

UNISEC GLOBAL



Ghana's First Amateur Ground Station

Presented by: Aaron Yankey-Antwi (9G1-IC)

OVERVIEW



- ✓ Perspective
- ✓ Steps
- ✓ Amateur Ground Station (G.S.)
- ✓ Hardware
- ✓ Software
- ✓ Platform
- ✓ Results
- ✓ Conclusion

PERSPECTIVE



Country	Number of amateur radio operators	% population	Year of Report	Source
Japan	1,296,059	1.012	1999	[2]
United States	738,497	0.239	2012	[3]
Thailand	176,278	0.275	2006	[2]
South Korea	141,000	0.288	2000	[2]
Germany	75,262	0.092	2007	[4]
Canada	69,183	0.201	2011	[3]
Republic of China	68,692	0.296	1999	[2]
Spain	58,700	0.127	1999	[2]
United Kingdom	58,426	0.094	2000	[2]
Russia	38,000	0.026	1993	[2]
Brazil	32,053	0.016	1997	[2]
Italy	30,000	0.049	1993	[2]
Indonesia	27,815	0.011	1997	[2]
France	18,500	0.028	1997	[2]
Ukraine	17,265	0.037	2000	[2]
Argentina	16,889	0.042	1999	[2]
Poland	16,000	0.041	2000	[2]
Australia	15,328	0.067	2000	[2]
India	15,679	0.001	2000	[2]
Denmark	8,668	0.156	2012	[5]
Slovenia	6,500	0.317	2000	[2]
South Africa	6,000	0.012	1994	[2]
Norway	5,302	0.106	2000	[2]

Ghana

No Amateur Ground-Stations

1 Amateur operators (Manfred Quarshie)

STEPS



- First Step



- Second Step



AMATEUR G.S.



- Location

- 6.1094 N 0.3020 W



- Developer

- All Nations University College



HARDWARE



- TS2000
 - Restricted frequency spectrum (Bad for testing)
 - More hardware requirements (Spectrum Analyzers)
- Universal Software Radio Peripheral (USRP)
 - Unrestricted frequency spectrum (Good for testing)
 - Less hardware requirements



SOFTWARE

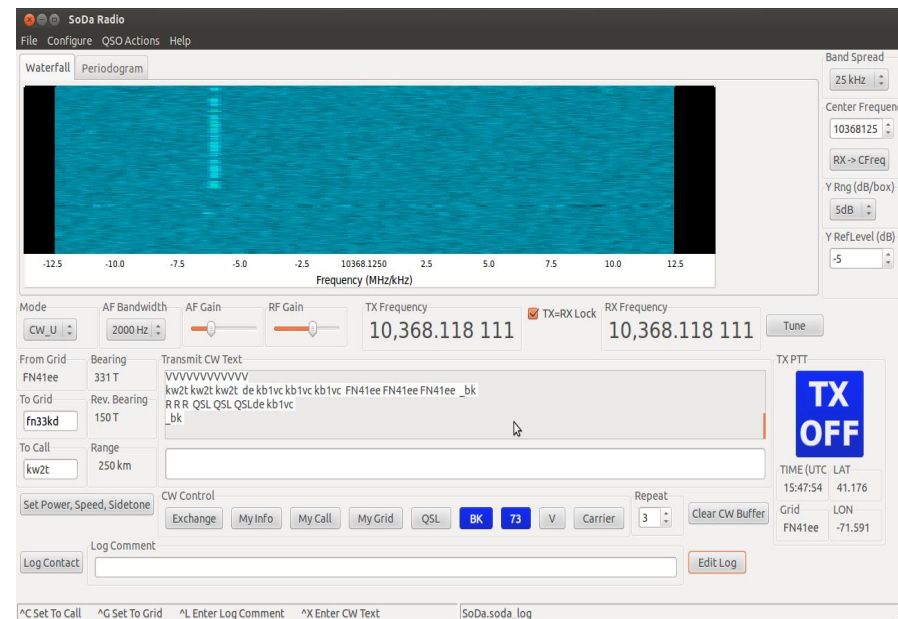


•Windows

- Features
 - Closed source
 - More of support for USRP

•Linux

- Features
 - Open source
 - Less support for USRP
- Options
 - Gnuradio (No DSP, No Time)
 - gqrx (No TX)
 - Sodaradio (No Doppler tuning, No FM uplink)



PLATFORM



- Distribution
 - Ubuntu 14.04
- Radio interface (SoDaRadio)
 - SOCAT, Hamlib
- Routing (Audio)
 - Server (Jack Audio, Pulse Audio)
 - Client
 - Audacity - recording
 - Fldigi - decoding beacons
 - Pulse audio
 - QSSTV
 - VLC
 - SoDaRadio
 - Soundmodem (AX.25)
- Prediction and Rotor Interface
 - Gpredict

RESULTS

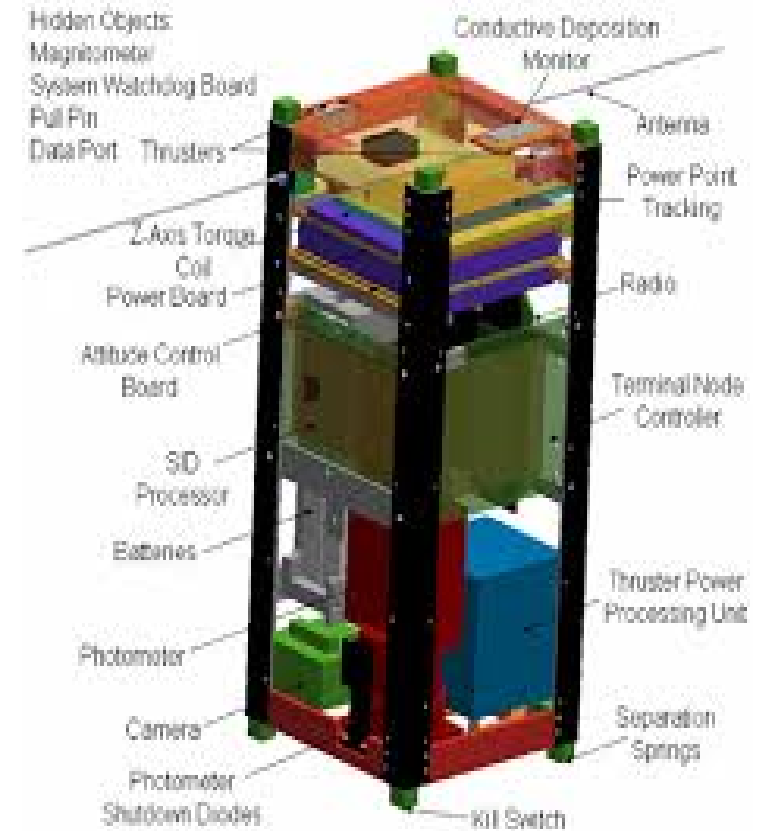


- Videos (SSTV)
 - ISS
- Beacons
 - KKS,Jugnu,SRM,
etc
- Packets
- Voice

NEXT STEP



- CubeSat



CONCLUSIONS



- Our second step to space is the first in Sub-Saharan Africa.
- More Amateur operators.
- Strategic location of CubeSats (Relay of Data)
-

THANK YOU



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- <https://github.com/angelnora/noraa-issl-comms>
- <http://sourceforge.net/projects/sodaradio/>

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en.wikipedia.org/wiki/Amateur_radio_operator#Demographics

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- First Step



- Second Step



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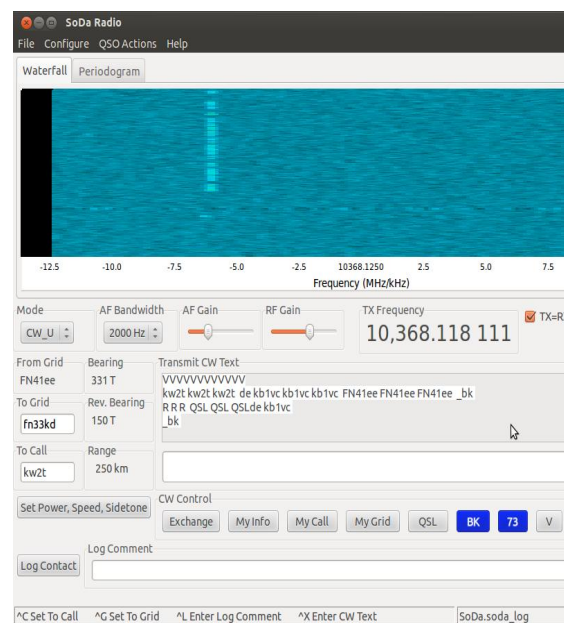


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- CubeSat

University of Illinois CubeSat



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