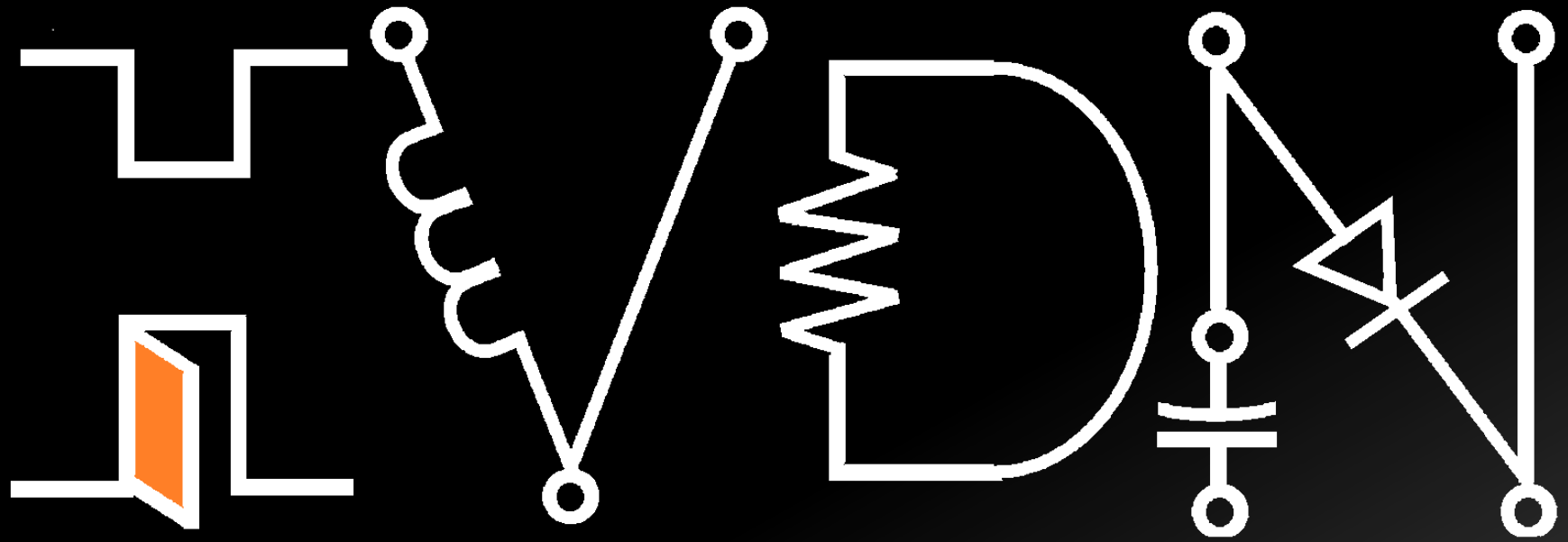


Hudson Valley Digital Network | www.hvdn.org /presentations

Satellite Spectrum & Amateur Radio

About Hudson Valley Digital Network (HVDN)

Subpart A—General Provisions

§ 97.1 Basis and purpose.

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

(a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.

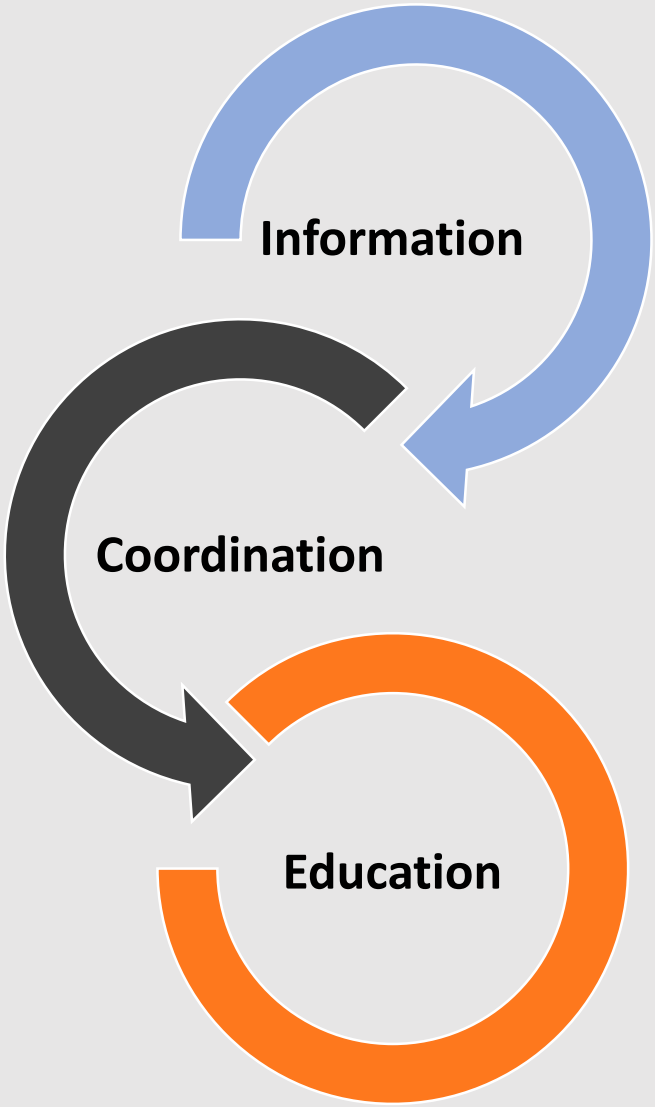
(b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.

(c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.

(d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.

(e) Continuation and extension of the amateur's unique ability to enhance international goodwill.

- HVDN founded 2017
- Uphold FCC Part 97.1
- 3 pillar approach
- Deliberate modern & future focus
- Club call sign N2HVD
- Digital meets physical world



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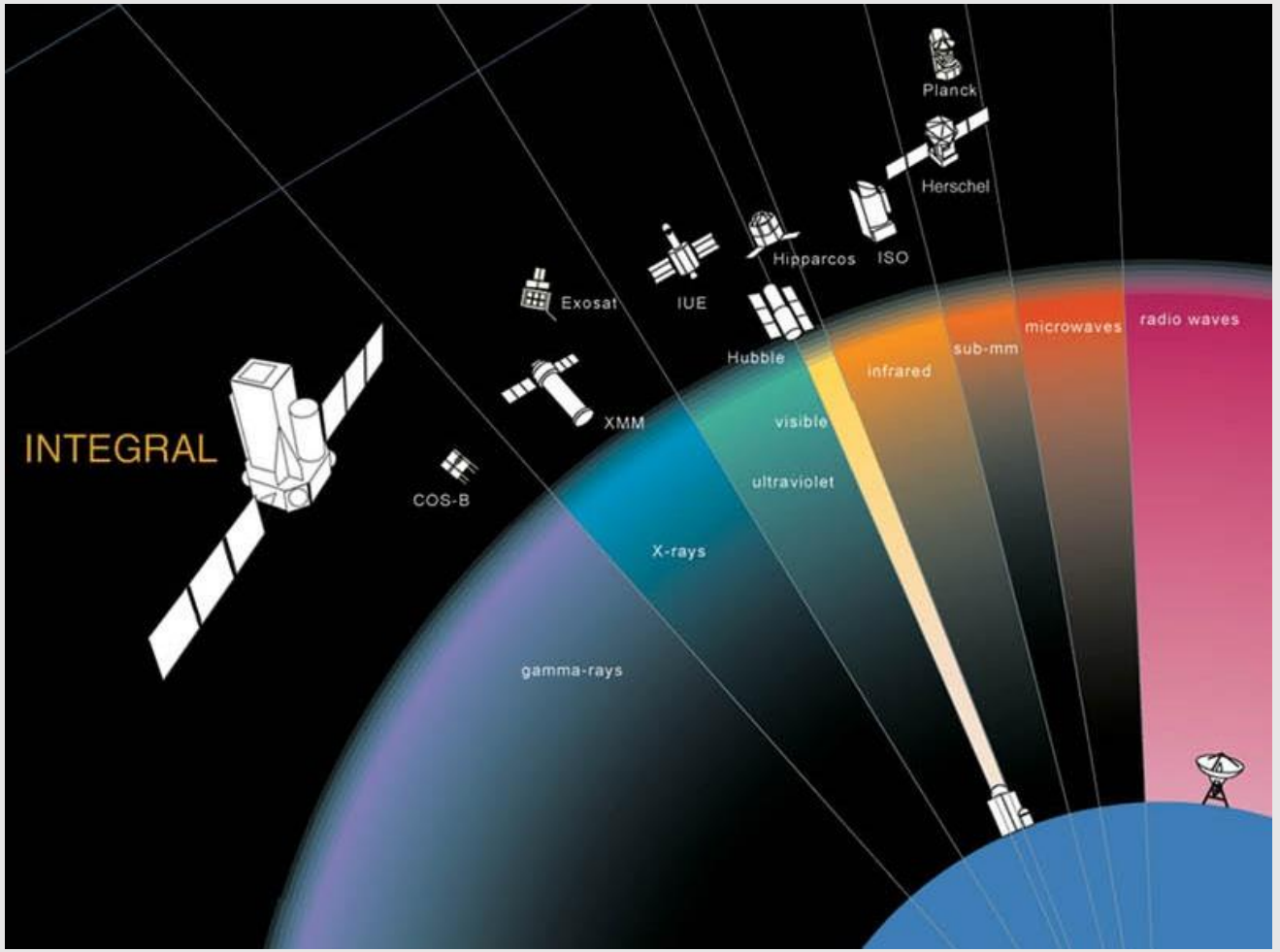
The “Biography” Slide….

Steve Bossert
K2GOG, Co-Founder HVDN

Name:	Steve Bossert
First “Hack” at the age of:	9 Years Old
Amateur Radio License Since:	1998 (21 Years Ago)
Hobby Funding Source:	Informa PLC
Top 3 Hobby Interests:	Hiking, Photography, Travel
Fun Fact About Me:	Sneezed in/on two continents at same time

Presentation Overview

- Add It Up: 21,417.70 MHz !!!
- By the band….
- Region 2 Specifics: USA & ITU
- Compare: Tech and Extra Ham Radio
- Common Spectrum & Satellite Use
- Quick deep dive or dive deep quick
- Getting Started for $100 (USD)
- Why YOU matter & looking beyond



Presentation Goal

Highlight the valuable radio spectrum available through amateur radio and promote its use through innovative communication applications on earth and in space thanks to underlying computer technology

Add It Up: 21,417.70 MHz !!!

Less than 4 MHz of total amateur spectrum (0.0163%) gets unfair attention or does it?

License Class	Total Amateur Spectrum	Total Amateur Satellite Spectrum	Total HF Spectrum (2200m to 10m)	Total Common Satellite Spectrum (2m to 13cm)
Extra	**23,126.7731 MHz**	**21,417.7000 MHz**	**3.7731 MHz**	**65.0000 MHz**
General	**23,125.3481 MHz**	**21,417.7000 MHz**	**3.3481 MHz**	**65.0000 MHz**
Technican	**23,122.8500 MHz**	**21,415.5000 MHz**	**0.8500 MHZ**	**65.0000 MHz**

By the band….

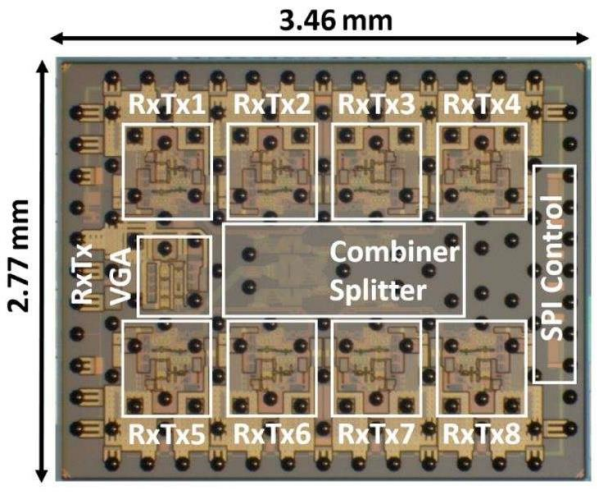
377.7 MHz of total amateur satellite spectrum

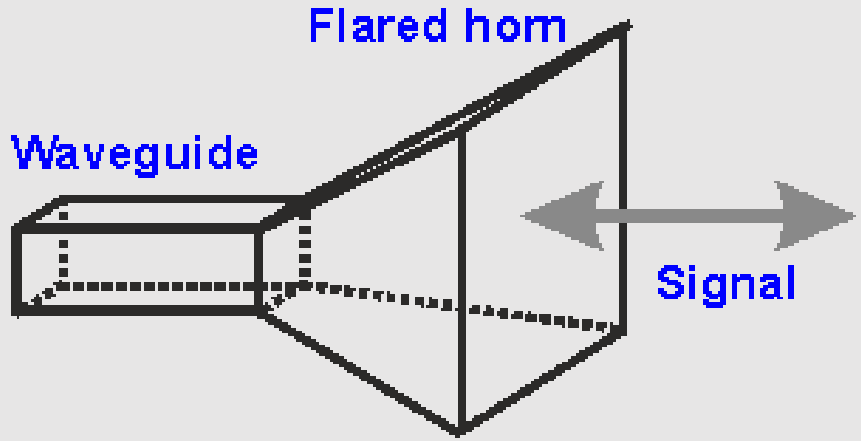
Band	Lower	Upper	Total (Satellite Only)
40m	7	7.1	0.1
20m	14	14.25	0.25
17m	18.068	18.168	0.1
15m	21	21.45	0.45
12m	24.89	24.99	0.1
10m	28	29.7	1.7
2m	144	146	2
70cm	435	438	3
23cm	1260	1270	10
13cm	2400	2450	50
9cm	3400	3410	10
3cm	10450	10500	50
1.2cm	24000	24050	50
6mm	47000	47200	200

By the band….

21,000 MHz more satellite spectrum too

Band	Lower	Upper	Total (Satellite Only)
4mm	76000	77500	1500
4mm	77500	78000	500
4mm	78000	81000	3000
2mm	134000	136000	2000
2mm	136000	141000	5000
1mm	241000	248000	7000
1mm	248000	250000	2000



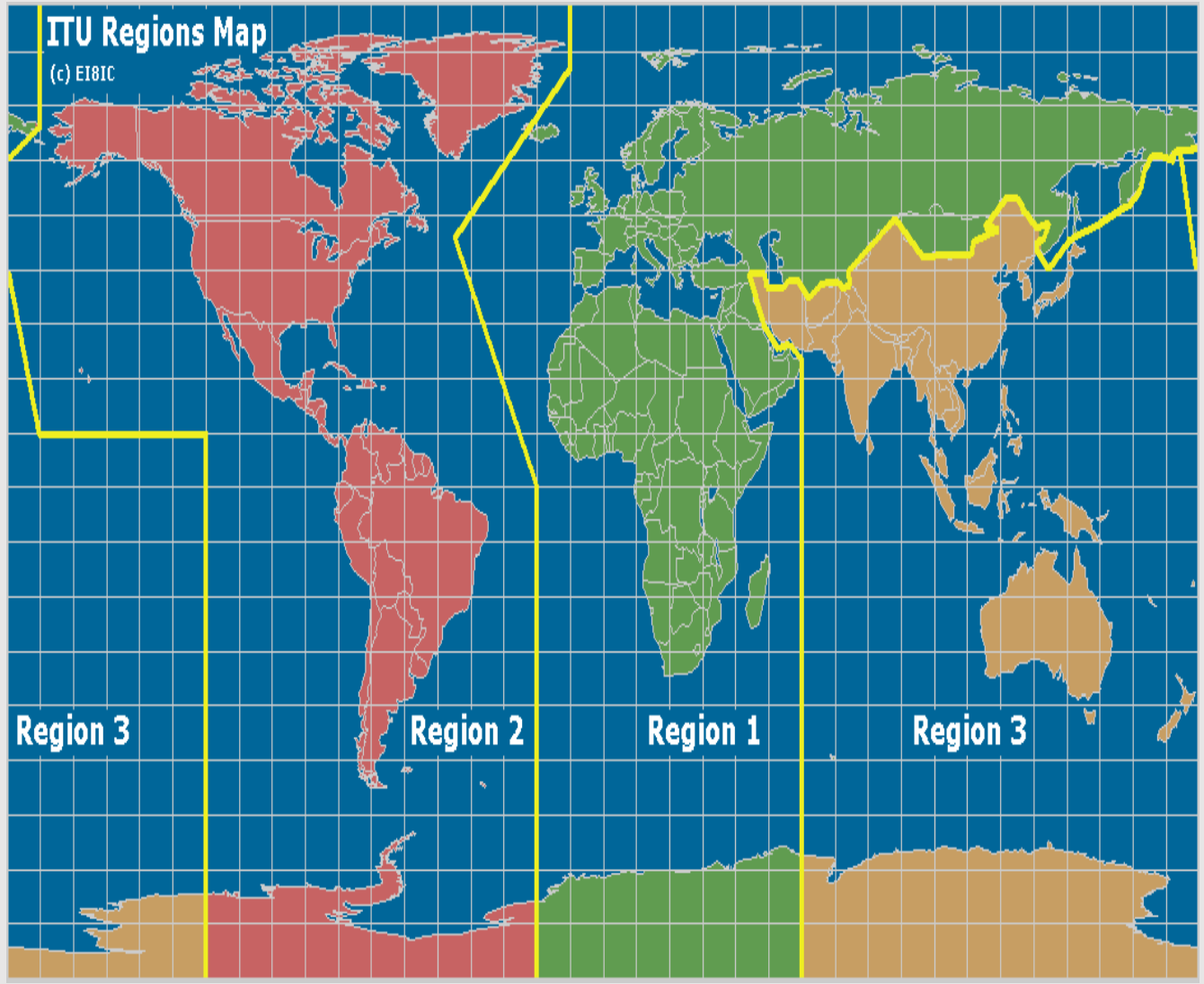


Region 2 Specifics: USA & ITU

Region	Function	Uplink	Downlink
ITU 1,3	ISS Voice	144.490	145.800
ITU 2	ISS Voice	145.200	145.800

Region	Function	Uplink	Downlink
ITU 1,2,3	ISS APRS	145.825	145.825
ITU 1,2,3	NO-84 APRS	145.825	145.825
ITU 1,2,3	NO-44 APRS	145.825	145.825
ITU 1,2,3	FalconSat-3	145.840	435.103

Region	Function	Uplink	Downlink
ITU 1,2,3	AO-92 Voice	435.340	145.88
ITU 1,2,3	AO-92 Voice	1267.350	145.88
ITU 1,3	QO-100 STV	2400.05	10489.675
ITU 1,2,3	DSTAR-1	437.325	435.525



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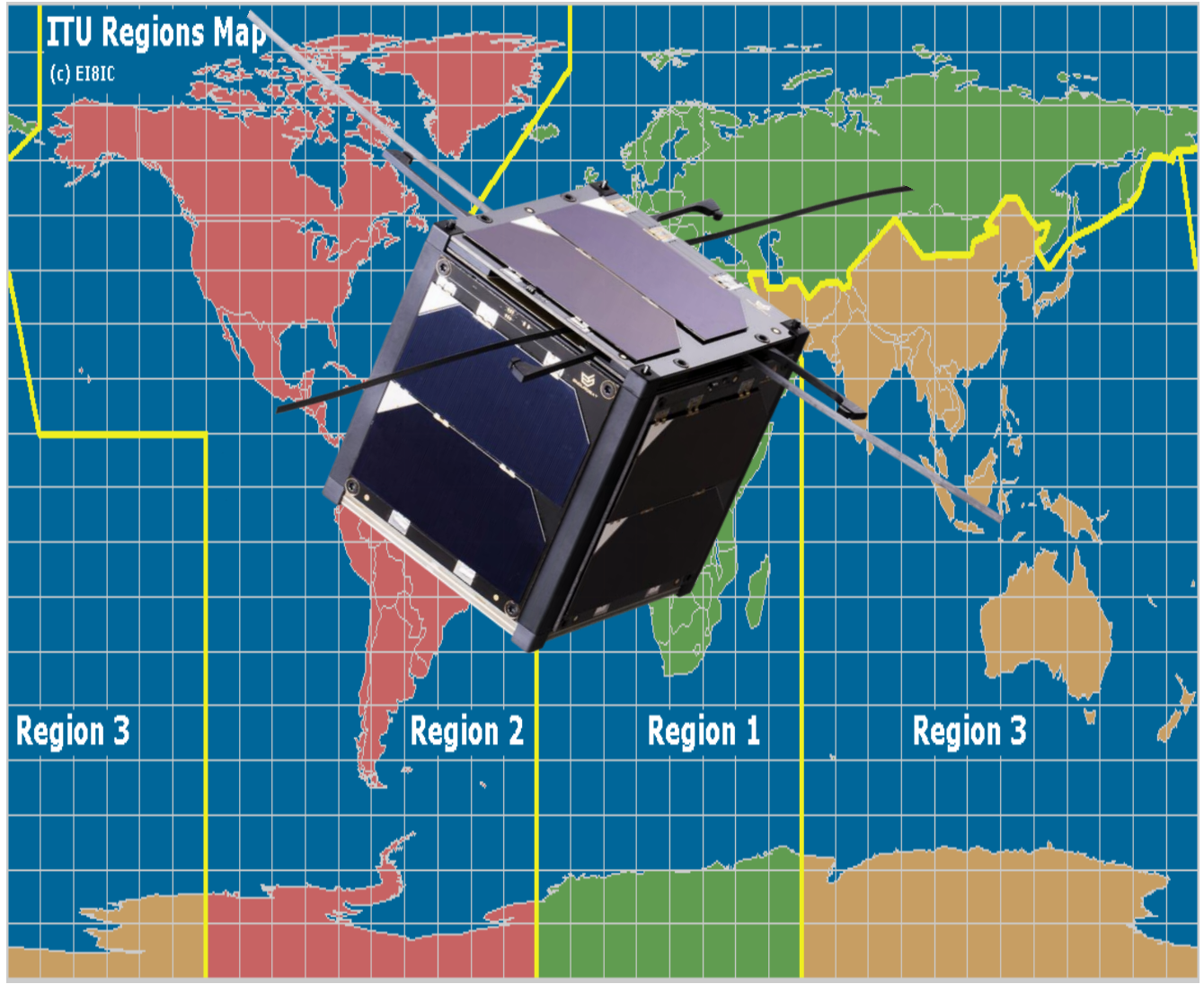
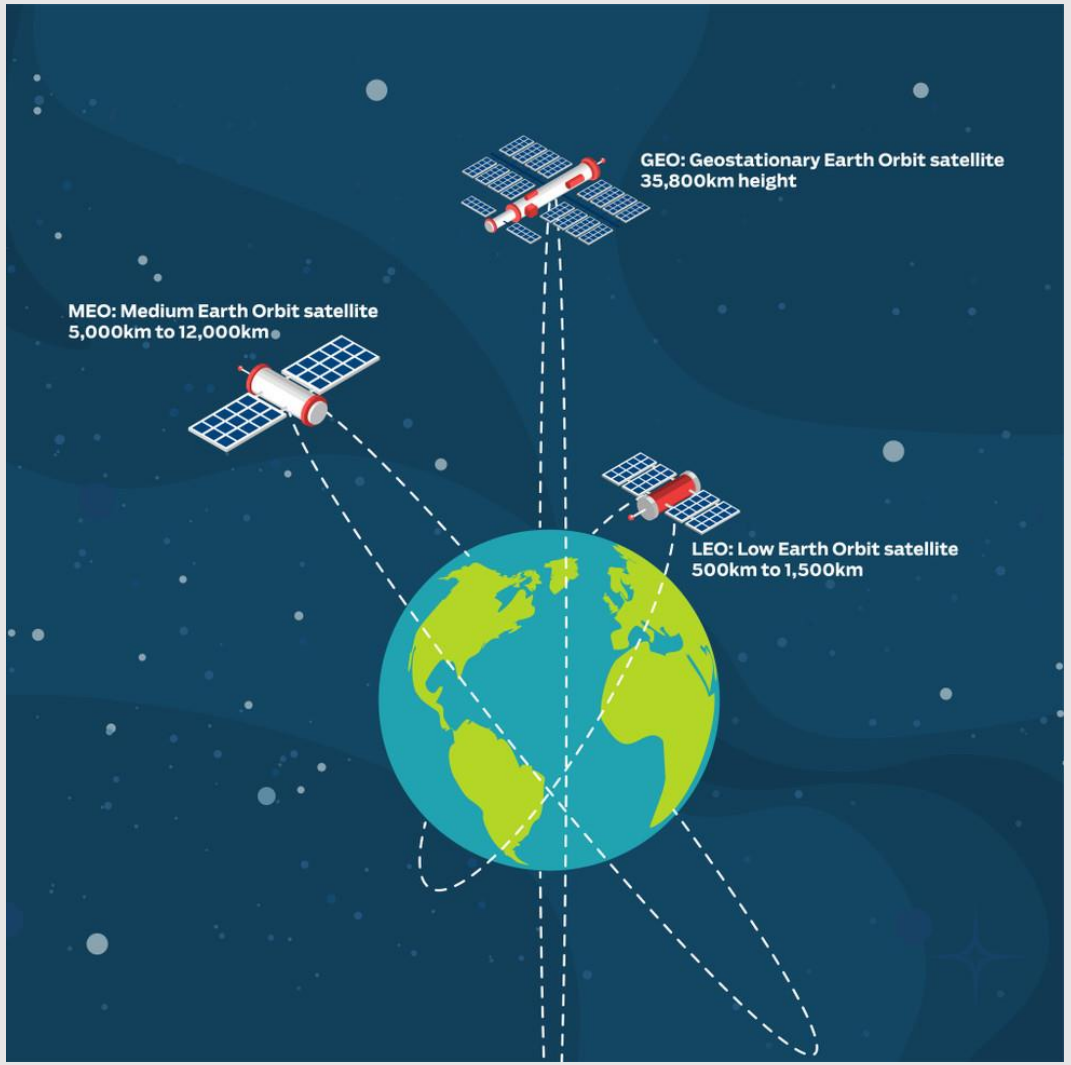
Region 2 Specifics: USA & ITU

- Digital Mode Hot Spots (MMDVM)
- 435-438 MHz Interference
- Innovation: Fighting for attention



Common Spectrum & Satellite Use

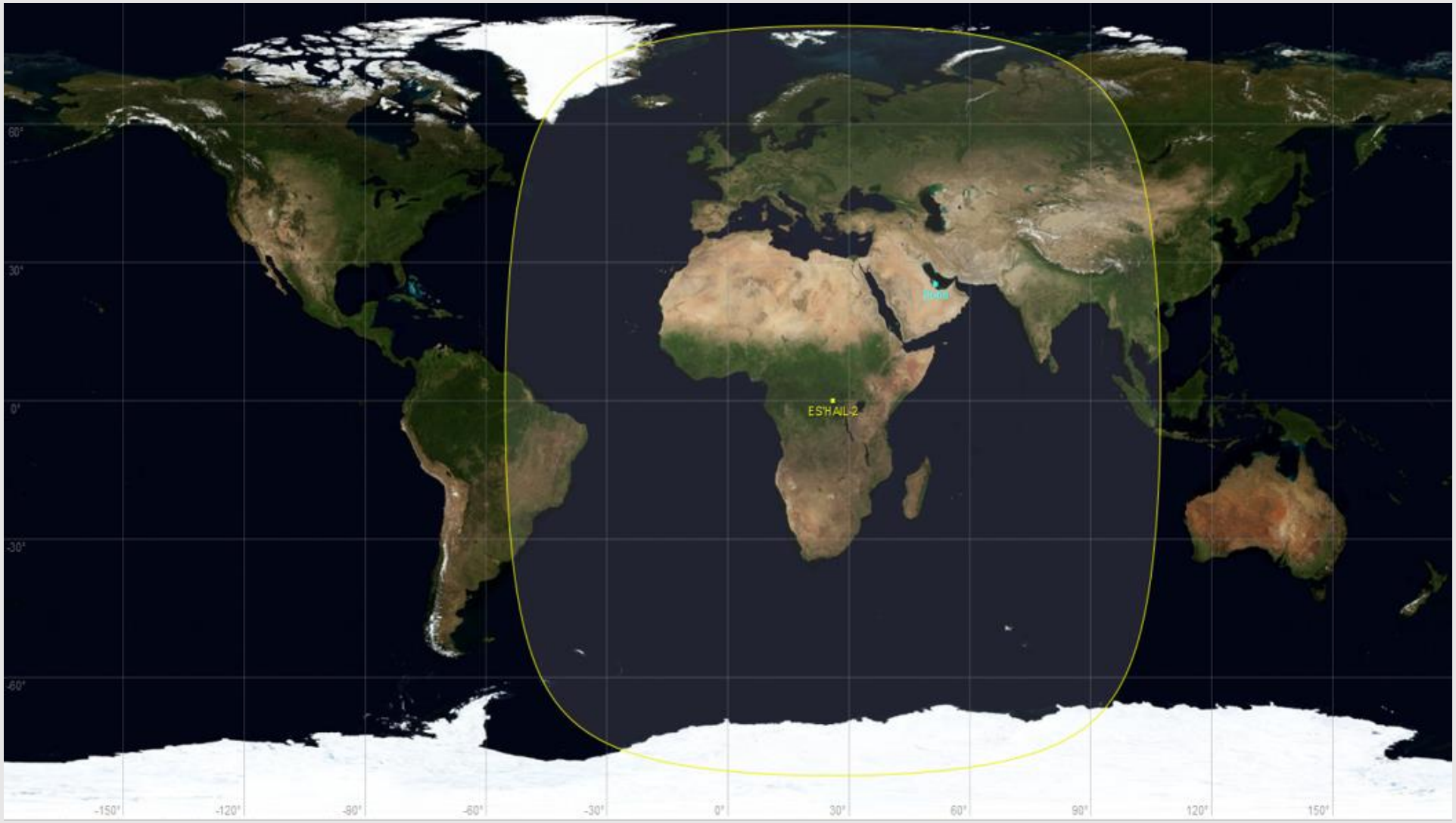
Name	2m	70cm	23cm	13cm	3cm	Image	Data	Voice
AO-91	X	X						X
AO-92	X	X	X					X
SO-50	X	X						X
FO-29	X	X					X	X
QO-100				X	X	X	X	X
DSTAR-1		X					X	X
FS-3	X	X	X				X	
NO-44	X						X	
NO-84	X						X	
CAS	X	X					X	X
XW	X	X				X	X	X



DIGITAL NETWORK

Innovate: Quick deep dive or dive deep quick

- 25.9 Degrees East
- 22,000 Miles Away
- 5,000+ Mile Footprint
- Supports the following:
  - DATV
  - NB FM
  - SSB
  - CW
  - Low SNR Data



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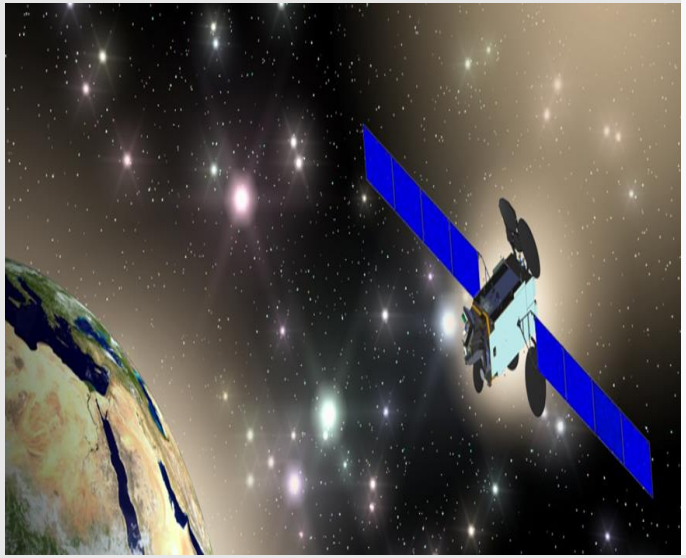
Innovate: Quick deep dive or dive deep quick

- 10 GHz downlink (Dish TV)
- 2 GHz uplink (Like Wi-Fi)
- SDR Receiver in UK



View: waterfall blind | Allow keyboard: | Waterfall: HTML5 | Sound: HTML5 | 136 user(s) online.

10489450 10489500 10489550 10489600 10489650 10489700 10489750 10489800 10489850 10489900

L CW -> NB Dig Digi -> Mixed -> SSB -> Upper Beacon

10489746.00 kHz labels

--- -- - + ++ +++

CW LSB USB AM FM

Memories:

recall erase store (new)

Filter: 2.70 kHz - +

squelch autonotch

Audio recording

start

S1 S3 S5 S7 S9 +20dB +40dB +60dB

-81.6 dB; peak -81.6 dB;

Volume: mute

Signal strength plot: none

Waterfall zoom

- + >< <>

Speed: slow

Size: medium

View: waterfall

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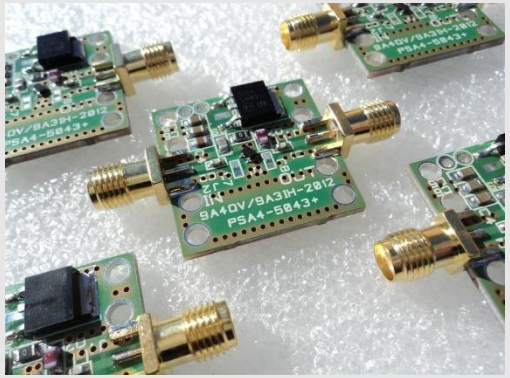
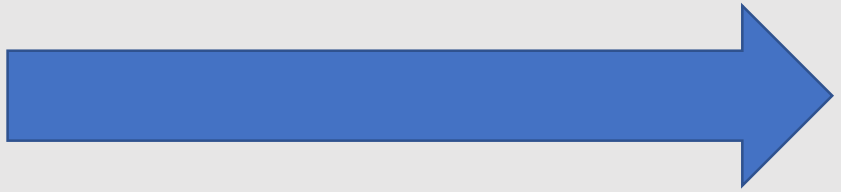
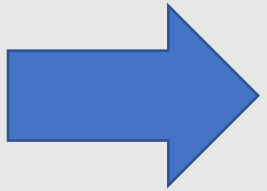
Getting Started for $100 (USD)

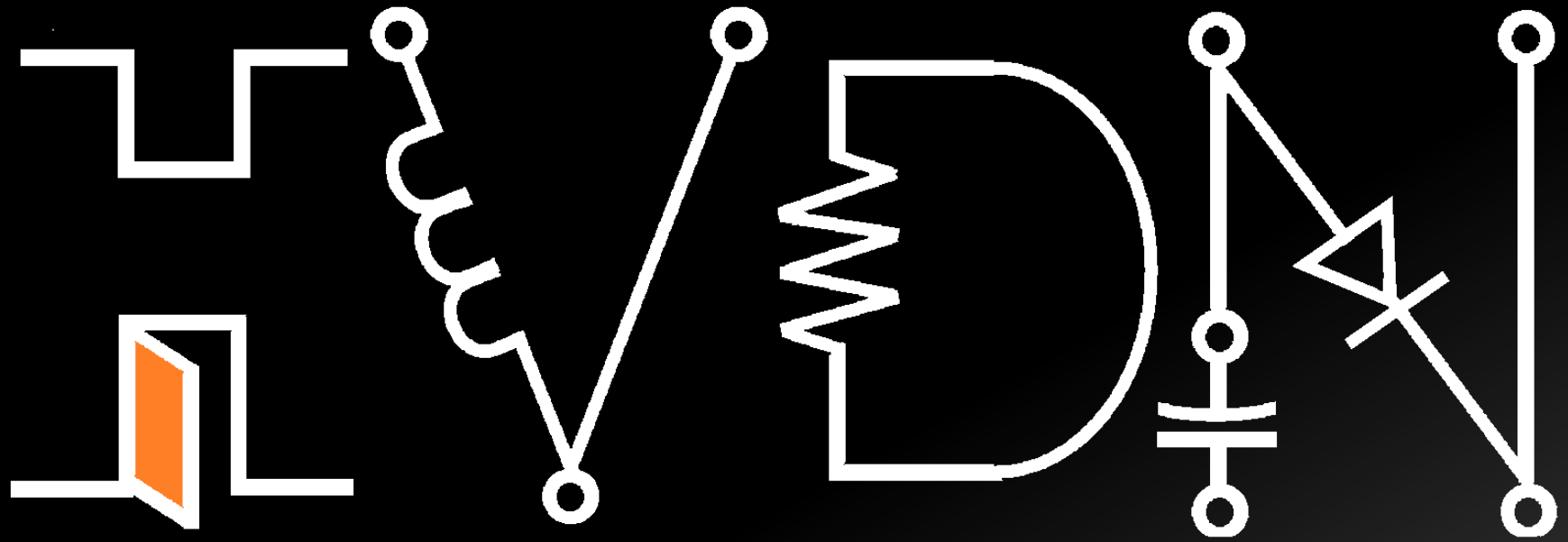
Input/Output	Radio Device	LNA	Antenna
			
			

Why YOU matter…..

- Use it  Cheap & Easy….
- Not just satellite  IoT, AI, Location, etc
- Experiment  Python, SDR, LoRA
- Not just “because radio”  Community Value?

.....looking beyond

- Satellite discussion? → DMR TG 98006 (AMSAT)
- Computer discussion? → Too many.....
- STEM anyone? → DMR TG 31630 (STEM)
- But, I am not on DMR… → Echolink & Allstar
  stem.hvdn.org



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