

Amateur Radio Satellites
Mitch Ahrenstorff ADØHJ



Presentation Outline – Topics Discussed

Satellite Fun Without Transmitting (No License Options)

- ISS Slow Scan TV
- Arrow II Satellite Antenna
- NOAA Weather Satellites (LRPT)
- GOES Weather Satellites (HRPT)
- Weather Balloon Tracking
- Satellite Telemetry (AO-91 Example)
- SatNOGS / Libre Space Foundation
- Wow@Home SDR Telescope Network

Making Friends Everywhere (Amateur License Options)

- Three Flavors of Amateur Satellites
- Why Amateur Radio Satellites?
- Getting Started with Amateur Satellites
- DX Engineering Videos by Sean KX9X
- Games Satellite Operators Play (GridMaster + VUCC/r)
- Satellite Tracking with Your Smartphone
- Doppler's Effect on Satellite Operating
- Portable Satellite Equipment / Operating
- FM Satellite Equipment Example
- FM/Linear/ Satellite Example
- DX Contacts via AO-7, FO-29, and RS-44
- AMSAT History and Overview
- AMSAT / ARRL Awards

International Space Station Slow Scan TV

The image is a decoded SSTV slide with a black background. At the top center, the text "World Space Week 2025" is displayed in white. To the left of this text is a circular logo with "ISS" and "ARISS" inside. To the right is a red circular logo with a stylized satellite antenna. Below the main title, there is a central image of a satellite with long antennas. To the right of the satellite image, Russian text reads: "Радиолобительский спутник, запущенный космонавтами с ОК МИР по российско-французской программе". Below this text are three lines of dates: "RS-17 - 03.11.1997", "RS-18 - 10.11.1998", and "RS-19 - 16.04.1999". On the left side, the text "N A I S S" is written vertically in yellow, followed by "S l i d e" in a smaller font. At the bottom left, "8/12" is written in yellow. On the right side, the text "R S O I S S" is written vertically in yellow, followed by "С е р и я" in a smaller font. At the bottom right, "29" is written in yellow. At the bottom of the slide, there are two photographs: on the left, a woman in a white shirt sitting in a space station module; on the right, a man in a blue suit working inside a circular hatch of a space station module.

World Space Week
2025

Радиолобительский спутник,
запущенный космонавтами с ОК МИР
по российско-французской программе

RS-17 - 03.11.1997
RS-18 - 10.11.1998
RS-19 - 16.04.1999

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Decoded SSTV Image from ARISS October 2025 Event. Source: David Trolinger N5ZKK @david_trolinger

International Space Station Slow Scan TV

Reasons Why It's Popular

- Several ISS SSTV Events per Year
- Easiest Satellite Based Activity To Do
- Twelve Different Images to Collect
- Several Days / Week Event Duration
- Minimal Equipment Needed
- Popular Social Media Event
- Electronic Award Certificate

Why Minimal Equipment?

- High Transmit Power = Less Antenna
- VHF FM Downlink = Use Handheld Radio
- VHF Doppler Shift = Ignore Doppler
- Smartphone Satellite Tracking Apps
- Smartphone Slow Scan TV Apps
- Handheld Transceiver + Smartphone



Source: Juta Hariadi Soesilo YD9CKH @Jutahariadi

International Space Station Slow Scan TV

Smartphone Tracking Apps

- Look4Sat for Android
- GoSatWatch for iPhone
- ISS Detector Pro for Android
- ISS Detector for iPhone

Smartphone SSTV Apps

- SSTV Slow Scan TV for iPhone
- Robot36 for Android

ISS SSTV Expert Mode

- Mobile or Base Station Radio
- Arrow II Yagi Satellite Antenna
- Record Audio for RX-SSTV Decode
- Adjust Antenna Polarity During Pass
- Overhead Pass for More Images
- Go Portable / Good View of Horizon

Amateur Radio on the International Space Station
Любительское радио на борту Международной космической станции



ARISS SSTV Award

№ 201192

John Brier KG4AKV
Received SSTV images from the ISS commemorating women in Space and Cosmonautics Day. The images were sent via an amateur radio system installed on the Russian Segment of the International Space Station. Принял SSTV изображения с МКС, посвященные женщинам в космосе ко Дню космонавтики. Изображения были отправлены через радиолобительскую систему установленную на Российском сегменте Международной космической станции.

Руководитель Радиолобительской
Деятельности на МКС
Сергей Самбуров RV2DR
ARISS International Chair
Frank Bauer K4ZHO
ARISS Europe Chair
Oliver Amend DG6BCE
RSOISS Операторы - космонавты
Олег Артемьев
Денис Матвеев
Сергей Корсаков
Mentor ARISS Europe
Armand Budzianowski SP3QFE
ARISS SSTV Award Manager
Slawomir Szymanski SQ300K



RSOISS NA1SS
April 11 - 13, 2022



Women in Space
Cosmonautics Day

Женщины в космосе
День космонавтики

Source: John Brier KG4AKV @SpaceComms1

International Space Station Slow Scan TV

International Space Station

- How Fast? 17,500 Miles/Hour
- Orbit Altitude? ~250 Miles
- Orbits Earth Every 90 Minutes
- Voice Repeater - Columbus Module
- APRS Packet - Service Module
- Astronauts (Most are Licensed Hams)
- Educational School Contacts
- Slow Scan Television

More Information

- ARISS Website: www.ariss.org
- amsat-uk.org/beginners/iss-sstv/
- ariss-usa.org/ARISS_SSTV/
- MagPi #80 Article: Pictures from Space via Ham Radio

Amateur Radio on the International Space Station

NA1SS RS0ISS OR4ISS

The International Space Station (ISS) is sponsored by Canada, Japan, Russia, the USA and many nations in Europe. ISS crews hail from these and other nations. Major hardware elements are:

- Zarya, Zvezda, Pirs, research modules Poisk and MRM-1 Rassvet built by Russia
- Science lab Destiny, Unity, Quest, Harmony and Tranquility modules provided by the US
- Canadian Mobile Servicing System, a 55-foot mobile robotic arm used for assembly and maintenance
- Columbus module, a science laboratory provided by ESA
- Kibo module, a science laboratory provided by Japan
- CREW - LINDGREN - KOSMOS

ISS crews and visitors often use their Amateur Radio station, first set up in Zarya and then Zvezda, to talk with school students to aid in their education, plus chat with fellow radio amateurs around the world. The ARISS Team continually works to extend ISS Amateur Radio station capability with new operation modes and, more recently, equipment placement in the Columbus module.

To: **K7VNE**

From	Day	Month	Year	UTC	MHz
<input checked="" type="checkbox"/> NA1SS	23	6	2022	1217	299 / 10cm
<input type="checkbox"/> RS0ISS					
<input type="checkbox"/> OR4ISS					

Mode: Voice Packet SSTV APRS Repeater SWL

VINCE - THANKS FOR PARTICIPATING - 73 -

Source: Vince Rosemann K7VNE @StaticAZ

Arrow II Satellite Antenna

Lightweight Portable Satellite Antenna

- Arrow Antenna / Cheyenne, WY
- Portable Satellite Antenna
- Lightweight Design ~1.2 lbs.
- www.arrowantennas.com
- Arrow II Satellite Antenna
 - 3 Elements for 146 MHz
 - 7 Elements for 437 MHz
 - 10-Watt Micro Duplexer
 - Split Boom Design Available
- Alaskan Arrow II Sat Antenna
 - 4 Elements for 146 MHz
 - 10 Elements for 437 MHz
 - 10-Watt Micro Duplexer
 - Split Boom Design Available



Source: Grace Papay KE8RJU @ke8rju

LRPT Weather Satellites (APT)

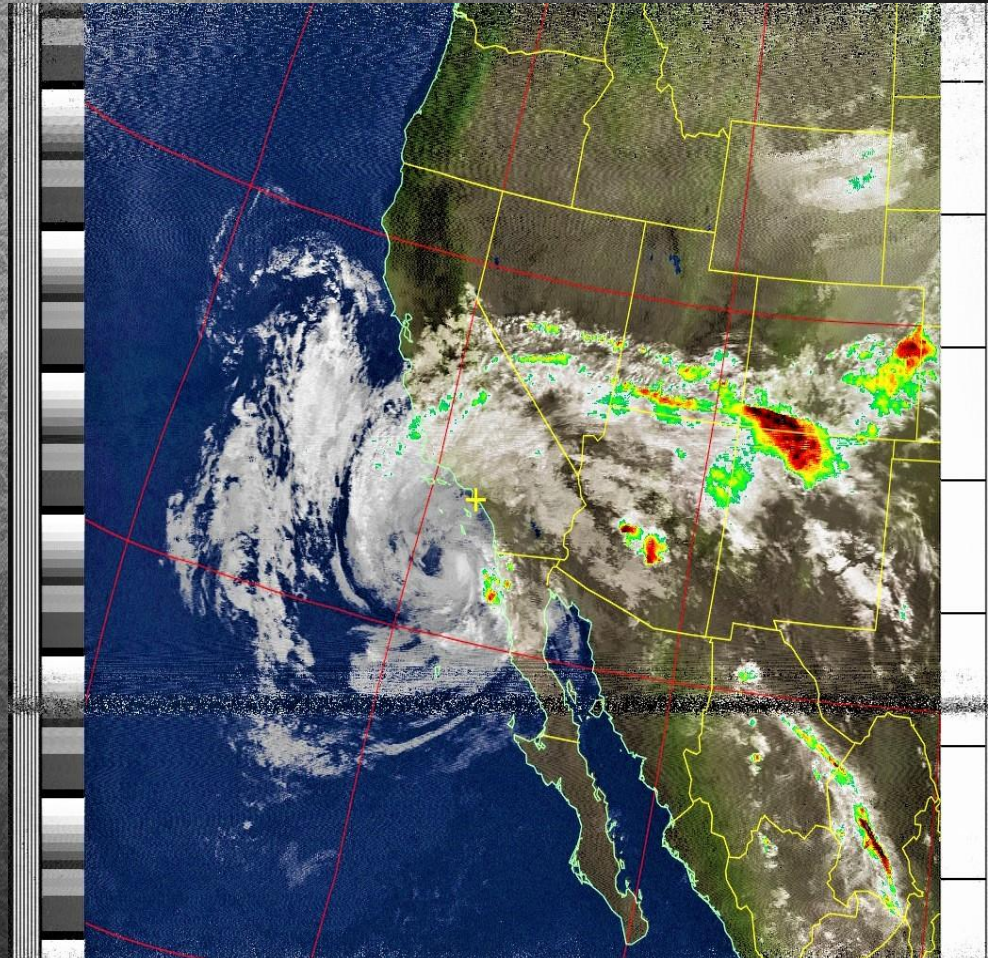
Automatic Picture Transmission

NOAA-15, 18, 19 / Meteor-M N2-3

- Orbit Altitude? ~500 Miles
- Orbits Earth Every 100 Minutes
- Downlink Frequency ~137 MHz
- Use Software Defined Radio
- 34 kHz Bandwidth FM Signal
- QFH (Quadrifilar Helix) Antenna
- Arrow II Satellite Antenna Works

More Information

- SatDump Website / Software
- WxtoImg Restored website
- RTL-SDR Tutorial: Receiving NOAA WX Satellite Images
- YouTube: Decoding WX Satellites Using An SDR Receiver NOAA-19



Source: Endaf Buckley N6UTC @N6UTC

Geostationary Weather Satellites

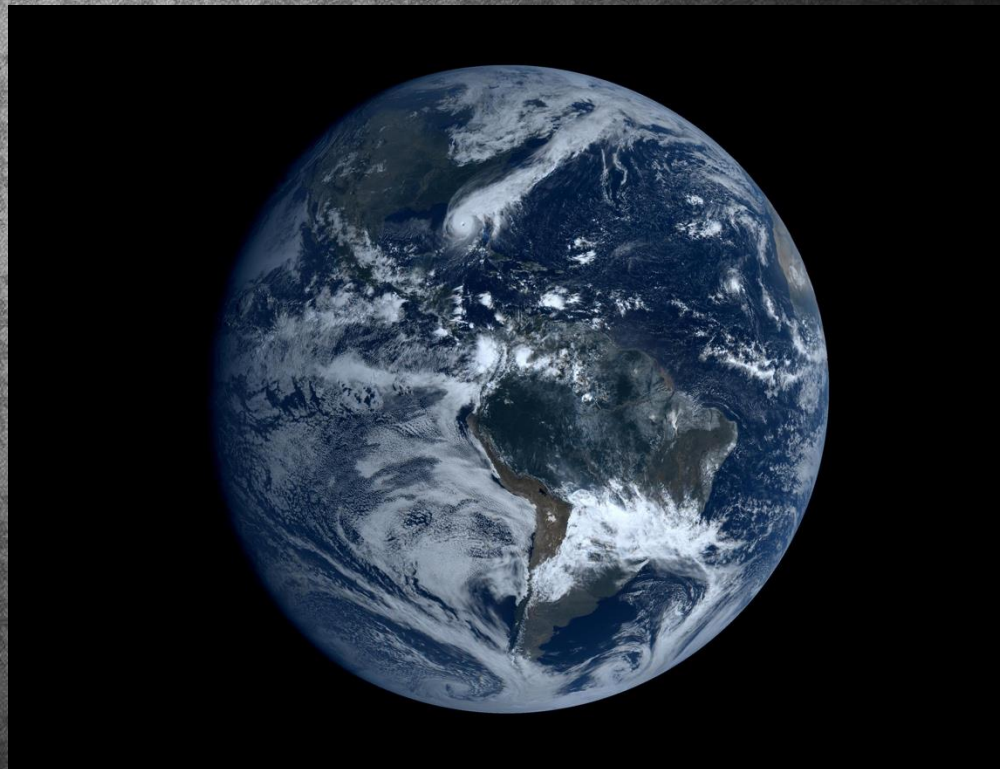
HRIT (High Rate Information Transmission)

NOAA GOES East / GOES West

- Orbit Altitude? ~22,236 Miles
- Geostationary Earth Orbit
- Downlink Frequency ~1.7 GHz
- Use Software Defined Radio
- Nooelec SDR + SAWbird LNA
- Modified 2.4 GHz Wifi Antenna

More Information

- GOES Website: www.goes-r.gov
- RTL-SDR Tutorial: GOES 16/17
Weather Satellite Reception
- YouTube: Pulling Clear Images
Directly Off Satellites | GOES-
15,16,17



Source: Earth Bot @GOES_Sat

Weather Balloons / Radiosonde Tracking

Easy Mode (<https://sondehub.org/>)

Graw DFM17 / Vaisala RS41

- Used to Measure Temperature, Humidity, Air Pressure, Wind Direction, and Wind Speed.
- GNSS (GPS, GLONASS, BEIDOU)
- Frequency Range: 400-406 MHz
- Output Power < 100 mW

More Information

- YouTube: How To Track Weather Balloons Using SDR
- RTL-SDR Tutorial: Tracking Radiosondes With an RTL-SDR and Radiosonde_Auto_Rx
- coaa.co.uk/sondemonitor.htm



Source: NWS Atlanta @NWSAtlanta

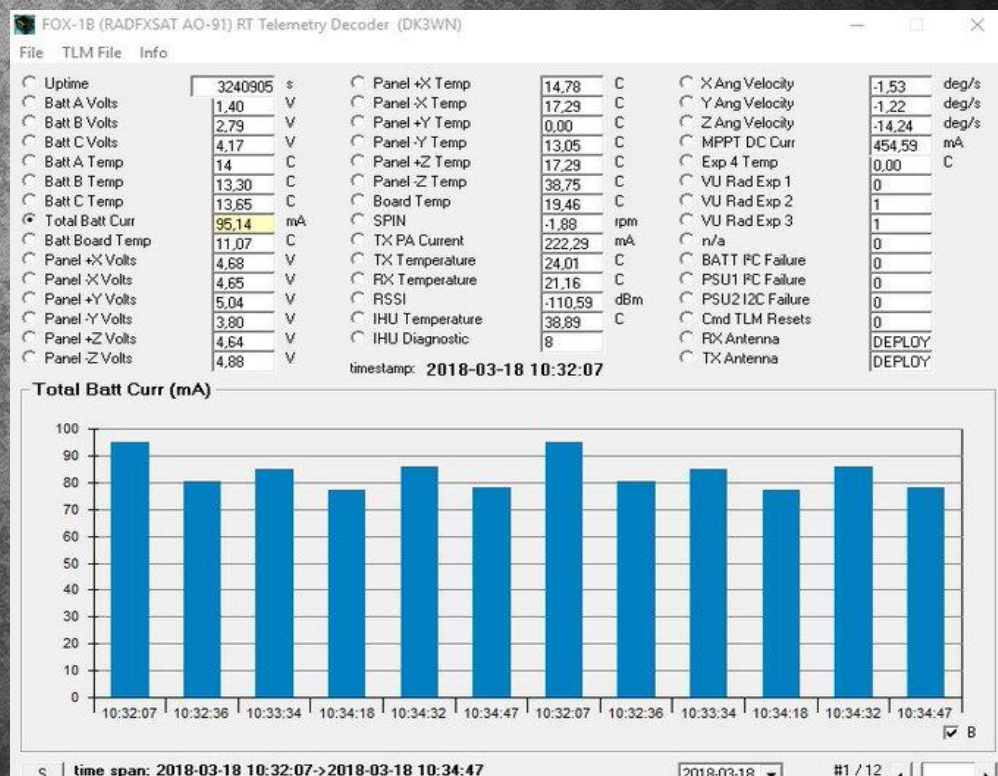
Satellite Telemetry

Monitor Satellite Health / Parameters

- CW Telemetry on Some Sats
- AO-91 Uses "Data Under Voice"
- Telemetry Sent When Xmit On
- Data Under Voice 200 bps FSK
- Barely Audible During QSOs
- Fox Telemetry Decoder

More Information

- amsat.org/foxtelem-software-for-windows-mac-linux/
- AMSAT Cubesat Simulator
- FOX Telemetry Leaderboard
- Youtube: AO-91 Telemetry Decode. Pass over Costa Rica



Source: AMSAT-SM (SMOTGU Lars) @amsat_sm

SatNOGS

Global Network of Satellite Ground-Stations

- Collect Telemetry Worldwide
- Crowd-Sourced Dashboards
- Simple / Complex Stations
- SatNOGS Rotator + Antenna
- Raspberry Pi SatNOGS Client
- RTL-SDR / Other SDR Receivers
- Part of Libre Space Non-Profit

More Information

- SatNOGS Website + Wiki Page
- Libre Space Foundation Website
- YouTube: Crowdsourced Satellite Telemetry Collection w/ SatNOGS
- Hackaday: Wall-Mounted Ground Station Tames Unruly SatNOGS Node



Source: SatNOGS @SatNOGS

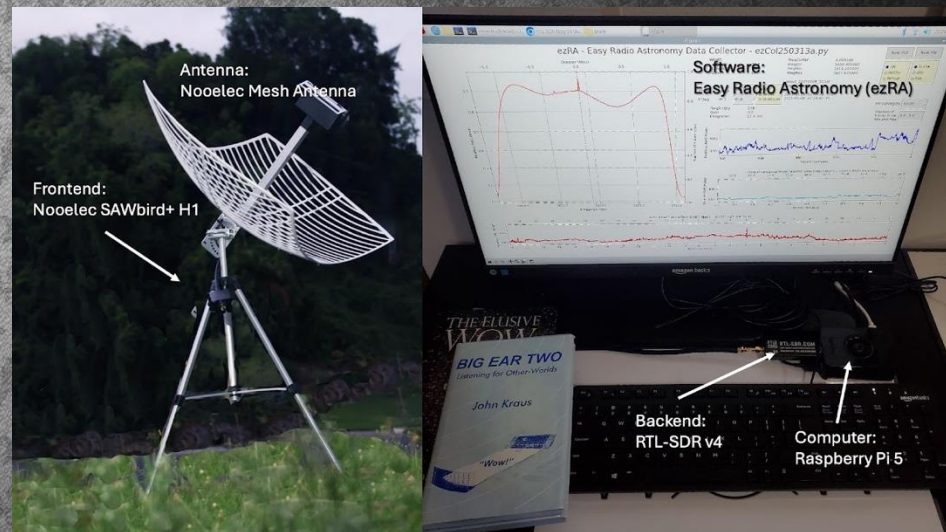
Wow@Home

Wow@Home Radio Telescope (SETI)

- Worldwide coordinated observations
- 24/7 autonomous sky monitoring
- Rejects RFI with multi-station detection
- \$500 DIY setup with off-the-shelf parts
- Captures transient astrophysical events
- Educational & citizen science focus
- Free open-source software

More Information

- Website: phl.upr.edu/wow/outreach
- phl.upr.edu/wow/outreach
- Easy Radio Astronomy (ezRA) starter software
- Society of Amateur Radio Astronomers (SARA)



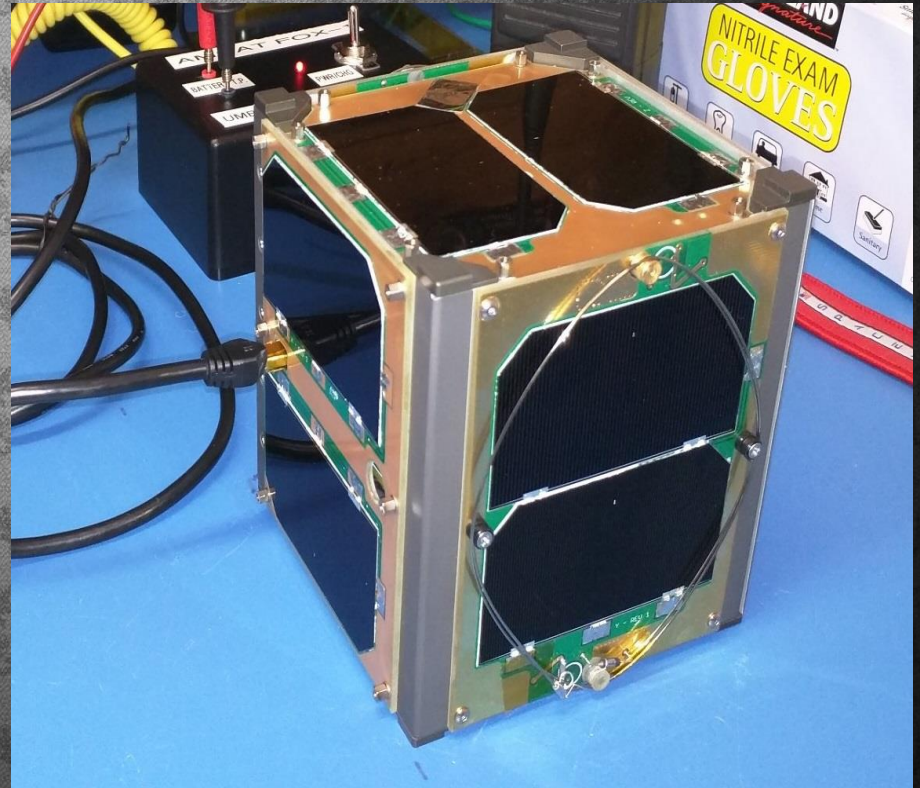
Source: PHL @ UPR Arecibo

Amateur Radio Satellites

AMSAT Satellite Status Page: amsat.org/status/

Three Flavors of Amateur Satellites

- FM Satellites (Flying FM Repeater)
 - SO-50
 - AO-123
 - ISS
- Linear Satellites (SSB / CW)
 - AO-07
 - RS-44
 - JO-97
- APRS / Packet Satellites
 - International Space Station
 - SONATE-2



Source: Jerry Buxton N0JY @N0JY

Why Amateur Radio Satellites?

Make Friends All Over North America / World

- Friendly Worldwide AMSAT Community
- Unique Technical / Operations Challenge
- Required Equipment Needs are Limited
- Portable Operation (No Restrictions)
- Satellite Passes Less Than 22 Minutes
- Available to Lowest Amateur Licensee
- Satellite Footprint Covers Large Area
- No Propagation / Sunspot Dependency
- AMSAT GridMaster Award (488 Grids)
- Operational Proficiency After Completing
- AMSAT Reverse VUCC (Rove 100 Grids)
- Rare DX in Your Town / State / Region
- Exploration / Adventure via Roving



Source: Nancy Livingston N9NCY @Nancy_N9NCY

Getting Started with Amateur Satellites

AMSAT Store Digital Download (\$15.00)

Table of Contents

Chapter 1: Introduction to Satellites

Chapter 2: Satellite Basics

Chapter 3: Locating Amateur Satellites

Chapter 4: Your Antenna System

Chapter 5: Your Radio System

Chapter 6: Operating the FM Satellites

Chapter 7: Operating the SSB Satellites

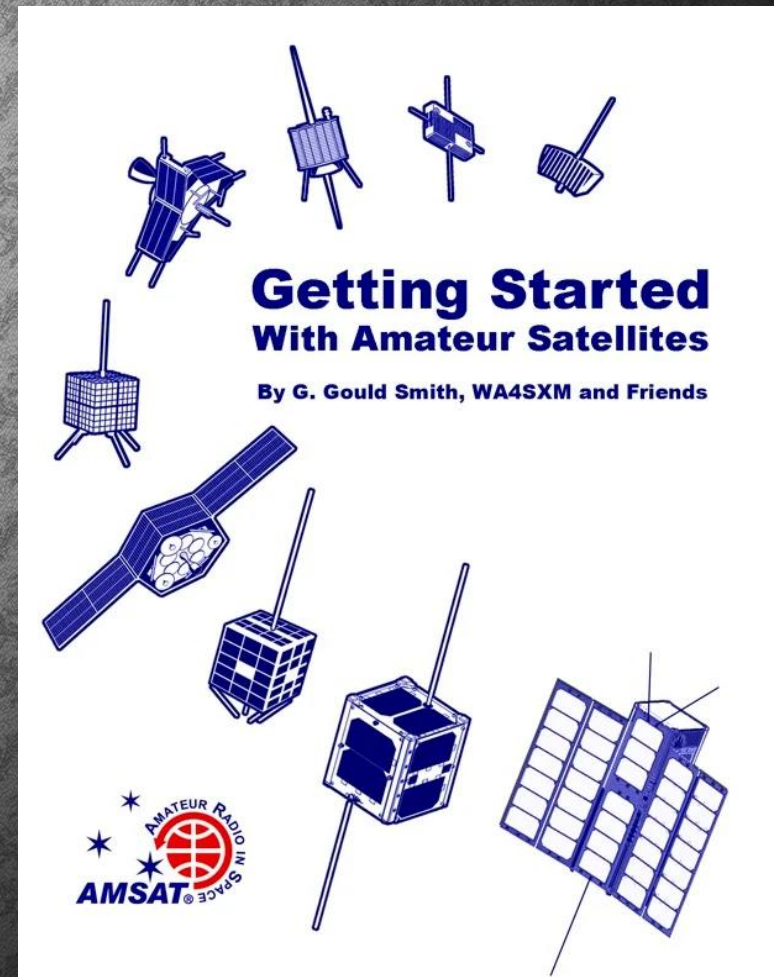
Chapter 8: Digital Modes

Satellite Reference Guide

Appendix A: Amateur Satellites Modes

Appendix B: Upgrading Your Amateur
Satellite Station

Appendix C: Future Satellites



Source: AMSAT @AMSAT

DX Engineering Videos by Sean KX9X



Source: Sean Kutzko KX9X @SeanKutzko

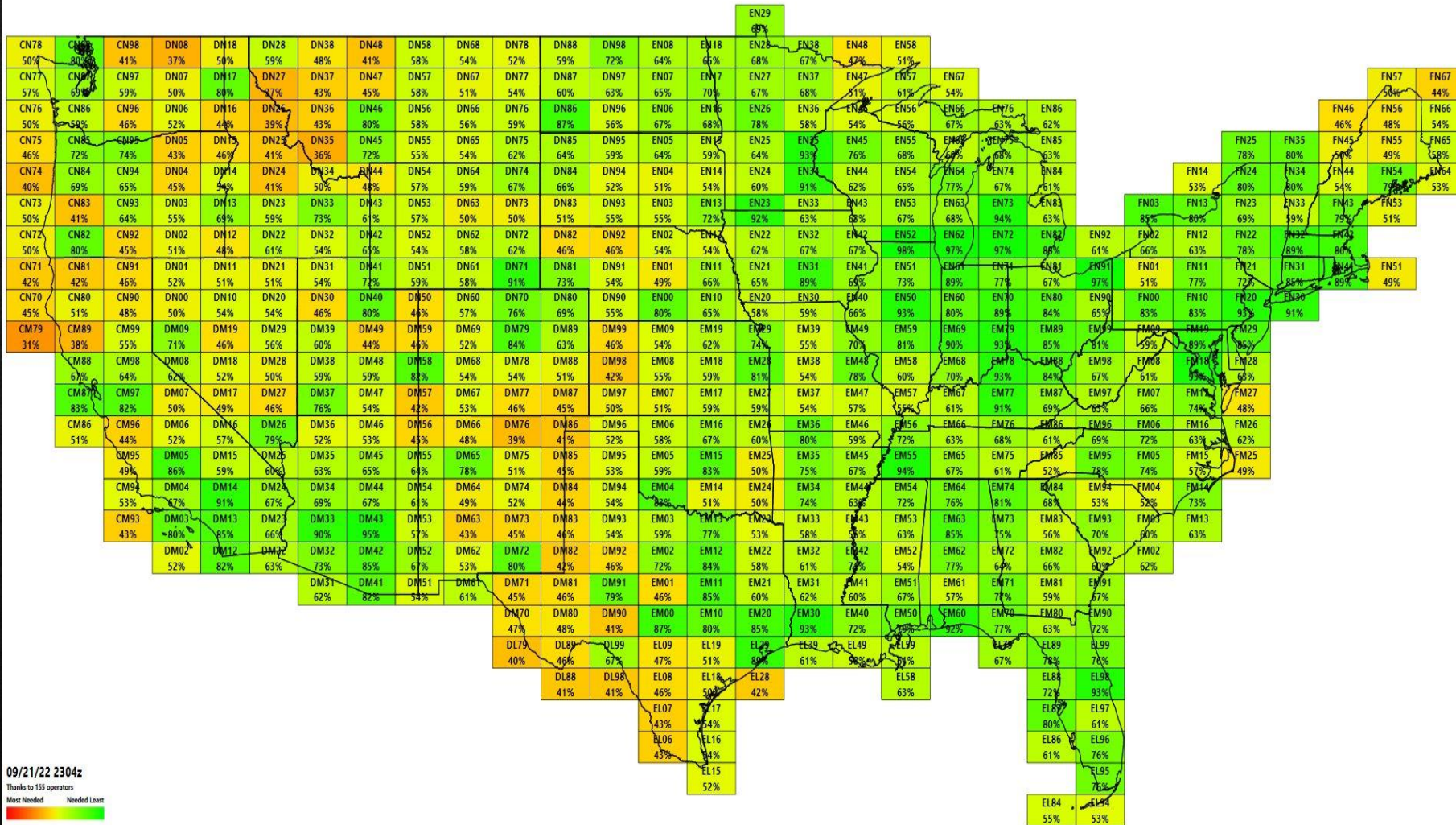
Recommended YouTube Videos from Sean KX9X

- How and Why to Get Started in Operating Amateur Radio
- Tips on Operating FM Amateur Radio Satellites
- Tips on Operating Linear Amateur Radio Satellites (Part 1)
- Tips on Operating Linear Amateur Radio Satellites (Part 2)
- Operating Amateur Radio Satellites from Your Home Station
- Tips on Operating a Satellite while Roving
- Satellites with Sean Kutzko, KX9X and K3LR

AMSAT GridMaster Award

Log Satellite QSOs With All 488 Grid Squares

Gridmaster 488






AMSAT Reverse VUCC (VUCC/r)

Log Satellite QSOs From 100 Grid Squares

										DN69	DN79	DN89	DN99	EN09	EN19	EN29	EN39	EN49	EN59	EN69										
CN78	CN88	CN98	DN08	DN18	DN28	DN38	DN48	DN58 07-04-25	DN68 07-05-25	DN78 07-05-25	DN88 07-06-25	DN98 07-06-25	EN08 08-31-24	EN18 09-23-21	EN28 09-23-21	EN38 09-23-21	EN48 10-08-23	EN58 10-08-23	EN68											
CN77	CN87	CN97	DN07	DN17	DN27	DN37	DN47	DN57 07-04-25	DN67 07-01-23	DN77 07-02-23	DN87 07-02-23	DN97 07-03-23	EN07 08-31-24	EN17 09-01-24	EN27 04-14-23	EN37 03-21-20	EN47 10-08-23	EN57 10-08-23	EN67						FN57	FN67				
CN76	CN86	CN96	DN06	DN16	DN26	DN36	DN46	DN56 07-01-23	DN66 07-03-25	DN76 07-02-23	DN86 07-02-23	DN96 07-03-23	EN06 08-31-24	EN16 08-31-24	EN26 04-01-22	EN36 10-07-23	EN46 10-07-23	EN56	EN66	EN76	EN86				FN46	FN56	FN66			
CN75	CN85	CN95	DN05	DN15	DN25	DN35	DN45	DN55 07-01-23	DN65 07-03-25	DN75 07-01-25	DN85 07-01-25	DN95 07-07-25	EN05 08-07-20	EN15 08-17-20	EN25 10-05-24	EN35	EN45	EN55	EN65	EN75	EN85			FN25	FN35	FN45	FN55	FN65		
CN74	CN84	CN94	DN04	DN14	DN24	DN34	DN44	DN54 07-02-25	DN64 07-02-25	DN74 08-05-20	DN84 08-05-20	DN94 08-03-20	EN04 08-06-20	EN14 08-07-20	EN24 07-02-22	EN34 10-21-22	EN44 12-11-20	EN54	EN64	EN74	EN84				FN14	FN24	FN34	FN44	FN54	FN64
CN73	CN83	CN93	DN03	DN13	DN23	DN33	DN43	DN53	DN63	DN73 10-05-22	DN83 10-05-22	DN93 10-04-22	EN03 08-05-24	EN13 08-21-20	EN23 HOME	EN33 06-06-22	EN43 05-18-25	EN53 05-18-25	EN63	EN73	EN83			FN03	FN13	FN23	FN33	FN43	FN53	
CN72	CN82	CN92	DN02	DN12	DN22	DN32	DN42	DN52	DN62	DN72 10-06-22	DN82 08-06-24	DN92 08-06-24	EN02 08-05-24	EN12 09-23-23	EN22 09-23-23	EN32 06-06-22	EN42 05-18-25	EN52 05-18-25	EN62	EN72	EN82	EN92	FN02	FN12	FN22	FN32	FN42			
CN71	CN81	CN91	DN01	DN11	DN21	DN31	DN41	DN51	DN61	DN71 10-07-22	DN81 11-15-21	DN91 08-09-24	EN01 11-14-21	EN11 08-04-22	EN21 07-31-22	EN31 06-04-22	EN41 06-04-22	EN51 05-19-24	EN61	EN71	EN81	EN91	FN01	FN11	FN21	FN31	FN41	FN51		
CN70	CN80	CN90	DN00	DN10	DN20	DN30	DN40	DN50	DN60	DN70 10-07-22	DN80 11-15-21	DN90 08-09-24	EN00 11-14-21	EN10 08-04-22	EN20 08-10-24	EN30 12-06-24	EN40 06-03-22	EN50 05-19-24	EN60	EN70	EN80	EN90	FN00	FN10	FN20	FN30				
CM79	CM89	CM99	DM09	DM19	DM29	DM39	DM49	DM59	DM69	DM79	DM89	DM99	EM09	EM19	EM29	EM39	EM49	EM59	EM69	EM79	EM89	EM99	FM09	FM19	FM29					
	CM88	CM98	DM08	DM18	DM28	DM38	DM48	DM58	DM68	DM78	DM88	DM98	EM08	EM18	EM28	EM38	EM48	EM58	EM68	EM78	EM88	EM98	FM08	FM18	FM28					
	CM87	CM97	DM07	DM17	DM27	DM37	DM47	DM57	DM67	DM77	DM87	DM97	EM07	EM17	EM27	EM37	EM47	EM57	EM67	EM77	EM87	EM97	FM07	FM17	FM27					
	CM86	CM96	DM06	DM16	DM26	DM36	DM46	DM56	DM66	DM76	DM86	DM96	EM06	EM16	EM26	EM36	EM46	EM56	EM66	EM76	EM86	EM96	FM06	FM16	FM26					
		CM95	DM05	DM15	DM25	DM35	DM45	DM55	DM65	DM75	DM85	DM95	EM05	EM15	EM25	EM35	EM45	EM55	EM65	EM75	EM85	EM95	FM05	FM15	FM25					
			CM94	DM04	DM14	DM24	DM34	DM44	DM54	DM64	DM74	DM84	DM94	EM04	EM14	EM24	EM34	EM44	EM54	EM64	EM74	EM84	EM94	FM04	FM14					
			CM93	DM03	DM13	DM23	DM33	DM43	DM53	DM63	DM73	DM83	DM93	EM03	EM13	EM23	EM33	EM43	EM53	EM63	EM73	EM83	EM93	FM03	FM13					
				DM02	DM12	DM22	DM32	DM42	DM52	DM62	DM72	DM82	DM92	EM02	EM12	EM22	EM32	EM42	EM52	EM62	EM72	EM82	EM92	FM02						
						DM31	DM41	DM51	DM61	DM71	DM81	DM91	EM01	EM11	EM21	EM31	EM41	EM51	EM61	EM71	EM81	EM91								
										DM70	DM80	DM90	EM00	EM10	EM20	EM30	EM40	EM50	EM60	EM70	EM80	EM90								
											DL79	DL89	DL99	EL09	EL19	EL29	EL39	EL49	EL59		EL79	EL89	EL99							
												DL88	DL98	EL08	EL18	EL28						EL88	EL98							
														EL07	EL17							EL87	EL97							
														EL06	EL16							EL86	EL96							
															EL15							EL95								
																						EL84	EL94							

AD0HJ 2025/10/07 106/488 (21.72%) Total

	Confirmed in LOTW	106	106
	Confirmed by QSL	0	0
	Worked/Unconfirmed	0	0

Revoked
106

Satellite Tracking Programs

IOS

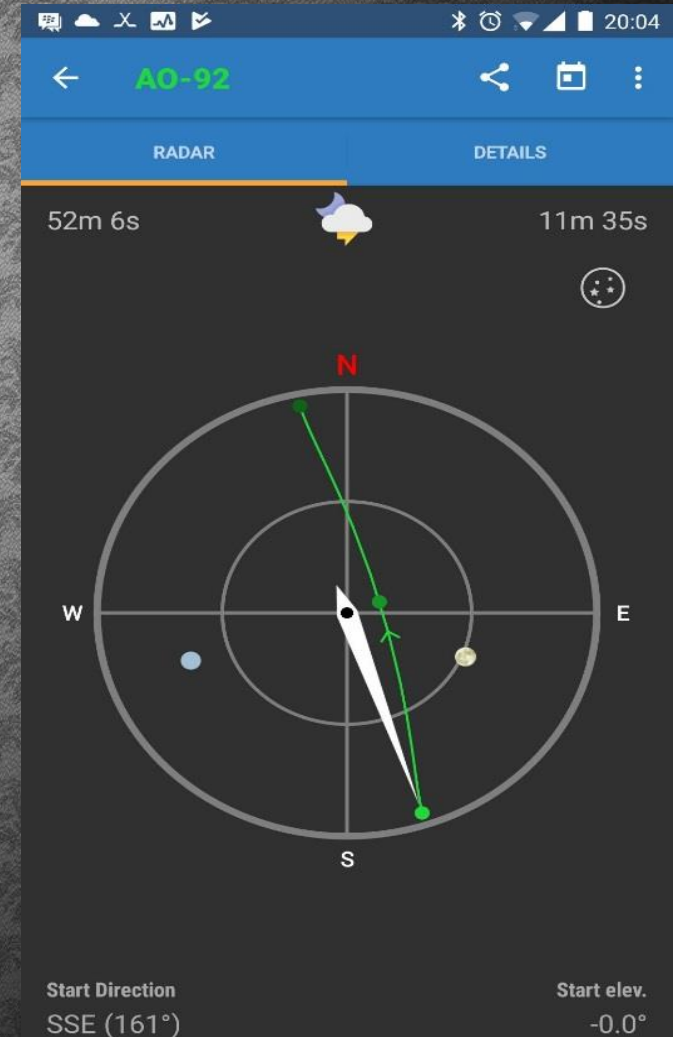
- GoSatWatch
- TrackSats
- Satellite Tracker

Android

- ~~Amsat Droid Free~~
- ISS Detector Pro
- Heavens Above
- Look4Sat

PC - Mac

- SatPC32 (\$50.00) <- Available from AMSAT
- Mac Doppler <- More Features
- Orbitron
- GPredict
- AMSAT Web Page



Satellite Tracking on GoSatWatch (iOS)

AO-85 1:34:33 11:53:34 AM

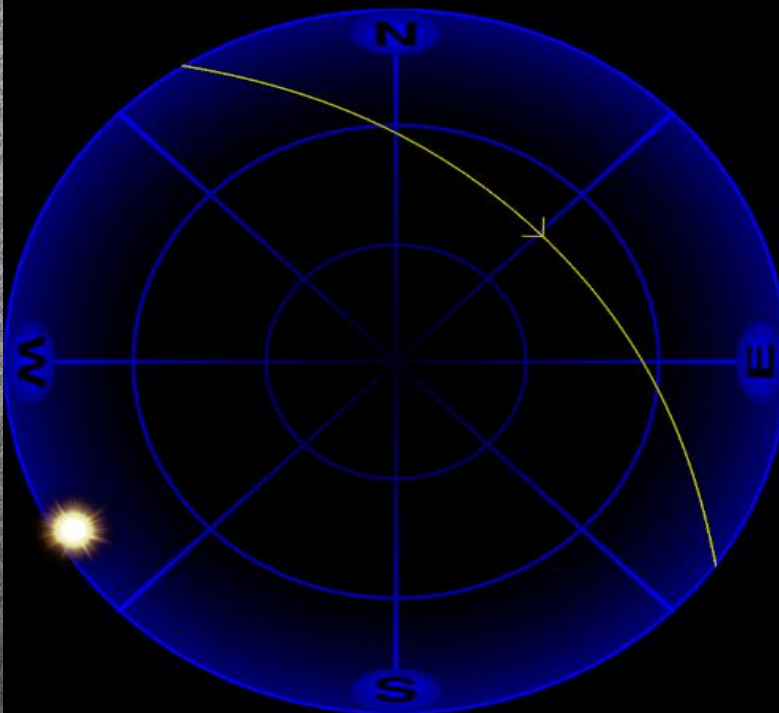
Now Passes

	Start	End	Peak	Mg
Thursday, February 1, 2018				
 SO-50	11:46:25 AM	11:57:24 AM	39° SW	4.5
 AO-91	11:58:24 AM	12:06:43 PM	23° NE	4.3
 AO-85	1:28:07 PM	1:32:38 PM	7° N	5.0
 AO-91	1:34:35 PM	1:43:18 PM	28° W	4.5
 AO-85	3:08:59 PM	3:17:13 PM	13° NE	4.6
 LILACSAT-2	4:39:45 PM	4:48:17 PM	26° E	3.3
 AO-85	4:48:52 PM	5:00:45 PM	44° NE	3.4
 LILACSAT-2	6:13:58 PM	6:22:31 PM	25° W	5.1
 AO-85	6:29:24 PM	6:40:54 PM	33° SW	5.1
 AO-92	8:42:17 PM	8:51:04 PM	37° E	--
 AO-92	10:16:49 PM	10:24:15 PM	17° W	--
Friday, February 2, 2018				

World Sky **Passes** Satellites Settings

AO-85 1:32:18 11:55:49 AM

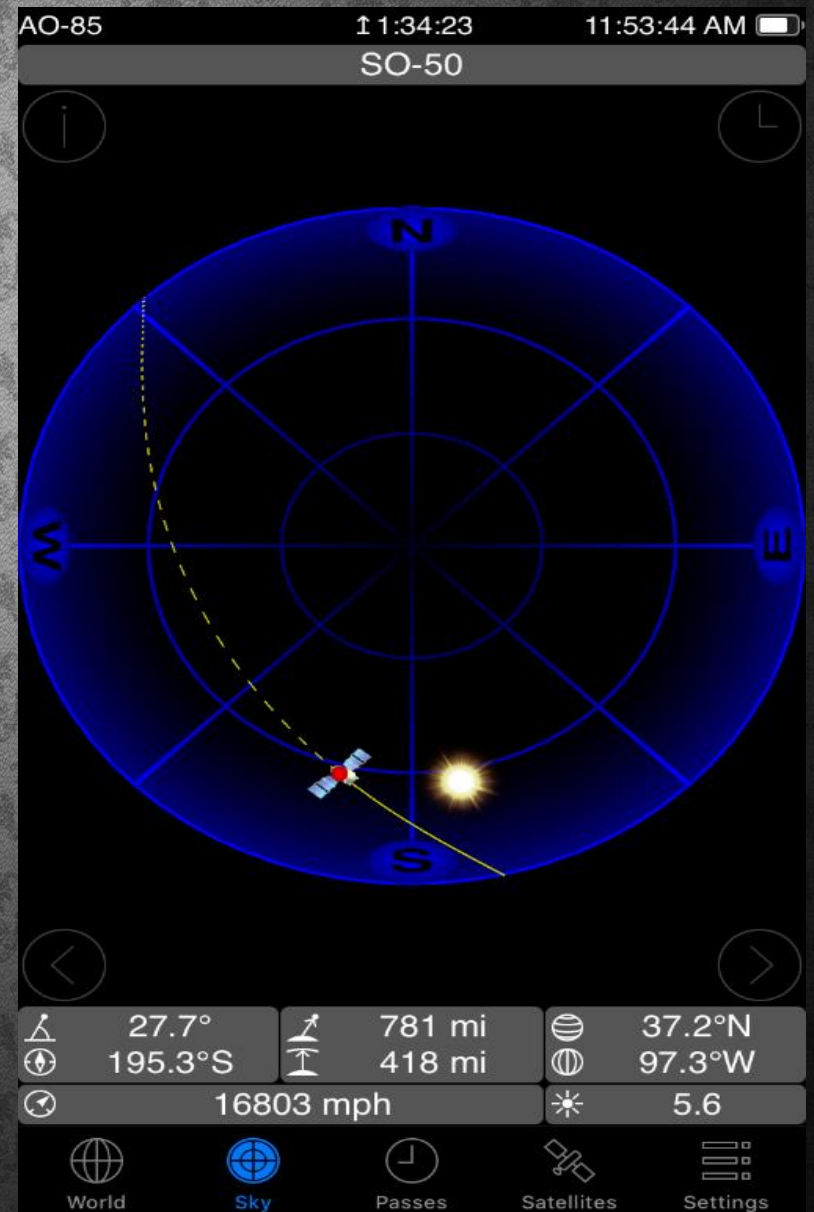
Passes AO-85



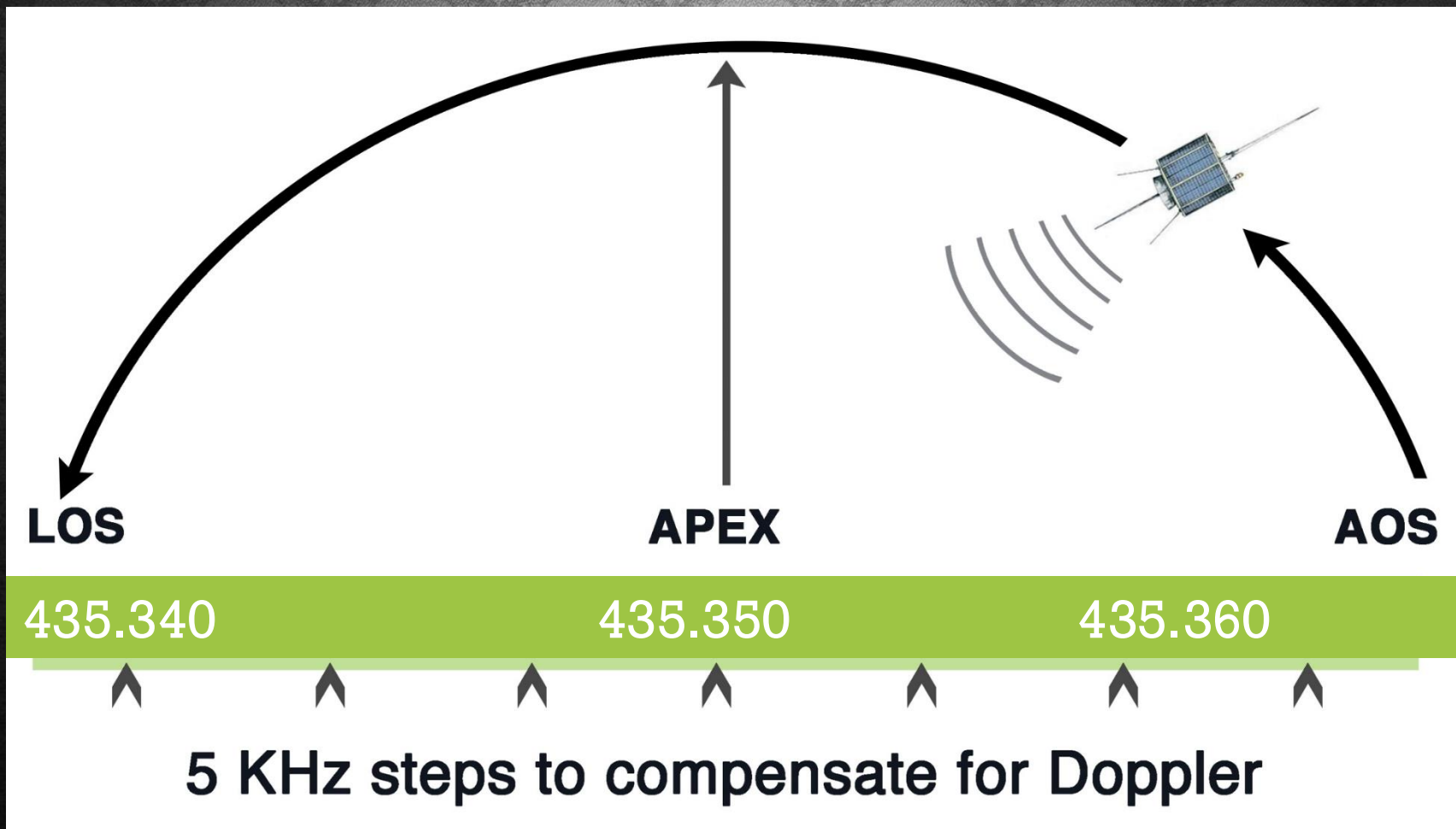
5° NW 4:48:52 PM 44° NE 4:54:38 PM 5° SE 5:00:45 PM

World Sky **Passes** Satellites Settings

Satellite Tracking on GoSatWatch (iOS)



Doppler Effect (Satellite Travels ~17,500 mph)



KEOPBR Frequency Cheat Sheet

KEOPBR Wordpress Website

SO-50	67 Hz		AO-91			67 Hz			
	Preset #3	Up (FM)	Down (FM)	Preset #2	Up (FM)	Down (FM)			
	AOS		436.805	AOS	435.240				
	2		436.800	2	435.245				
	Mid	145.850	436.795	Mid	435.250	145.960			
	4		436.790	4	435.255				
	LOS		436.785	LOS	435.260				
LilacSat-2	No tone		AO-92			67 Hz		L-Band	AO-92
		Up (FM)	Down (FM)	Preset #1	Up (FM)	Down (FM)	AOS	1267.320	
	AOS		437.210	AOS	435.340			1267.325	
	2		437.205	2	435.345			1267.330	
	Mid	144.350	437.200	Mid	435.350	145.880		1267.335	
	4		437.195	4	435.355			1267.340	
	LOS		437.190	LOS	435.360			1267.345	
							TCA	1267.350	
								1267.355	
								1267.360	
								1267.365	
								1267.370	
								1267.375	
								LOS	1267.380

<- Doppler is High to Low

Source: <https://ke0pbr.wordpress.com/2018/12/31/my-frequency-cheat-sheet/>

Portable Satellite Equipment

Dual Yaesu FT-818s
External Battery
Manual Doppler
Manual Antenna
Voice Recorder
Alaskan Arrow
Smartphone
Camera Bag
Headset

Great Portable Spot
Awesome Horizon
Perfect Weather
No RF Interference
No Power Lines
No Obstruction
No Distractions



Portable Satellite Equipment

FM Satellite Gear

AD0HJ's FM Satellite Setup

- Kenwood TM-V71A Transceiver
 - Arrow 146/437-10WBP Antenna
 - Sony MDR-ZX110 Headphones
 - Sony ICD-PX470 Voice Recorder
 - DXE-58AURHC002 Coax Cable
 - Zippy 13.2V 4200mAh Battery
 - iSDT Q6 Lite Battery Charger
 - 3.5mm Audio Patch Cable
 - Tactical Shoulder Bag
-
- KE0PBR Wordpress / TM-V71 Setup
 - Crossband Repeat Capable Radio
 - Full Duplex / Listen to Downlink
 - Kenwood TH-D72 Handheld
 - Dual Handhelds / Solid Radio for RX
 - AMSAT Getting Started with
Amateur Satellites



Source: Ryan Zink KI7QEK @KI7QEK

Portable Satellite Equipment

Linear / FM Satellite Gear

AD0HJ's Linear Satellite Setup

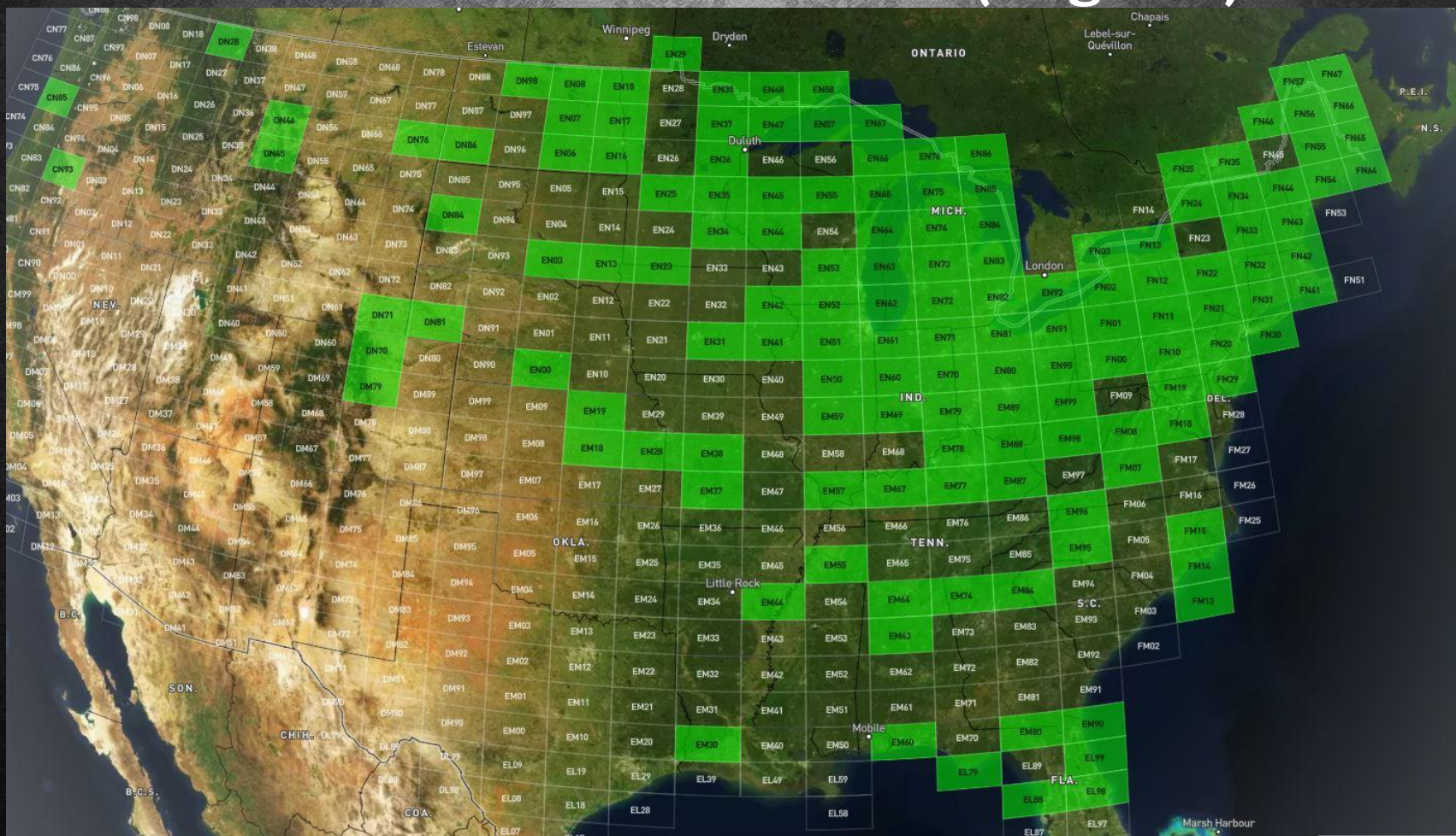
- Dual FT-818 Transceivers
- Portable Zero Dual Escort Rails
- Arrow 146/437-14BP Antenna
- Mini-Circuits BLP-200+ Filter
- 52 Inch / 60 Inch RG-58 Coax Cables
- UHF Male to BNC Female Adaptors
- MH-31 Microphone (Working FM Sats)
- Heil BM17DDYN Headset
- Heil AD1YM Headset Adapter
- Sony ICD-PX470 Voice Recorder
- 3.5mm Audio Patch Cable
- FT-818 Powerpole Power Adaptor
- Six Inch Power Pole Y Cable
- Five Foot Powerpole Cable
- Zippy 13.2V 4200mAh Battery
- iSDT Q6 Lite Battery Charger
- USB CAT Programming Cable
- CHIRP Programming / Memories



Source: Kylee Shirbroun KE0WPA @kylee_ke0wpa

DX Contacts via AO-7, FO-29, and RS-44

Maidenhead Grid IO93VN (England)



Source: David Pykett G0IIQ @G0IIQ

WELCOME TO THE AMSAT MEMBERSHIP AND EVENT PORTAL

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The Radio Amateur Satellite Corporation (as AMSAT is officially known) is a scientific and educational non-profit corporation chartered in the District of Columbia in 1969. We design, construct, test, and operate space stations in the amateur satellite service. We also make available a variety of publications, computer programs, educational services, and internet services, promoting space science education among radio amateurs and students worldwide.

For over 50 years AMSAT has played a key role in significantly advancing the state of the art in space science, space education, and space technology. Undoubtedly, the work now being done by AMSAT volunteers throughout the world will continue to have far-reaching, positive effects on the future of Amateur Radio, as well as other governmental, scientific and commercial activities in the space, the final frontier.

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AMSAT / ARRL Satellite Awards

AMSAT Satellite Awards

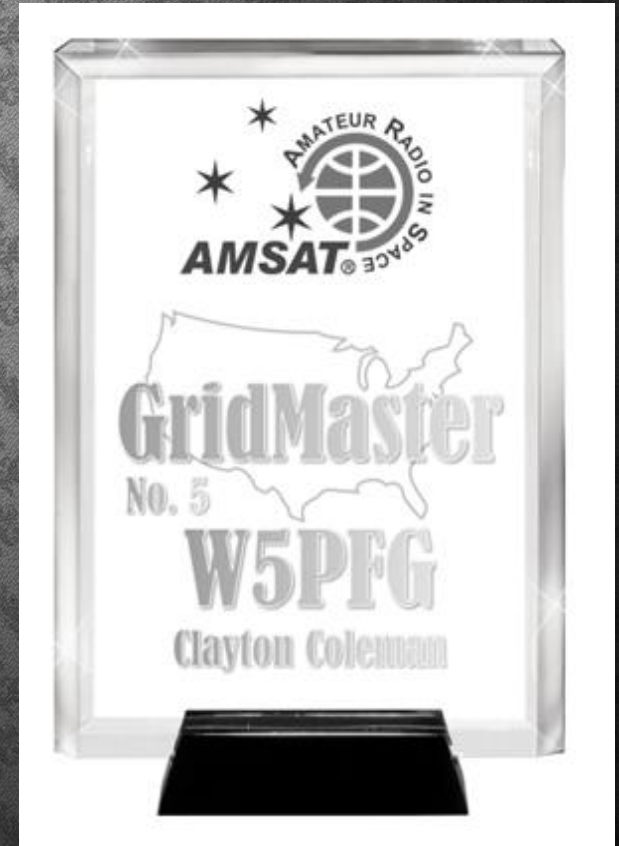
- Satellite Communicators' Club (1 Contact)
- Oscar Achievement Award (20 Entities)
- Oscar Sexagesimal Award (60 Entities)
- Oscar Century Award (100 Entities)
- AMSAT Rover Award
- AMSAT GridMaster Award
- Reverse VUCC or VUCC/r Award
- W4AMI Satellite Operator Achievement Award

ARRL Satellite Awards

- VHF/UHF Century Club Satellite
- Worked All States Satellite

International Space Station QSL Card

- ARRL or RAC (Radio Amateurs of Canada)
- QSL Card for Voice, Packet or SSTV



Source: AMSAT @AMSAT

Amateur Radio Satellites
Mitch Ahrenstorff ADØHJ

