



KSAT

KONGSBERG

KONGSBERG SATELLITE SERVICES

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TABLE OF CONTENTS

1. Svalbard – SvalSat Ground Station	2
1.1.1. SG26 System	3
1.1.2. SG6 System	4
2. Trollsat Ground Station, Antarctica	5
2.1.1. TR9 System	5
2.1.2. TR2 Antenna	7

1. SVALBARD – SVALSAT GROUND STATION

The SvalSat site is located outside Longyearbyen on the Platåfjellet plateau at 78°14'N / 15°24'E and approximately 450 meter above sea level.



Figure 1 SvalSat



1.1.1. SG26 System

Below is described the technical specifications of the prime antenna system, including station performance, SLE and terminal characteristics.

The KSAT SG26 system is a multi-mission S- and X-band ground station system for TT&C and payload data acquisition. The SG26 antenna is a three axis 11.3m Viasat system.

Parameter	Value
<i>General</i>	
Reflector Size	11.3 meter
Frequency Bands	S-band & X-band
Ranging Supported	Yes
Dual (simultaneous) polarization	Yes
Space Link Extension (SLE)	Yes
<i>Tracking & Pointing</i>	
Pointing accuracy	$\leq 0,05$ deg rms
Tracking accuracy	$\leq 0,03$ deg rms
Tracking Modes	Auto, Program, Manual, Scan
Search Modes	Raster, spiral, Box Scan and Time offset search
<i>S-band Performance</i>	
S-band Transmit Frequency Range	2025 – 2120 MHz
S-band Transmit Polarization	LHCP and RHCP
S-band Transmit EIRP	65 dBW
S-band Transmit Power	300 W
S-band Receive Frequency Range	2200 – 2300 MHz
S-band Receive G/T	23dB/K
<i>X-band Performance</i>	
X-band Receive G/T	36 dB/K
X-band Receive Frequency Range	8000 – 8500 MHz
# Data Channels	4 channels
X-band Receive Polarization	LHCP, RHCP Simultaneous

The SG26 backend comprises of the following key subsystems:

- Two independent S-band TT&C system with SLE (Cortex CRT Quantum)
- One X-band Front End Processor (Direct Ingest System)
- 32x32 Digital Matrix for ECL, RS-422 switch capabilities
- Time and Frequency References
- Monitor and Control subsystem with storage and archiving capabilities



1.1.2. SG6 System

Below is described the technical specifications of the SG6 system, including station performance, SLE and terminal characteristics. SG6 will be used for backup antenna.

The KSAT SG6 system is a multi-mission S- and X-band ground station system for TT&C and payload data acquisition.

Parameter	Value
<i>General</i>	
Reflector Size	7.3 meter
Frequency Bands	S-band & X-band
Ranging Supported	Yes
Dual (simultaneous) polarization	Yes
Space Link Extension (SLE)	Yes
<i>Tracking & Pointing</i>	
Pointing accuracy	$\leq 0,10$ deg rms
Tracking accuracy	$\leq 0,05$ deg rms
Tracking Modes	Auto, Program, Manual, Scan
Search Modes	Raster, spiral, Box Scan and Time offset search
<i>S-band Performance</i>	
S-band Transmit Frequency Range	2025 – 2120 MHz
S-band Transmit Polarization	LHCP and RHCP
S-band Transmit EIRP	53 dBW
S-band Transmit Power	50 W
S-band Receive Frequency Range	2200 – 2300 MHz
S-band Receive G/T	19 dB/K
<i>X-band Performance</i>	
X-band Receive G/T	32.0 dB/K
X-band Receive Frequency Range	8000 – 8500 MHz
# Data Channels	3 channels
X-band Receive Polarization	LHCP and RHCP

Table 1: SG25 System Specification

The SG6 backend comprises of the following key subsystems:

- Two independent S-band TT&C system chains with SLE (Cortex CRT XL)
- One X-band Front End Processor (Direct Ingest System)
- Time and Frequency References
- Monitor and Control subsystem with storage and archiving capabilities

2. TROLLSAT GROUND STATION, ANTARCTICA



Figure 2 Troll Ground Station with TR9 in front

TrollSat is located at 72°S 2°E in Antarctica on solid ground 1365m above sea level, 300km from the ice edge.

2.1.1. TR9 System

Below is described the technical specifications of the TR1 system, including station performance, SLE and terminal characteristics.

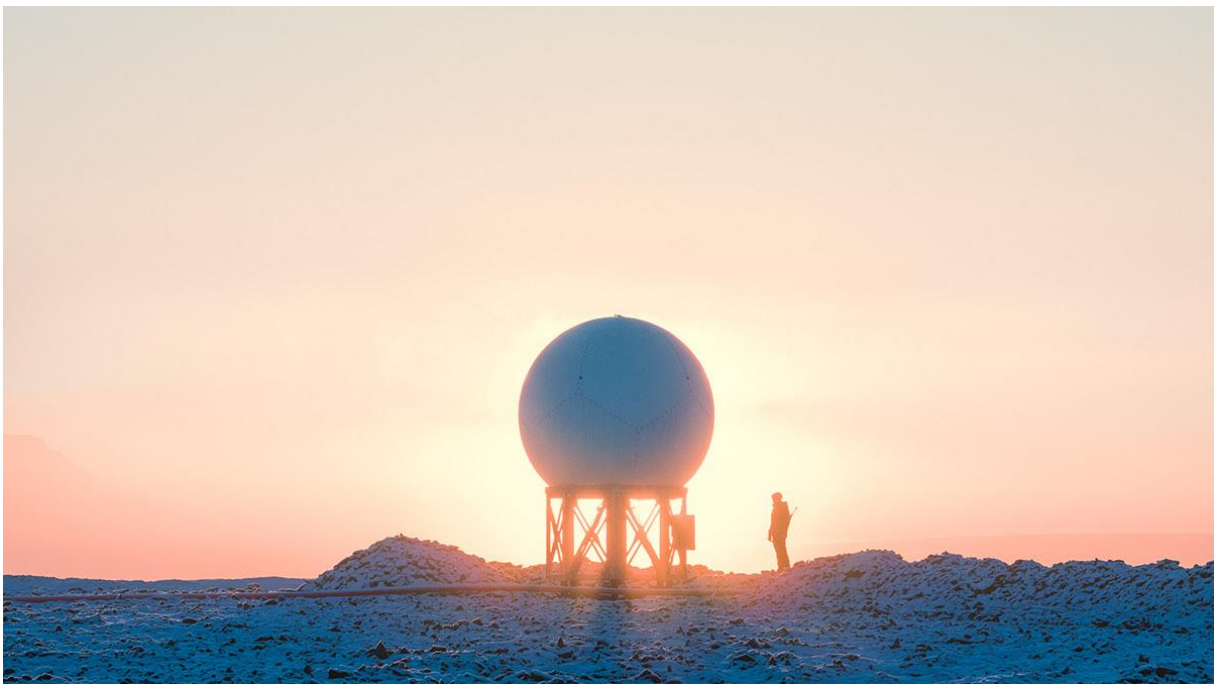
The KSAT TR9 system is a multi-mission S- and X-band ground station system for TT&C and payload data acquisition.

Parameter	Value
<i>General</i>	
Reflector Size	8,5 meter
Frequency Bands	S-band & X-band
Ranging Supported	Yes
Dual (simultaneous) polarization	Yes
Space Link Extension (SLE)	Yes
<i>Tracking & Pointing</i>	
Pointing accuracy	<= 0.005 deg rms

Tracking accuracy	≤ 0.003 deg rms
Tracking Modes	Auto, Program, Manual, Scan
Search Modes	Raster Scan, Spiral Scan, Sector Scan and Track Scan
<i>S-band Performance</i>	
S-band Transmit Frequency Range	2025 – 2120 MHz
S-band Transmit Polarization	LHCP and RHCP
S-band Transmit EIRP	60.5 dBW
S-band Transmit Power	200 dBm
S-band Receive Frequency Range	2200 – 2300 MHz (Data)
S-band Receive G/T	19 db/K
<i>X-band Performance</i>	
X-band Receive G/T	32,0 dB/K
X-band Receive Frequency Range	7600 – 8400 MHz
# Data Channels	4 channels
X-band Receive Polarization	LHCP and RHCP

The TR9 backend comprises of the following key subsystems:

- Two independent S-band TT&C system chains with SLE (Cortex CRT XL)
- Time and Frequency References
- Monitor and Control subsystem with storage and archiving capabilities





2.1.2. TR2 Antenna

Below is described the technical specifications of the TR2 system, including station performance, SLE and terminal characteristics.

The KSAT TR2 system is a multi-mission S- and X-band ground station system for TT&C and payload data acquisition.

Parameter	Value
<i>General</i>	
Reflector Size	7,3 meter
Frequency Bands	S-band & X-band
Ranging Supported	Yes
Dual (simultaneous) polarization	Yes
Space Link Extension (SLE)	Yes
<i>Tracking & Pointing</i>	
Pointing accuracy	≤ 0.06 deg rms
Tracking accuracy	≤ 0.05 deg rms
Tracking Modes	Auto, Program, Manual, Scan
Search Modes	Raster Scan, Spiral Scan, Box Scan and time offset search
<i>S-band Performance</i>	
S-band Transmit Frequency Range	2025 – 2120 MHz
S-band Transmit Polarization	LHCP and RHCP
S-band Transmit EIRP	53 dBW
S-band Transmit Power	100 dBm
S-band Receive Frequency Range	2200 – 2300 MHz (Data)
S-band Receive G/T	20 dB/K
<i>X-band Performance</i>	
X-band Receive G/T	32 dB/K
X-band Receive Frequency Range	8000 – 8400 MHz
# Data Channels	4 channels
X-band Receive Data Rate Range	400 Mbps
X-band Receive Polarization	LHCP and RHCP

The TR3 backend comprises of the following key subsystems:

- Two independent S-band TT&C system chains with SLE (Cortex CRT Quantum)
- Time and Frequency References
- Monitor and Control subsystem with storage and archiving capabilities