

MAREX-NA / ARISS

SPACECAM1

Status Report

April 2002

project manager

G. Miles Mann WF1F



Introduction

The MAREX-NA / ARISS SSTV System is an entry-level PC based Slow Scan Television system designed to be used on board the International Space Station Alpha.

The name of the SSTV project will be called the SpaceCam1 project.

This system will support most of the common SSTV transmission modes.

The SpaceCam1 project has been specifically designed to be accessible to as many stations as possible around the world.

The original proof-of-concept system was built by the MAREX-NA team and successfully flown on the Russian Space Station Mir (December 1998 until August 1999).

The proof-of-concept system has proven the ability of the hardware design and it has taught us how to make additional improvements for the next generation SSTV system for ISS.

Hardware / Software Overview


The basic components of the SpaceCam1 project will consist of a Windows software application, which will run on the Station Support Computer (SSC), and ,a VOX/SSTV Interface module.

The SpaceCam1 project will build upon the ISS-Ham VHF/UHF project.

The SpaceCam1 project will be plug-compatible with the ISS-Ham project and will add two-way SSTV support to the ISS-HAM VHF project.


MAREX-NA ISS SpaceCam 1 Beta 1 Build 001

MAREX-NA ISS SpaceCam 1




Portions © (1999) Silicon Pixels USA

Robot 36
Robot 72
Scottie S1
Scottie S2
Martin M1




7%

Auto-Save
 Lock Mode



MANUAL | REPEATER | SETTINGS



DEFAULT | LIBRARY | REPEATED | CREW | **USER**




C: \SSTV Images

```

20:42:18 MAREX-NA SpaceCam 1 (Beta 1 Build 001 13-March-2000)
20:42:18 Main window loaded
20:42:18 Setting DSP filter: Bandpass
20:42:18 Initializing preview grids
20:42:19 Initializing VFW interface
20:42:21 Logitech QuickCam VC USB,
20:42:21 Live window
                
```

Slide Show ON (O)  

Slide Show OFF (F) Slide Show disk path (Use DISK icon)
C:\SSTV IMAGES\

TRANSMIT (T)  Enable video

RECEIVE (R) (C)

Auto-RECEIVE (A) **STANDBY / ABORT (S)**

RE-SYNC (Y) Refresh Preview Grids

Laptop CPU and Memory Requirements

Operating System	CPU Speed	Ram Megabyte	Ram Megabyte Video
Windows 95	166 MHZ	48	2
Windows 98	250 MHZ	128	4
Windows NT	300 MHZ	196	8

SpaceCam1 System requirements:

Memory requirements during operation	11MB
Disk requirements for full installation	10MB
Additional disk storage for images.	Variable

Software Status

- The SpaceCam1 Software development is 99% completed.
- Testing with the ARISS VOX/SSTV Interface module has been completed.
- There are no, known problems.
- Testing at NASA and RSA is in progress

Completed Software

- Send and Receive SSTV Images
- Save Images with Time/Date stamp
- SSTV Repeaters with SSID Security
- Text Overlay
- Guest Call Sign
- Video Camera Support

Pending Features

- Digital Voice Recorder (DVR)
 - This feature has not been implemented because of a Load issue with the SSC Pentium 166 CPU. The CPU and the implementation of the DSP audio process on this specific computer imposes too high of a CPU load.
 - The DVR option will require a faster CPU, approximately 300 MHz.

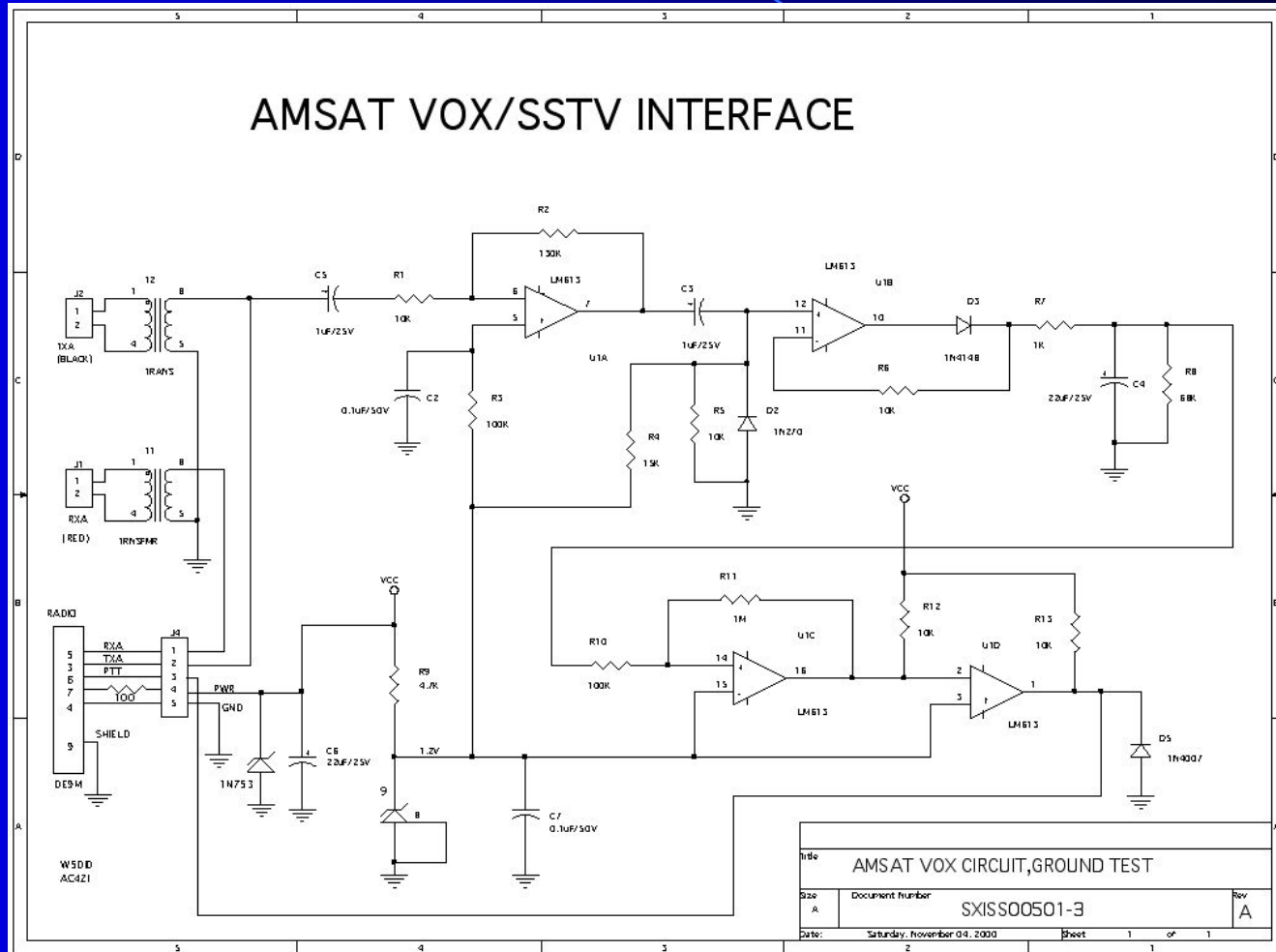
Pending Features

- Disk/File storage limit
 - The plan is to limit the number of JPG images saved on the SSC computer disk by the SpaceCam1 software. This implementation is being delayed because we have not been given details on where to SAVE the images.
 - Disk or File server.

Hardware Status

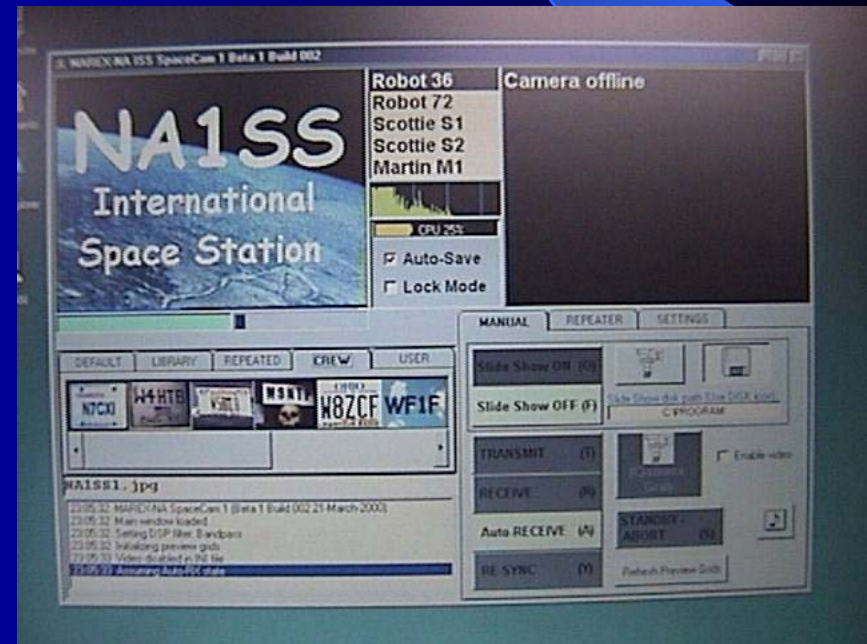
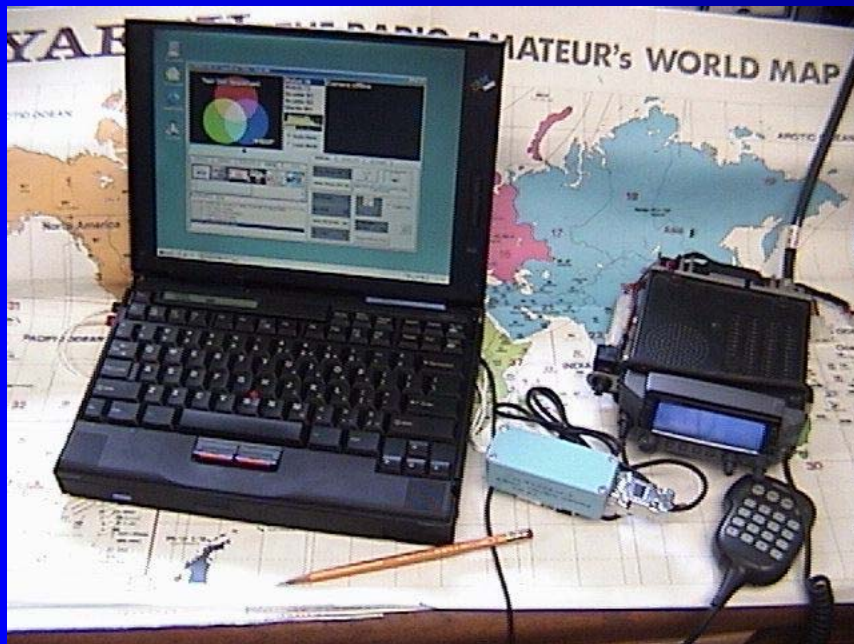
- Prototype Hardware completed
- Flight Ready Hardware being built
- Testing in progress on prototype hardware with excellent results.

Schematic



Testing

Farrell Winder and the MAREX team have been actively testing the new software with Lou's new Audio Box.



Testing Cont.

The image on the left shows the size of the Audio Adapter box required to connect the SSC to the AIRSS Amateur Radio System.



TESTING SSC

- The MAREX team has begun to received information from NASA and RSA regarding testing of the SpaceCam1 Software on the SSC!
- MAREX purchased 2 IBM-760 PC's to simulate the SSC testing. Everything works.
- Extensive Satellite testing via AO-40

Outstanding Issues

- Need faster feed back from NASA and RSA on test results.
- Lack of flight approval paper work (NASA)
- When will SpaceCam1 fly?
- What is the long term plan for SpacCam1, will it be used on Kenwood hardware in the future?

Development Schedule

First Build
Completed

SpaceCam1 Alpha 10-5
June 1999

SpaceCam1 Alpha 15
Completed

Repeater options
February 2000

SpaceCam1 Alpha 19
Completed

Text options
August 2001

SpaceCam1 Alpha 40
pending

DVR

Development Schedule cont.

SpaceCam1 Flight Ready

June 2002

The final version of software will be delivered to ARISS

NASA and Energia will be issued software licenses to use and copy the SpaceCam1 software as needed for the ISS-Ham project.

MAREX TEAM

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K0TV VHF-SHF Consultant

N1WPN Repeater Engineer

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SpaceCam Testing Team

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G4CDZ

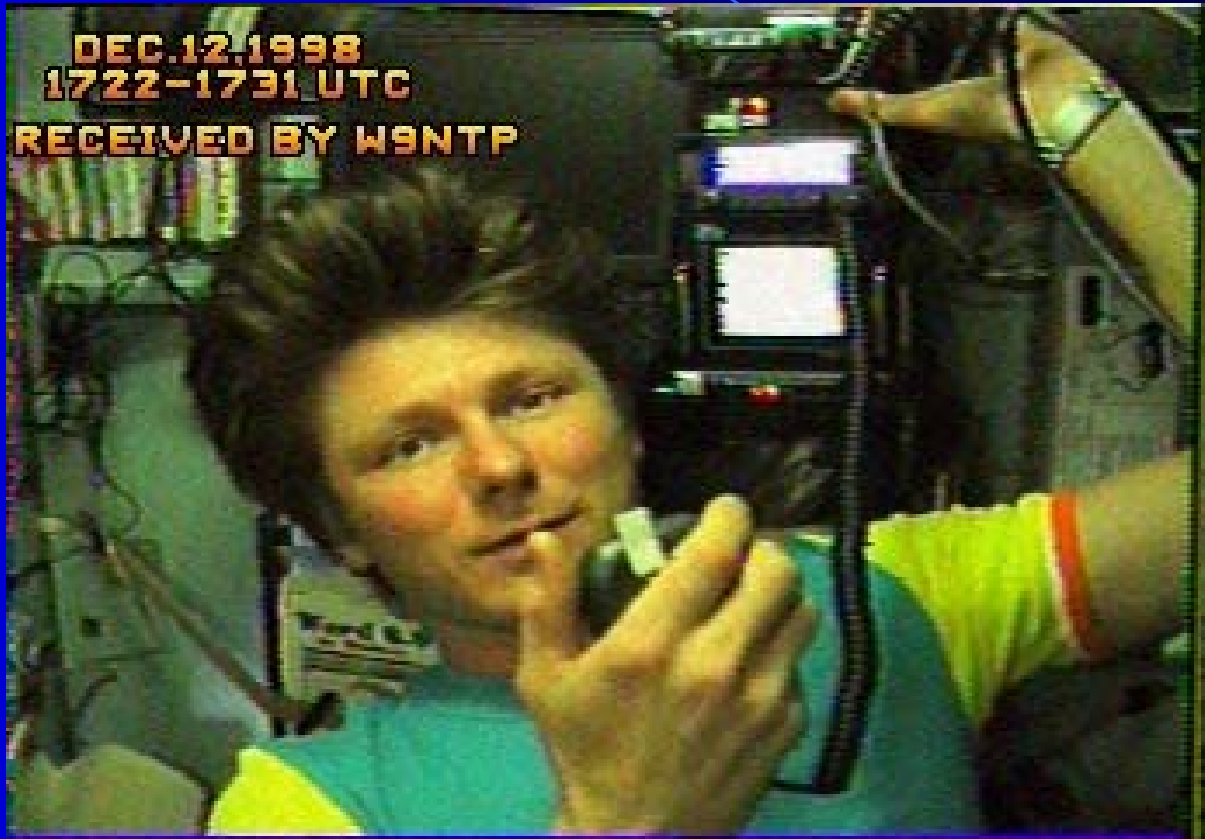
Ron Chapman

KA2HZO

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W0LMD





Amateur Radio SSTV from the Mir Space Station
over Lake Michigan Jan 31, 99 Rec by W8ZCF Cincinnati, OH

JAN 31, 1999
Bowling Green KY
RCV: W4HTB





Sergei Avdeyev

Jean-Pierre Heignere

Mir SSTU Feb 22 99 11:33 UTC Rec by W8ZCF

Mir Space Stn
Dec 12, '98
18:59 UTC



Rx W8ZCF Cinti, O



