

ARISSat-1 / RadioSkaf V Fact Sheet

Amateur Radio Experiment

Satellite to be manually launched from the International Space Station

Evolved from SuitSat-2 project after loss of the Russian Orlan suit in 2009

Carried to the ISS via Progress 41P in January 2011

Scheduled for deployment during EVA 29, July 2011

Expected time in space: 3.5 - 6 months in orbit

Expected transmit life: 1 month – 3 months

Designed, Built and Tested by AMSAT-NA (amsat.org)

Joint Project with AMSAT, ARISS, NASA, and RSC Energia and Microchip



Purpose: To promote Science, Technology, Engineering, and Mathematics (STEM) education around the world

Features

2 m FM transmissions can be easily received

24 international messages in 15 languages (most of the greetings are children)

English	Spanish	Russian	French
Italian	Dutch	Swedish	Japanese
Chinese	Catalan	Bengali	Portuguese
Hebrew	Nepalese	German	

Spoken telemetry values so students can track the changes in the spacecraft

Slow Scan TV (SSTV) images from space

New BPSK1000 protocol so full telemetry and experiment data can be received during weak signal conditions

SDX (Software Defined Transponder) technology used for multiple simultaneous transmissions

Kursk State Technical University experiment data available for realtime reception and over the Internet

Amateur radio transponder

Innovations/Experiments aboard

Experiment on shallow charge/discharge of the Silver Zinc battery

Velcro solar panel attachment

New data on the vacuum in space at different altitudes above earth

Characterize Silver Zinc battery operation at low temperatures

New SDX system to simultaneously transmit data using four different modulations

New SDX technology to simultaneously transmit data and voice in the same 48 kHz band
Experiment to test the reliability of a microSD card (used in your mobile phone) to work in space

Experiment to test new structure design for manual deployment from the ISS

Experiment using security cameras for taking in flight images

Experiment to test the reliability of OTC (over the counter) microcontrollers in space

Experiment using Max Power Point Tracker (MMPT) technology to optimized energy from the solar panels in space

Measurements

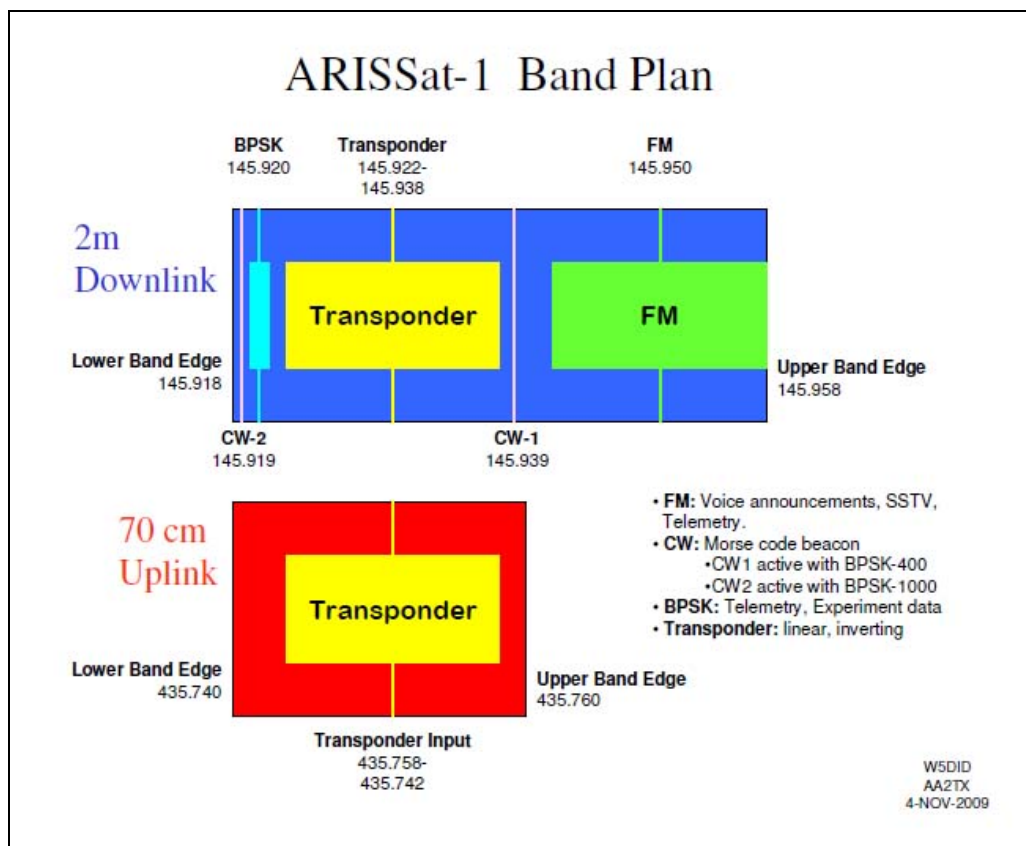
Body 23"x 23" x 19" [59 cm x 59 cm x xxx cm] (with solar panel covers)

Body with handles 26" x 26" x 19"

Progress launch mass 47 lbs

Deployment mass 47 lbs

Transmissions



ARISSat-1 Voice, SSTV, CW and BPSK Sequences

FM Voice Sequence loop

ID - Hi this is ARISSat-1 amateur radio satellite RS01S 7 secs

Greeting 20-29 secs

Voice Telemetry 34 secs

Tone introduction

MET is xxx minutes

IHU Temp is -xxx °C

Control Panel Temp is -xxx °C

Battery Voltage is xx.xx Volts

Battery Current is -xxx mA

Greeting 20-29 secs

ID - Hi this is ARISSat-1 amateur radio satellite RS01S 7 secs

no modulation 8 secs

SSTV image 36 secs

FM Total time ~142 sec

CW Sequence loop @15 wpm

ID - HI this is ARISSat1 RS01S 22 secs

callsign - W5DID ~7 secs

CW Telemetry - phi introduction

MET 337 m [Mission Elapsed Time in minutes]

IHU -112C [IHU internal temperature]

CP -112c [Control Panel external temperature] 112.5 secs

Bat 31.93V -221 mA [Battery Voltage and Current]

RF 363 mA [RF Current]

CW total 141.5 secs

BPSK Loop Sequence

Telemetry 371 bytes, 340 data 8 secs

Experiment 1 of 5 516 bytes 9.4 secs

Telemetry 371 bytes, 340 data 8 secs

Experiment 2 of 5 516 bytes 9.4 secs

Telemetry 371 bytes, 340 data 8 secs

Experiment 3 of 5 516 bytes 9.4 secs

Telemetry 371 bytes, 340 data 8 secs

Experiment 4 of 5 516 bytes 9.4 secs

Telemetry 371 bytes, 340 data 8 secs

Experiment 5 of 5 48 bytes 2.3 secs

BPSK signals 80 sec total

SSTV Sequence (initial sequence, this changes depending upon captured data)

Red callsign [-Y pointing camera, mirror reverses image]

Green callsign [+Z pointing camera]

Blue callsign [-Z pointing camera]

Magenta callsign [+Y pointing camera, mirror reverses image]

Fixed image #1

Red callsign [-Y pointing camera, mirror reverses image]

Green callsign [+Z pointing camera]

Blue callsign [-Z pointing camera]

Magenta callsign [+Y pointing camera, mirror reverses image]

Fixed image #2

SSTV images transmitted ~ every 2.11 minutes