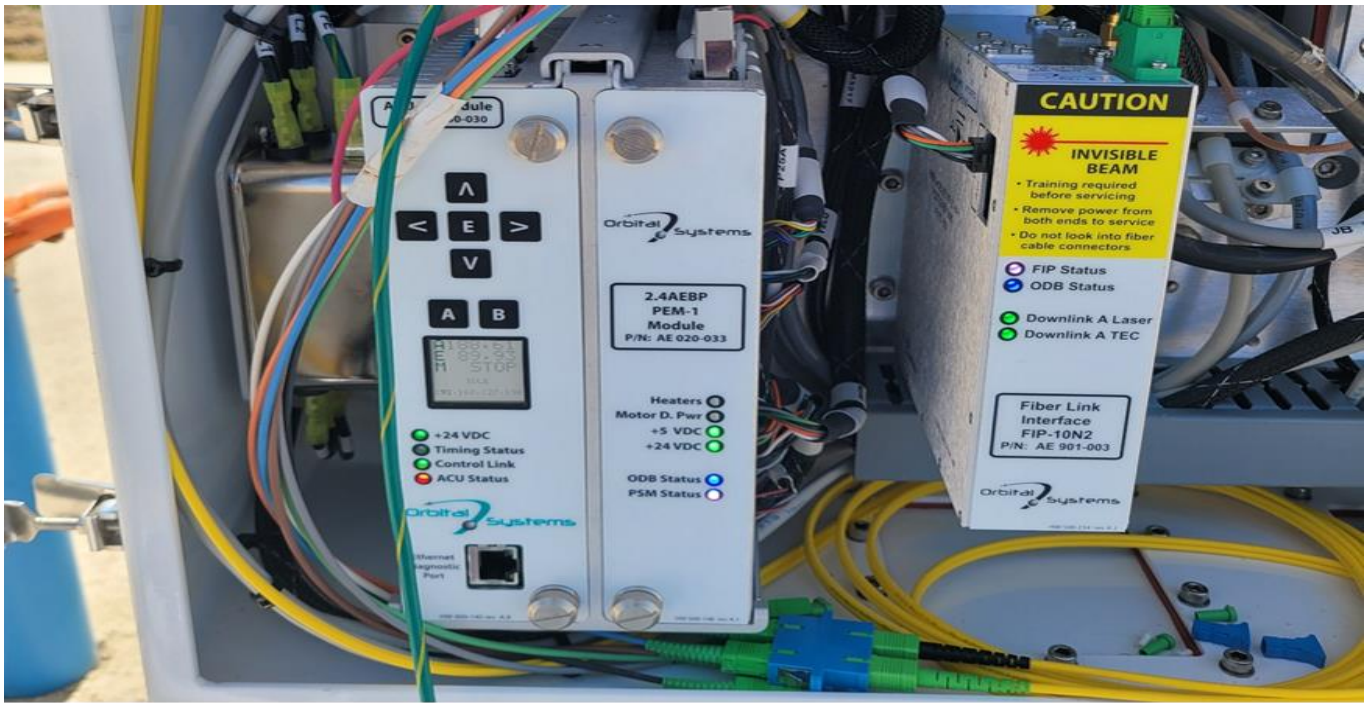
6.3 Systems Access Information

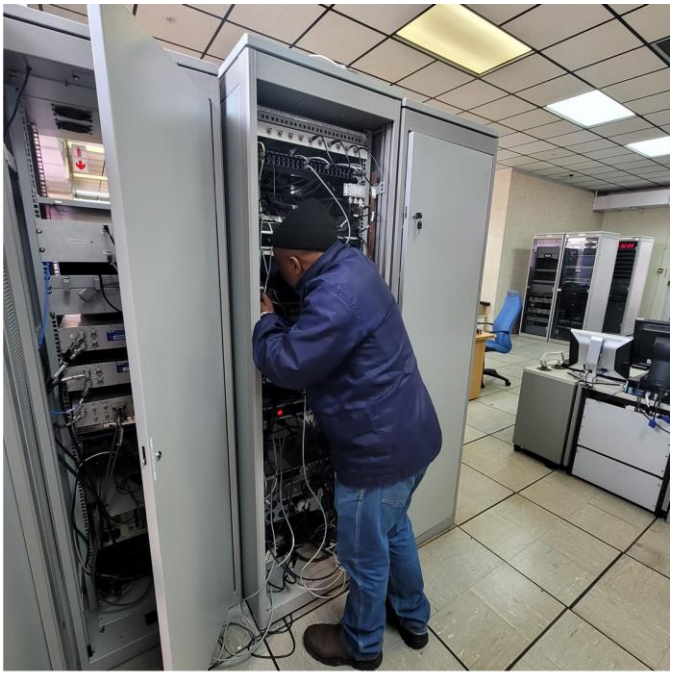
Classification	ID	Password	Category	IP
Server	farearth	hbksawidra2020hbk	SANSA Network	xx.xx.144.104
			Interface with ACU and D300 M&C link	xxx.xxx.127.180
Antenna System	N/A	N/A	ACU	xxx.xxx.127.190
	root	root	D-300 Demodulator SSH	xxx.xxx.127.173
	oscp	oscp		
	admin	admin	D-300 Demodulator M&C	xxx.xxx.127.173
	N/A	N/A	D-300 Demodulator Data	xxx.xxx.127.174
Software	operator	sawidra	FarEarth Acquisition-Controller-	xx.xx.144.104:8085
	operator	sawidra	FarEarth Director	xx.xx.144.104:8082
	operator	sawidra	FarEarth Catalogue	xx.xx.144.104:8081/catalogue
	operator	sawidra	FarEarth Observer	xx.xx.144.104:8080/observer

7. Maintenance Result Summary

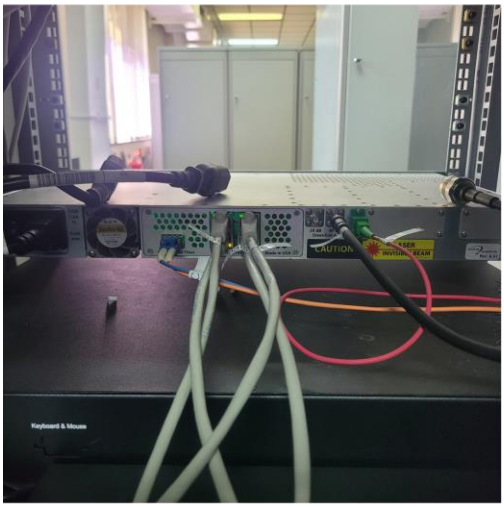
Classification	Category	Item	Pass	Fail
Antenna	Antenna Outside	21	21	-
	Antenna Interface	33	33	-
ICT Equipment	Server Status Check	9	9	-
	FAN Status Check	7	7	-
	Demodulator (D-300)	11	11	-
	RF Converter Module Status Check	8	8	-
	USP Status Check	7	5	2
	Monitor & KVM Switch Status Check	5	5	-
Software	FarEarth Acquisition-Controller	15	15	-
	FarEarth Director	19	19	-
	FarEarth Catalogue	9	9	-
	FarEarth Observer	4	4	-
SUM		**148**	**146**	**2**

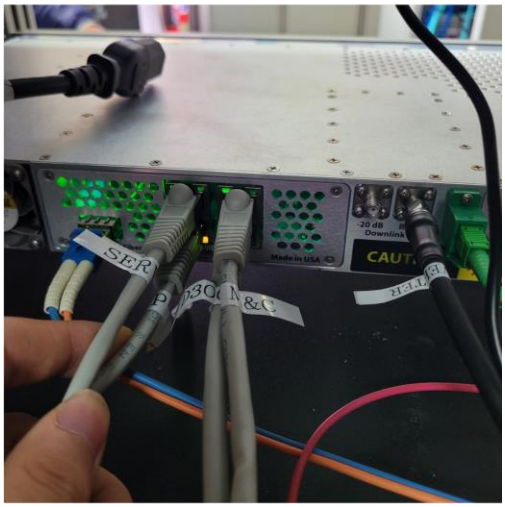
7.1 Maintenance Pictures

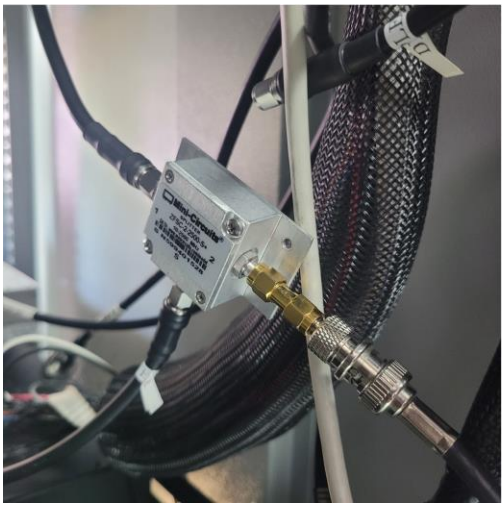




Hewlett Packard
Enterprise
CPI
Communications
& Power Industries
+12 VDC
Demod Status
Storage Status
Signal Quality
Demod Lock
FEC/Frame Lock
Orbital System
AC INFINITY

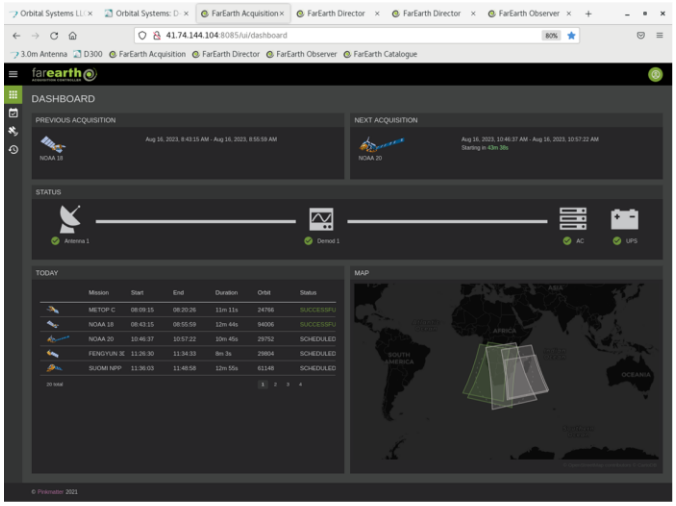


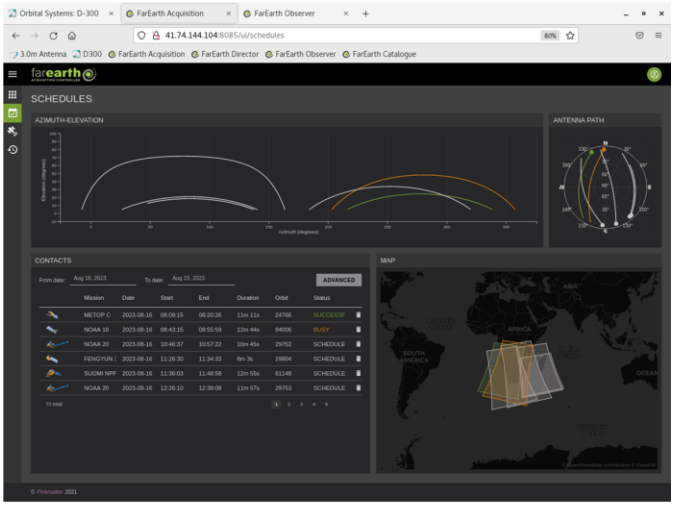


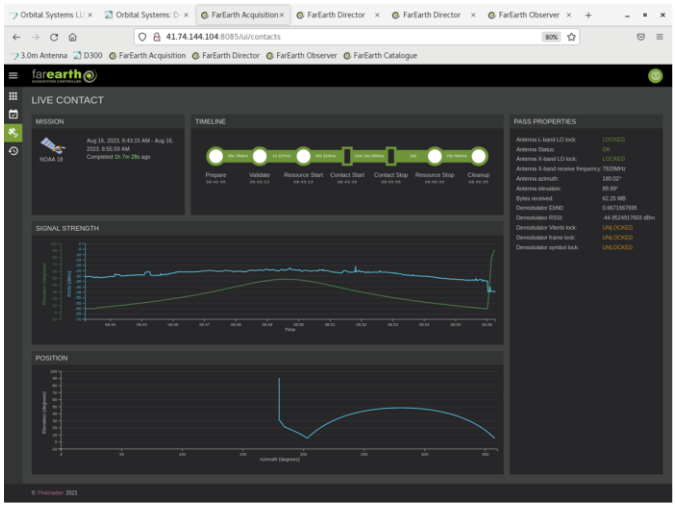


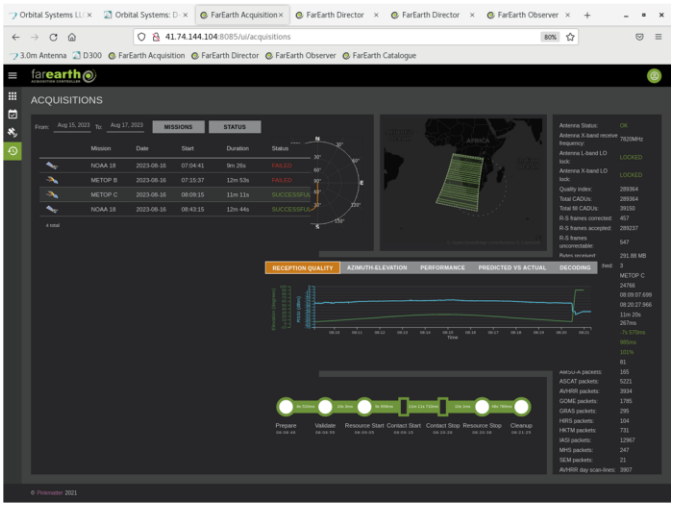
SRT10KRMXLT

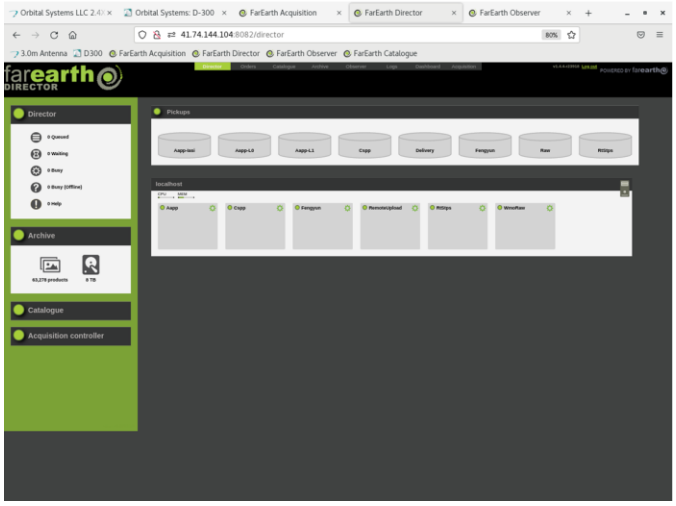
Orbital Systems
SOLETOP
2.4XLC-3.0m
SAWIDRA 3
Positioner Status
System Status
System Status: Operational
Mode Switch Status: Run
ACU Status: IDLE
Emergency Stop Status: OK
Azimuth Drive Status: Disabled
Elevation Drive Status: Disabled
Azimuth Brake Status: Engaged
Elevation Brake Status: Engaged
Azimuth Encoder Status: OK
Elevation Encoder Status: OK
Stow Pin Status: OK
System Time: 16/08/2023 11:21:43 UTC
Bus Status
Motor Drive Power Status: Ready
Heater Status: Off
24V Supply(V): 23.75
Heartbeat Status
CPU-2: OK
CPU-3: OK
PEM-1: OK
Azimuth Encoder Limit Node: OK
Azimuth Motor Drive: OK
Elevation Encoder Limit Node: OK
Elevation Motor Drive: OK
Limit Status
Azimuth Overspeed: OK
Elevation Overspeed: OK
Elevation Low Limit: OK
Elevation Low Pre-Limit: OK
Elevation High Pre-Limit: OK
Elevation High Limit: OK
Environmental Status
Pressure (PSI): 0.23
Electrical Cabinet Temp (°C): 33.4
Electrical Cabinet Humidity (%): 7.6
Upper Enclosure Temp (°C): 28.3
Upper Enclosure Humidity (%): 9.2
System Position
Azimuth
Position (°)
180.00
Target Δ (°)
0.00
Velocity (°/sec)
0.00
Current (Arms)
-0.00
Elevation
Position (°)
89.99
Target Δ (°)
0.00
Velocity (°/sec)
0.00
Current (Arms)
0.00
System Control
Orbital Advanced Control Protocol
Username
No Client Connected
Web Page Local Control
Manual Location Entry
Arrow Key Control
Minimum Wind Load Position
User Defined Position 1
User Defined Position 2
Azimuth
Elevation
180.02
89.99
Move
Track Sun
Cold Sky
Track Idle
Track TLE
Get TLE
Set TLE
Serial Control Protocol
Feed: FXL-DD-01
Status
Heartbeat: OK
Temperature (°C): 26.9
Humidity (%): 18.4
Purge Valve: Auto (Closed)
L Band LO Status: Locked
X Band LO Status: Locked
X Band Receive Freq (MHz): 7812.000
Fiber Link Status
Fiber Link Status: OK
Downlink A TX Laser: OK
ACU-2 Link Status: OK
Downlink A TX TEC: OK
FIP-10N2 Heartbeat: OK
Downlink A RX Power(mW): 4.77

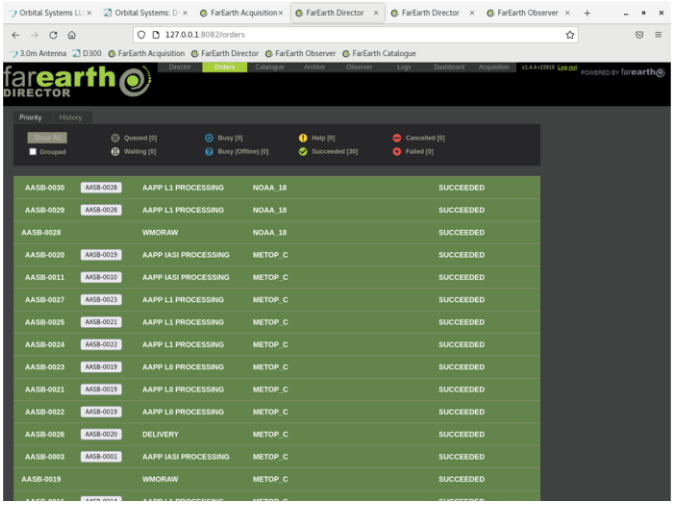

DASHBOARD
PREVIOUS ACQUISITION
NEXT ACQUISITION
STATUS
TODAY
MAP

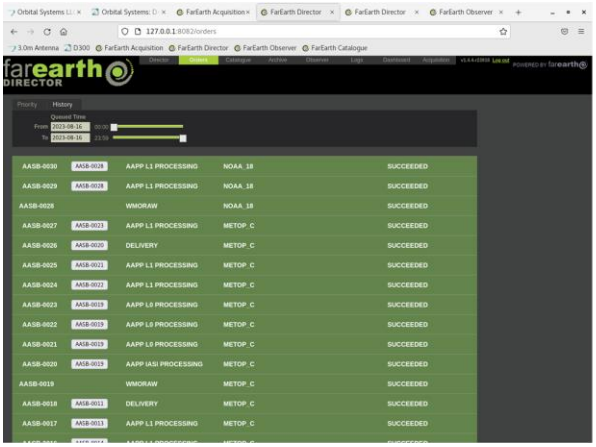

SCHEDULES
AZIMUTH-ELEVATION
ANTENNA PATH
CONTACTS
MAP

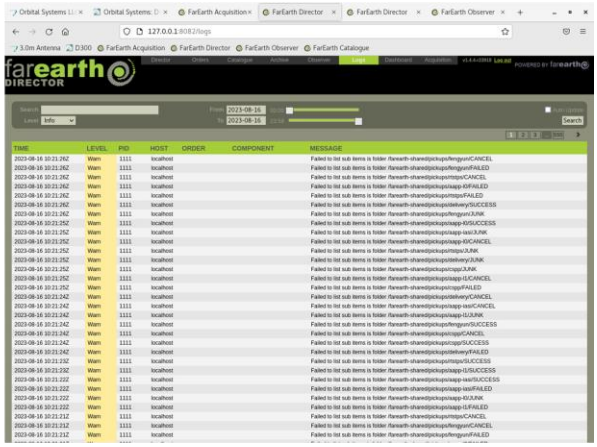

LIVE CONTACT
MISSION
TIMELINE
PASS PROPERTIES
SIGNAL STRENGTH
POSITION

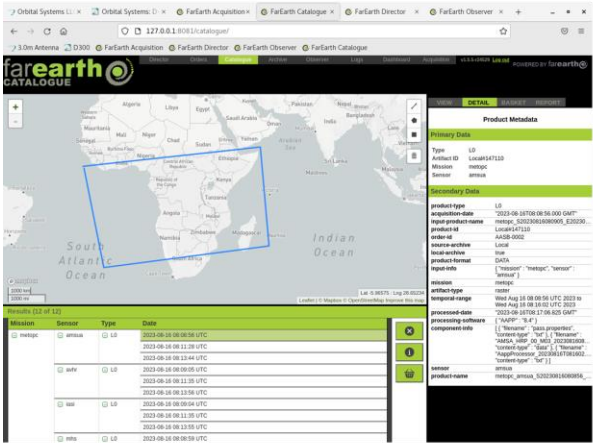

ACQUISITIONS
MISSIONS
STATUS

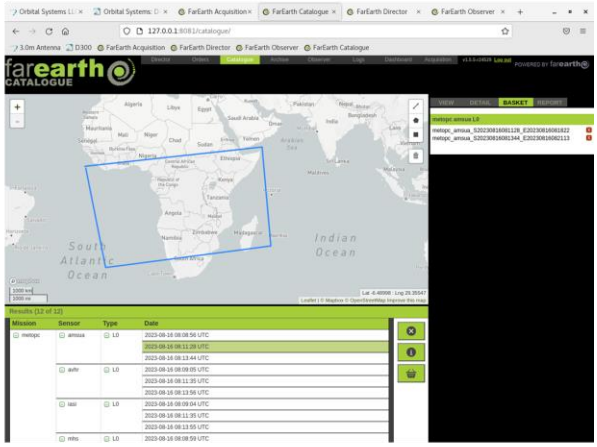

DIRECTOR
Director
Pickups
Archive
Catalogue
Acquisition controller

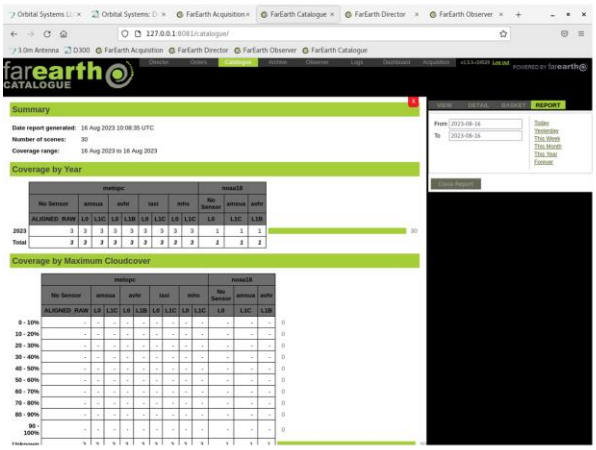

DIRECTOR
Priority
History
AASB-0030 AASB-0028 AAPP L1 PROCESSING NOAA_18 SUCCEEDED
AASB-0029 AASB-0028 AAPP L1 PROCESSING NOAA_18 SUCCEEDED
AASB-0028 WMORAW NOAA_18 SUCCEEDED
AASB-0020 AASB-0019 AAPP IASI PROCESSING METOP_C SUCCEEDED
AASB-0011 AASB-0010 AAPP IASI PROCESSING METOP_C SUCCEEDED
AASB-0027 AASB-0023 AAPP L1 PROCESSING METOP_C SUCCEEDED
AASB-0025 AASB-0021 AAPP L1 PROCESSING METOP_C SUCCEEDED
AASB-0024 AASB-0022 AAPP L1 PROCESSING METOP_C SUCCEEDED
AASB-0023 AASB-0019 AAPP L0 PROCESSING METOP_C SUCCEEDED
AASB-0021 AASB-0019 AAPP L0 PROCESSING METOP_C SUCCEEDED
AASB-0022 AASB-0019 AAPP L0 PROCESSING METOP_C SUCCEEDED
AASB-0026 AASB-0020 DELIVERY METOP_C SUCCEEDED
AASB-0003 AASB-0001 AAPP IASI PROCESSING METOP_C SUCCEEDED
AASB-0019 WMORAW METOP_C SUCCEEDED

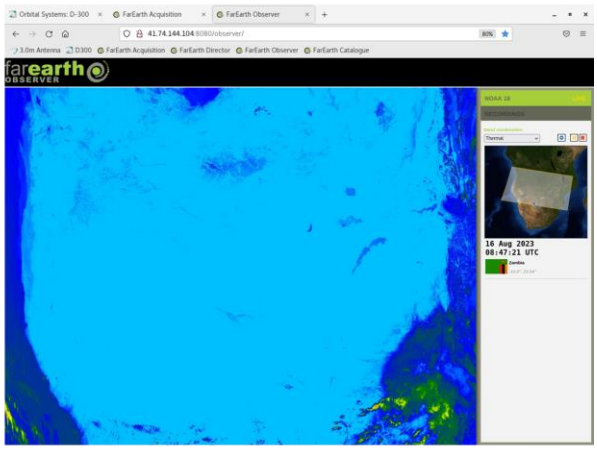


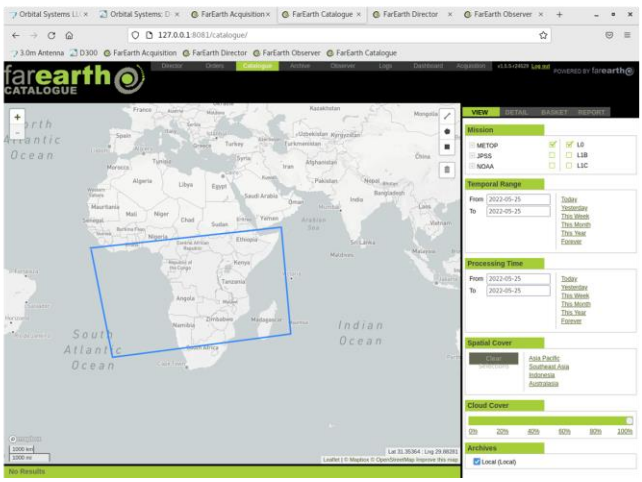


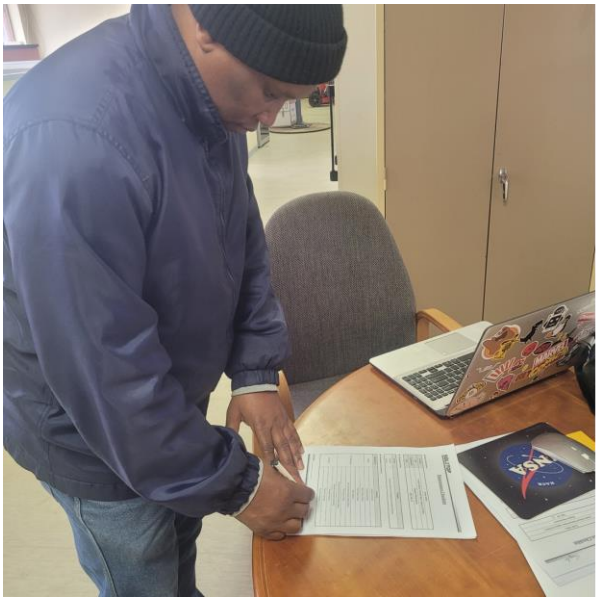












NASA

8. Others

8.1 D-300 Installation

During the maintenance period, the demodulators of HRD-200B and LRD-200B were uninstalled.

The direct connection between the D-300 demodulator and the Fiber Converter has been completed. Please refer to the attached image below.

Figure 8. D-300 Installation (RACK Front)

Figure 9. D-300 M&C Webpage

8.2 Internet Speed Test

In order to check for a smooth transmission of received data to GTS, we tested internet speed itself through the websites ‘https://fast,com’ and ‘https://speedtest.net’. The tests resulted in the upload speed of 720 Mbps and 1 Gbps respectively.

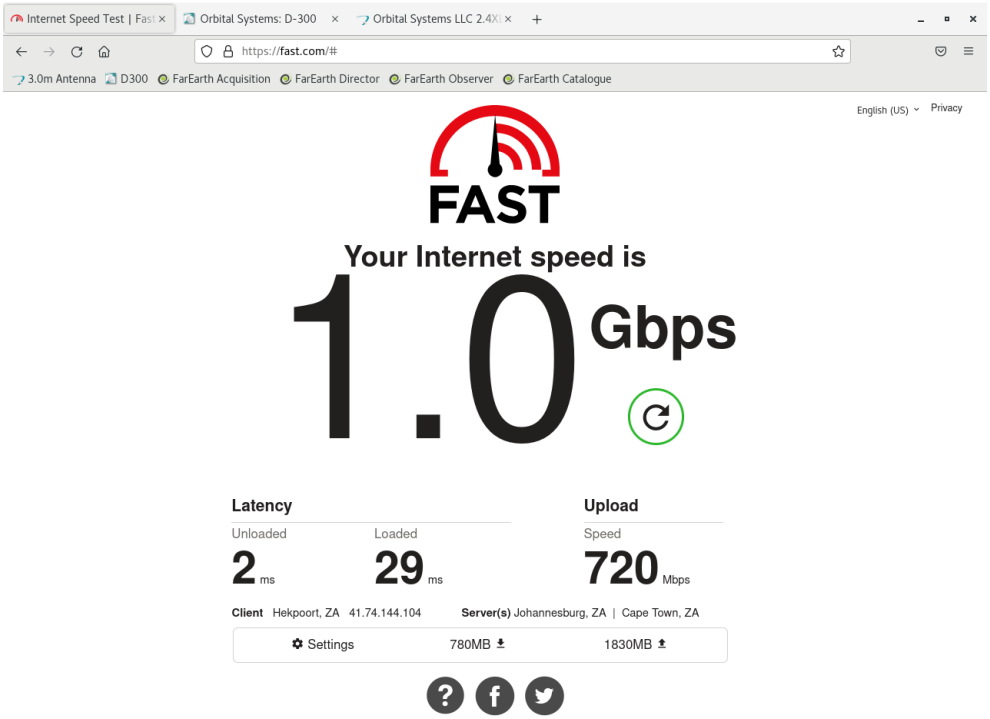


Figure 10. Internet Speed Test Result #1 (fast.com)

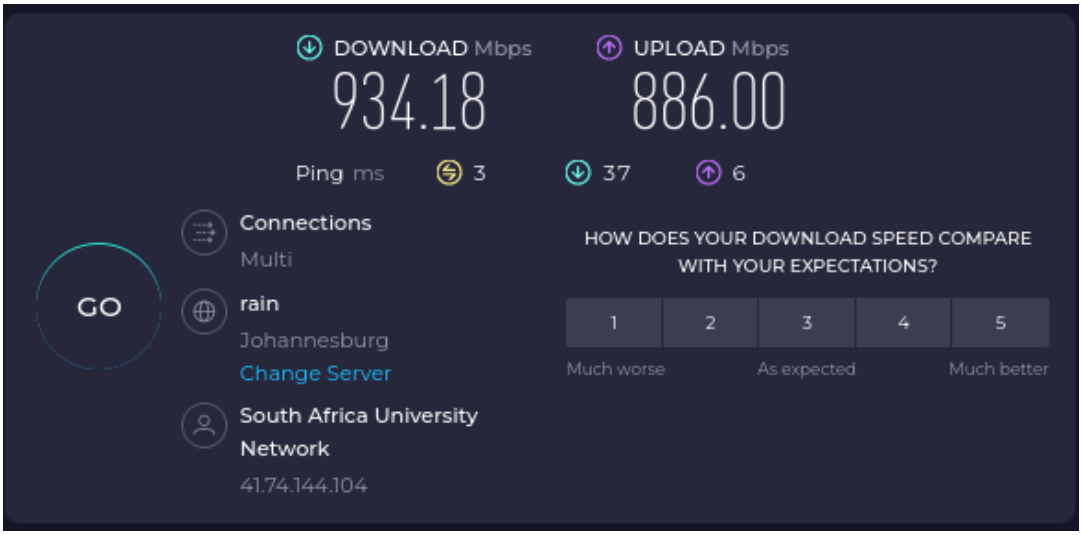


Figure 11. Internet Speed Test Result #2 (www.speedtest.net)

8.3 Network Configuration

SANSA/SOLETOP checked the entire network IP setting. Below is the relevant information:

Classification	ID	Password	Category	IP
	farearth	hbksawidra2020hbk	SANSA Network	xx.xx.144.104
			Interface with ACU and D-300 M&C link	xxx.xxx.127.180
			Interface with D-300 data link	xxx.xxx.127.174
	admin	admin	D-300 Demodulator	xxx.xxx.127.173
Anydesk	1635321226	Soletop@SW2023!!	SANSA Network	xx.xx.144.104
Software	operator	sawidra	FarEarth Acquisition-Controller-	xx.xx.144.104:8085
	operator	sawidra	FarEarth Director	xx.xx.144.104:8082
	operator	sawidra	FarEarth Catalogue	xx.xx.144.104:8081/catalogue
	operator	sawidra	FarEarth Observer	xx.xx.144.104:8080/observer

SOLETOP checked SANSA's VPN settings and connection status so that Pinkmatter could access the server remotely.

8.4 LRD-200B, HRD-200B recovered

Pre-separated and packed from SANSA before SAWIDRA maintenance period. I will recovered demodulators and return to SOLETOP

Figure 12. LRD-200B, HRD-200B Packaging

8.5 RF

I prepared and provided two pairs of spares, RF divider and RF cable, in preparation for the use of D-300.

Figure 13. two pairs of spares RF divider and RF cable

9. Maintenance Result

During the 2023 SAWIDRA maintenance period in SANSA, i recovered the HRD/LRD-200B demodulator.

Initialized password for root user, OS account od D-300.

D-300 registered in FarEarth system.

I delivered two pair of RF divider and RF cable with spares.

SOLETOP installed Anydesk to get remote access from SOLETOP HQ to monitor de system.

There are no singularities, such as Internet speed, in relation to GTS transfer testing SANSA

Appendix 1. SAWDRA Maintenance Checklist 2022 (SANSA)

Appendix 2. 2.4XLC-3.0m Installation, Operation and Maintenance Manual

Appendix 3. D300 Installation, Operation and Maintenance Manual REV A.11

Appendix 4. D300 Software Update Procedure

Appendix 5. SAWIDRA - Overview Document v1.1

Appendix 6. FarEarth Acquisition System - User Manual v3.1

Appendix 7. FarEarth Acquisition System - Deployment and Configuration Manual v3.1

Appendix 8. FarEarth Director and Processing System - User Manual v4.1

SOLETOP

Maintenance Checklist

◈ **Basic Information**

Country	**South Africa**
Site	**South African National Space Agency (SANSA)**
Classification	**Regular Maintenance**
Date	**2023. 08. 16**

◈ **Maintenance Item**

System	Category
Satellite System	Antenna System, ICT Equipment, Farearth Software

◈ **Maintenance List Summary**

Classification	Category
Antenna	Antenna Outdoor
	Antenna Interface
ICT Equipment	Server Status Check
	FAN Status Check
	Demodulator
	RF Converter Module Status Check
	USP Status Check
	Monitor & KVM Switch Status Check
Software	Farearth Acquisition-Controller
	Farearth Director
	Farearth Catalogue
	Farearth Observer

SOLETOP : Yeong Zee Seong Kang ***SANSA :***

Address: 409 Expo-ro, Yuseong-gu, Daejeon 34051, South Korea
Tel: +82) 42-867-7440. Fax: 042) 867-7445. http://www.soletop.com

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 1/ 13

1. Antenna

1.1. Antenna Subsystem – Outdoor

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
Antenna Subsystem	Antenna System Outdoor	Antenna	Antenna Appearance Damage Check	Normal	☑ Normal □ Abnormal	
			Feed Connection Status Check	Normal	☑ Normal □ Abnormal	
			RF Cable Connection Status Check	Normal	☑ Normal □ Abnormal	
			Ground Connection Status Check	Normal	☑ Normal □ Abnormal	
			Electrical Cabinet Status Check	Normal	☑ Normal □ Abnormal	
		ACU	Operation Status Check (ACU Front LED Check)	Green	☑ Normal □ Abnormal	
			Mode Change Check #1 (Stop-Safe) (System Mode Control Adjust)	STOP	☑ Normal □ Abnormal	
			Mode Change Check #2 (FreeWheel) (System Mode Control Adjust)	Free	☑ Normal □ Abnormal	
			Mode Change Check #3 (Stow) (System Mode Control Adjust)	STOW	☑ Normal □ Abnormal	
			Mode Change Check #4 (Run) (System Mode Control Adjust)	RUN	☑ Normal □ Abnormal	
			Injection of dry air Check (Operation of the injection valve Check)	Injection	☑ Normal □ Abnormal	
		Emergency Stop	Emergency Stop Button Push (ACU Front LCD Check)	STOP	☑ Normal □ Abnormal	
			Emergency Stop Button Pull (ACU Front LCD Check)	Unstop	☑ Normal □ Abnormal	
			Overspeed Control Check (Quick dish spin in FreeWheel mode)	STOP	☑ Normal □ Abnormal	
			STOW Pin Remove (Remove Stow Pin After Stow Mode)	STOP	☑ Normal □ Abnormal	

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 2/ 13

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
			Emergency Stop Release (StopSafe → Other Mode)	Unstop	☑ Normal □ Abnormal	
		Cable	RF Cable Connectors Check	Visual Check	☑ Normal □ Abnormal	
			Optical Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			Network Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
		Dehydrator	Power Status Check (Dehydrator Side LED Status Check)	Green	☑ Normal □ Abnormal	
			Pressure Gauge Check	0.2~0.4 psi	☑ Normal □ Abnormal	
Note						

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 3/ 13

1.2. Antenna Subsystem – Interface

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
Antenna Subsystem	Antenna System Indoor	ACU	System Status (Operational)	Green	☑ Normal ☐ Abnormal	
			Mode Switch Status (Run, Stop-Safe, FreeWheel. Stow)	Green	☑ Normal ☐ Abnormal	
			ACU Status (IDLE)	Green	☑ Normal ☐ Abnormal	
			Emergency Stop Status (OK)	Green	☑ Normal ☐ Abnormal	
			Azimuth Drive Status (Disables)	Green	☑ Normal ☐ Abnormal	
			Elevation Drive Status (Disables)	Green	☑ Normal ☐ Abnormal	
			Azimuth Brake Status (Engaged)	Green	☑ Normal ☐ Abnormal	
			Elevation Brake Status (Engaged)	Green	☑ Normal ☐ Abnormal	
			Azimuth Encoder Status (OK)	Green	☑ Normal ☐ Abnormal	
			Elevation Encoder Status (OK)	Green	☑ Normal ☐ Abnormal	
			Stow Pin Status (OK)	Green	☑ Normal ☐ Abnormal	
			System Time (UTC)	Green	☑ Normal ☐ Abnormal	
		Bus Status	Motor Drive Power Status (Ready)	Green	☑ Normal ☐ Abnormal	
			Heater Status (On,Off)	Green	☑ Normal ☐ Abnormal	
			24V Supply(V) (23.79)	Green	☑ Normal ☐ Abnormal	
		Heartbeat Status	CPU-2 (OK)	Green	☑ Normal ☐ Abnormal	

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 4/13

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
			CPU-3 (OK)	Green	☑ Normal □ Abnormal	
			PEM-1 (OK)	Green	☑ Normal □ Abnormal	
			Azimuth Encoder Limit Node (OK)	Green	☑ Normal □ Abnormal	
			Azimuth Motor Drive (OK)	Green	☑ Normal □ Abnormal	
			Elevation Encoder Limit Node (OK)	Green	☑ Normal □ Abnormal	
			Elevation Motor Drive (OK)	Green	☑ Normal □ Abnormal	
		Limit Status	Azimuth Overspeed (OK)	Green	☑ Normal □ Abnormal	
			Elevation Overspeed (OK)	Green	☑ Normal □ Abnormal	
			Elevation Low Limit (OK)	Green	☑ Normal □ Abnormal	
			Elevation Low Pre-Limit (OK)	Green	☑ Normal □ Abnormal	
			Elevation High Pre-Limit (OK)	Green	☑ Normal □ Abnormal	
			Elevation High Limit (OK)	Green	☑ Normal □ Abnormal	
		Environmental Status	Pressure(PSI)	Green	☑ Normal □ Abnormal	
			Electrical Cabinet Temp (℃)	Green	☑ Normal □ Abnormal	
			Electrical Cabinet Humidity (%)	Green	☑ Normal □ Abnormal	
			Upper Enclosure Temp(℃)	Green	☑ Normal □ Abnormal	

SOLTOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 5/13

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
			Upper Enclosure Humidity (℃)	Green	☑ Normal □ Abnormal	
Note						

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 6/ 13

2. ICT Equipment

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
RF Subsystem	Satellite Data System	Server	Power Condition Check	Normal	☑ Normal □ Abnormal	
			FAN Operation Status Check	Normal	☑ Normal □ Abnormal	
			Receiver Connection Status Check	Normal	☑ Normal □ Abnormal	
			CPU Utilization	Less Than 95%	☑ Normal □ Abnormal	
			Memory Utilization	Less Than 95%	☑ Normal □ Abnormal	
			HDD Utilization	Less Than 95%	☑ Normal □ Abnormal	
			System Time Synchronization Check	Normal	☑ Normal □ Abnormal	
			Network Status Check (Ping Test)	Normal	☑ Normal □ Abnormal	
			Appearance Damage Check	Normal	☑ Normal □ Abnormal	
	RACK Temperature Management System	FAN	FAN Operation Status Check	Green	☑ Normal □ Abnormal	
			PROBE Value Check	90~100°F	☑ Normal □ Abnormal	
			Setting Value Check	85°F	☑ Normal □ Abnormal	
			ALARM Value Check	110°F	☑ Normal □ Abnormal	
			Power Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			Senser Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			Appearance Damage Check	Normal	☑ Normal □ Abnormal	

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 7/ 13

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
	Demodulator	D-300	RF Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			Power Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			DATA to RF Converter LAN Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			M&C to RF Converter LAN Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			D-300 to KVM Switch USB Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			Demod status Check	Green Blink	☑ Normal □ Abnormal	
			Storage Status Check	Green	☑ Normal □ Abnormal	
			Signal Quality Status Check	Light	☑ Normal □ Abnormal	
			+12 VDC LED Status Check	Green	☑ Normal □ Abnormal	
			Demod Lock Status Check, whem receiving satellite data	Green Blink	☑ Normal □ Abnormal	
			Appearance Damage Check	Normal	☑ Normal □ Abnormal	
	Network System	RF Converter Module	RF Converter Control Link Status Check	Green	☑ Normal □ Abnormal	
			RF Converter Down Link A Status Check	Green	☑ Normal □ Abnormal	
			RF Converter DC Power Status Check	Green	☑ Normal □ Abnormal	
			Power Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			LAN Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			Optical Cable Connection Check	Visual	☑ Normal	

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 8/13

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
				Check	□ Abnormal	
			RF Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			Appearance Damage Check	Normal	☑ Normal □ Abnormal	
	Uninterruptible System	UPS	Power Cable Connection Check	Visual Check	☑ Normal □ Abnormal	
			Battery Connection Check	Visual Check	☑ Normal □ Abnormal	
			UPS to PDU Connection Check	Visual Check	☑ Normal □ Abnormal	
			Input Volt Check	More Than 215V	□ Normal ☑ Abnormal	
			Output Volt Check	More Than 215V	□ Normal ☑ Abnormal	
			Operation Time Check	More Than 24 Hours	☑ Normal □ Abnormal	
			Appearance Damage Check	Normal	☑ Normal □ Abnormal	
	Monitor System	Monitor & KVM Switch	Monitor & KVM Power Connection Check	Visual Check	☑ Normal □ Abnormal	
			FAN Operation Status Check	Visual Check	☑ Normal □ Abnormal	
			KVM to Server Connection Status Check	Visual Check	☑ Normal □ Abnormal	
			Monitoring System Operation Check	Visual Check	☑ Normal □ Abnormal	
			Appearance Damage Check	Visual Check	☑ Normal □ Abnormal	
Note	The UPS display shows "Internal RBC Neer End Of Life." This is due to the battery being discharged and the UPS's batteries are consumable and are not subject to maintenance.					

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 9/ 13

3. Software

3.1. Farearth Software

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
Software	Farearth	Aquisition-Controller	WEB Connection Status Check	Normal	☑ Normal □ Abnormal	
			Previous Acquisition Display Status Check [Farearth Acquisition Control -> Dash Bord]	Normal	☑ Normal □ Abnormal	
			Next Acquisition Display Status Check [Farearth Acquisition Control -> Dash Bord]	Normal	☑ Normal □ Abnormal	
			System Diagram Status Check [Farearth Acquisition Control -> Dash Bord]	Normal	☑ Normal □ Abnormal	
			Today's Satellite Schedule Display Status Check [Farearth Acquisition Control -> Dash Bord]	Normal	☑ Normal □ Abnormal	
			Map Display Status Check [Farearth Acquisition Control -> Dash Bord]	Normal	☑ Normal □ Abnormal	
			Azimuth-Elevation Display Status Check [Farearth Acquisition Control -> Schedule]	Normal	☑ Normal □ Abnormal	
			Antenna Path Display Status Check [Farearth Acquisition Control -> Schedule]	Normal	☑ Normal □ Abnormal	
			Schedule Query Function Status Check [Farearth Acquisition Control -> Schedule]	Normal	☑ Normal □ Abnormal	
			Map Display Status Check [Farearth Acquisition Control -> Schedule]	Normal	☑ Normal □ Abnormal	
			Live Mission Display Status Check [Farearth Acquisition Control -> Live Contact]	Normal	☑ Normal □ Abnormal	
			Live Timeline Display Status Check [Farearth Acquisition Control -> Live Contact]	Normal	☑ Normal □ Abnormal	
			Signal Strength Display Status Check [Farearth Acquisition Control -> Live Contact]	Normal	☑ Normal □ Abnormal	
			Antenna angle Live Status Check [Farearth Acquisition Control -> Live Contact]	Normal	☑ Normal □ Abnormal	
			Full Acquisition Display Status Check [Farearth Acquisition Control -> Acqusitions]	Normal	☑ Normal □ Abnormal	

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 10/ 13

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
		Director	WEB Connection Status Check [Farearth Director -> Director]	Normal	☑ Normal □ Abnormal	
			Director Status Check [Farearth Director -> Director]	Green	☑ Normal □ Abnormal	
			Pickups Status Check [Farearth Director -> Director]	Green	☑ Normal □ Abnormal	
			localhost Status Check [Farearth Director -> Director]	Green	☑ Normal □ Abnormal	
			Archive Status Check [Farearth Director -> Director]	Green	☑ Normal □ Abnormal	
			Catalogue Status Check [Farearth Director -> Director]	Green	☑ Normal □ Abnormal	
			Acquisition controller Status Check [Farearth Director -> Director]	Green	☑ Normal □ Abnormal	
			Orders WEB Connection Status Check [Farearth Director -> Orders]	Normal	☑ Normal □ Abnormal	
			Priority Display Status Check [Farearth Director -> Orders]	Normal	☑ Normal □ Abnormal	
			History Display Status Check [Farearth Director -> Orders]	Normal	☑ Normal □ Abnormal	
			Dashboard WEB Connection Status Check [Farearth Director -> Dashboard]	Normal	☑ Normal □ Abnormal	
			Summary Display Status Check [Farearth Director -> Dashboard]	Normal	☑ Normal □ Abnormal	
			Processing Steps(Past 24 Hours) Display Status Check [Farearth Director -> Dashboard]	Normal	☑ Normal □ Abnormal	
			Processing Areas(Past 24 Hours) Display Status Check [Farearth Director -> Dashboard]	Normal	☑ Normal □ Abnormal	
			Order Status(Past 24 Hours) Display Status Check [Farearth Director -> Dashboard]	Normal	☑ Normal □ Abnormal	

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 4 Page: 11/ 13

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
			Backlog(Past 24 Hours) Display Status Check [Farearth Director -> Dashboard]	Normal	☑ Normal □ Abnormal	
			Logs WEB Connection Status Check [Farearth Director -> Logs]	Normal	☑ Normal □ Abnormal	
			Logs Display Status Check [Farearth Director -> Logs]	Normal	☑ Normal □ Abnormal	
			Log Query Function Status Check [Farearth Director -> Logs]	Normal	☑ Normal □ Abnormal	
		Catalogue	Catalogue WEB Connection Status Check	Normal	☑ Normal □ Abnormal	
			Satellite Data View Function Check [Farearth Catalogue -> View]	Normal	☑ Normal □ Abnormal	
			Satellite Data Detail Function Check [Farearth Catalogue -> Detail]	Normal	☑ Normal □ Abnormal	
			Satellite Data Basket Function Check [Farearth Catalogue -> Basket]	Normal	☑ Normal □ Abnormal	
			Satellite Data Report Function Check [Farearth Catalogue -> Report]	Normal	☑ Normal □ Abnormal	
			Archive WEB Connection Status Check [Farearth Catalogue -> Archive]	Normal	☑ Normal □ Abnormal	
			Summary Display Status Check [Farearth Catalogue -> Archive]	Normal	☑ Normal □ Abnormal	
			Coverage by Year Display Status Check [Farearth Catalogue -> Archive]	Normal	☑ Normal □ Abnormal	
			Coverage by Maximum Cloudcover Display Status Check [Farearth Catalogue -> Archive]	Normal	☑ Normal □ Abnormal	
		Observer	Observer WEB Connection Status Check	Normal	☑ Normal □ Abnormal	
			Satellite Full Path Display Status Check	Normal	☑ Normal □ Abnormal	
			Satellite Historical Path Display Status Check	Normal	☑ Normal □ Abnormal	

SOLETOP	Maintenance Check List for 2023	Rev.: v1.0 Date: 2023. 08. 16 Page: 12/ 13

Item	Specification		Detailed Check List	Check Results		Etc.
				Standard	Result	
			Real-Time Receiving Data Display Status Check	Normal	☑ Normal □ Abnormal	
Note						