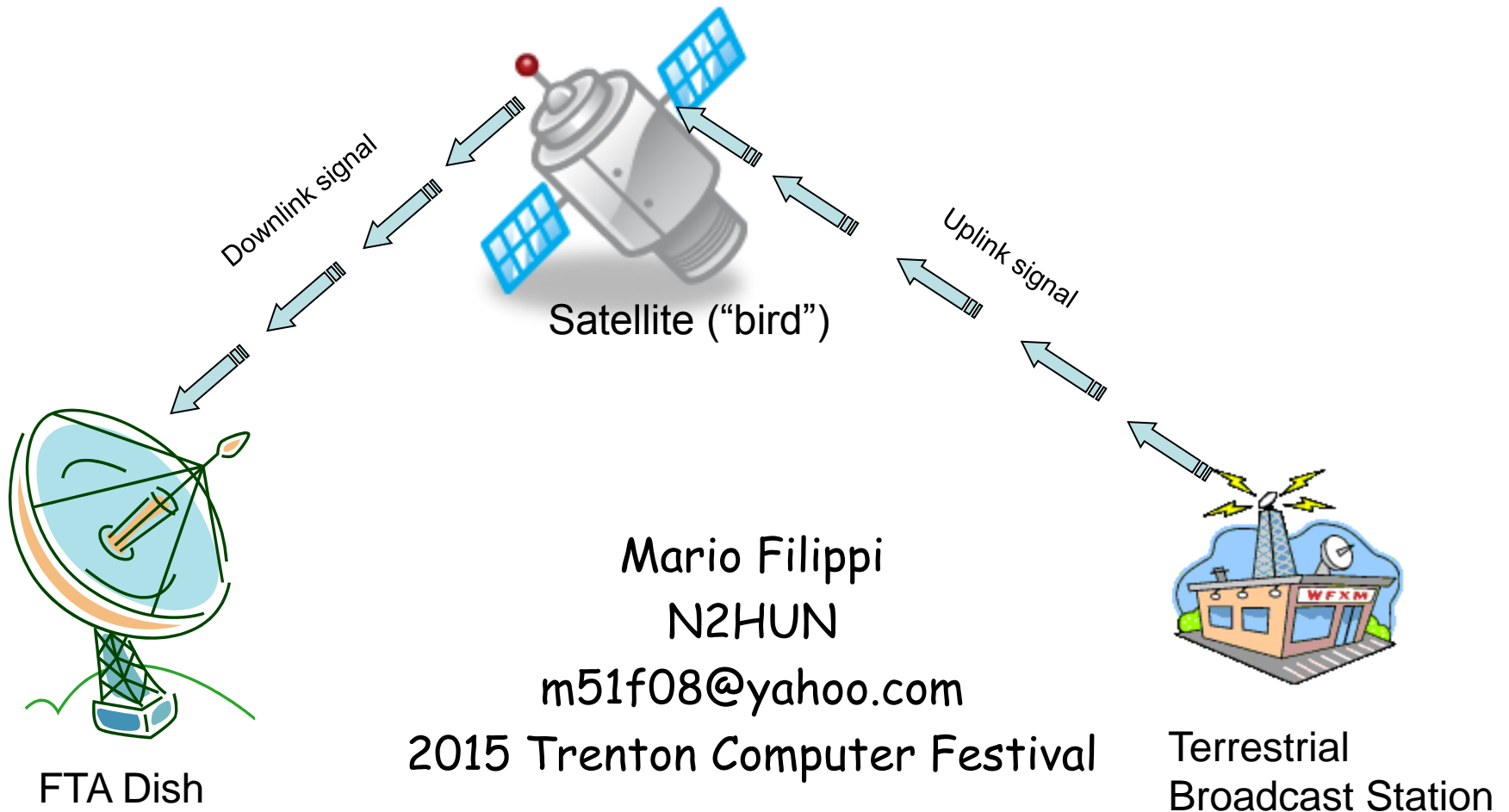


# Free To Air (FTA) Satellite Made Easy



# XENOPHILE

- 'zenəˌfɪl, 'zē-/
- *noun*
- an individual who is attracted to foreign peoples, manners, or cultures.

# Dishes Past and Present

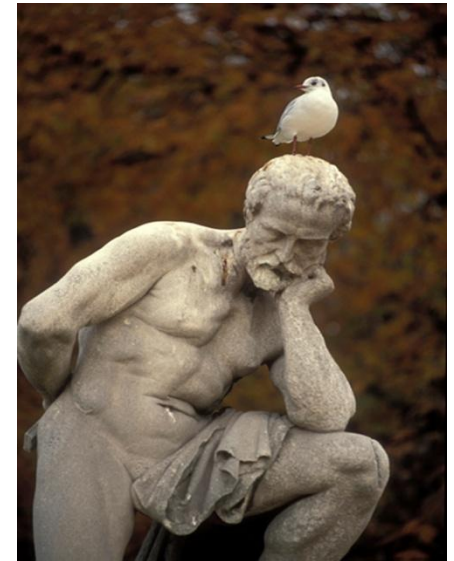


# Current Dish Farm

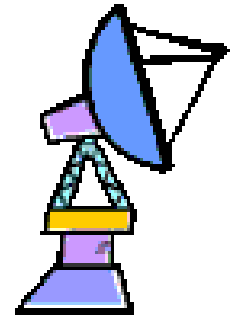


# What is FTA Satellite?

- Tune into foreign/domestic broadcasts
- Free (no monthly bills)
- Perfectly legal
- Requires dish, rcvr, TV
- Programming 24/7
- Radio + TV broadcasts
- Use of Ku/C band satellites in geostationary orbit
- News, music, sports, religion, education, arts, documentaries, films, sitcoms, soaps, cartoons, puppet shows, kiddie shows, cooking shows, commercials

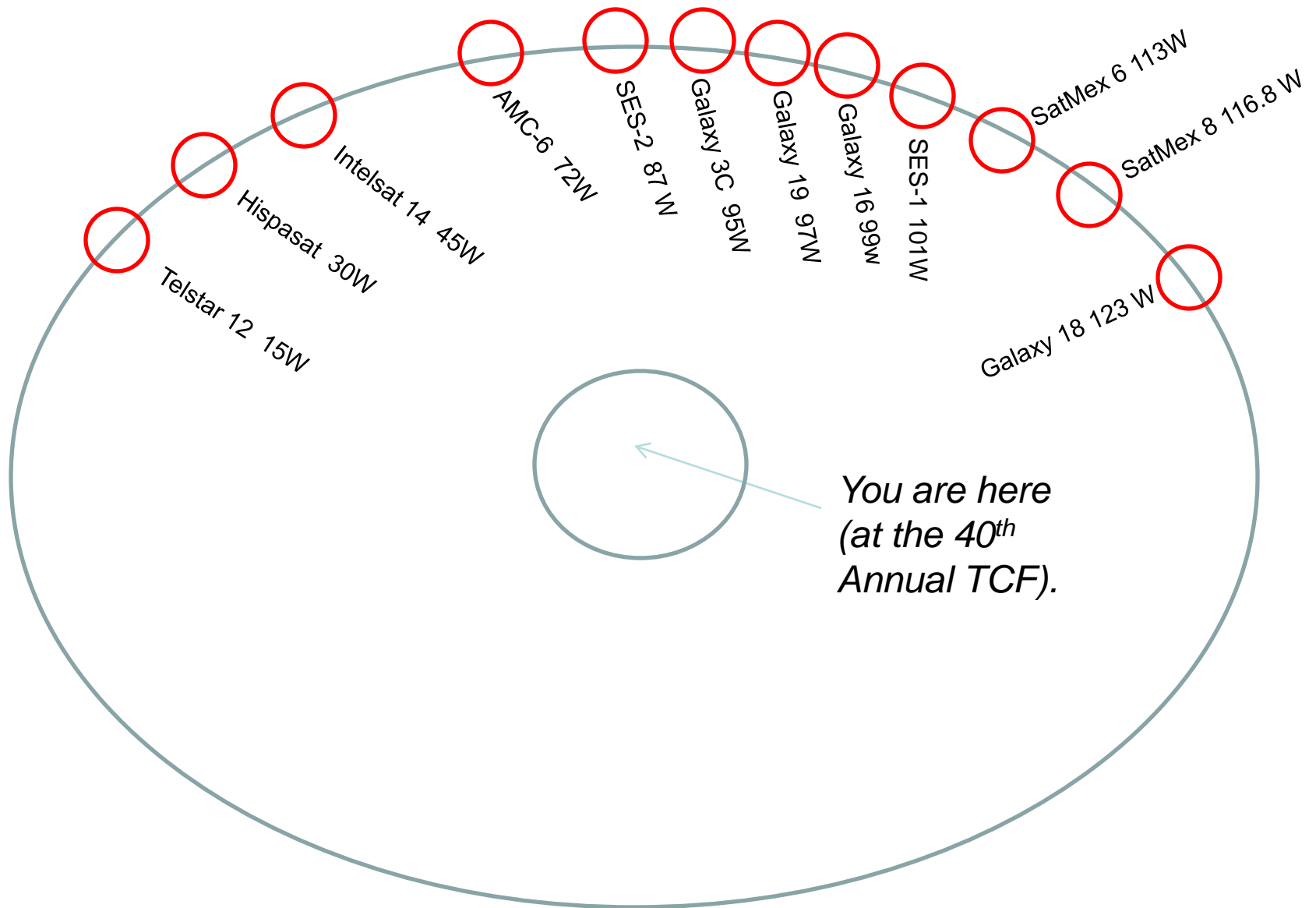


# Ku FTA Satellites



- Geostationary satellites
- Ku band (“Kurtz underband”) 12 – 18 GHz
- 23,000 mi from earth (Clarke Belt)
- Each “bird” has it’s own orbital slot (15 West – 125 West)
- Each has unique name, e.g. Galaxy 19, Telstar 12, Satmex 6, AMC-6, Intelsat 14
- Uplink frequencies: 14 -15 GHz
- Downlink frequencies: 11.7 – 12.2 GHz
- Lifespan varies 10 – 15 yrs
- Approx. 20 FTA satellites (“birds”) broadcasting TV/Radio
- Requires min. 30” dish
- Subscription type dishes, e.g. old Dish, DirectTV 18 inch dishes won’t work

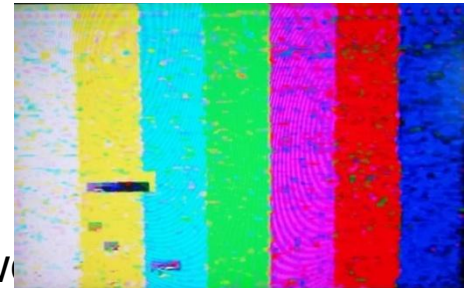




FTA Satellite Clarke Belt a la Filippi

# FTA Satellite B'casts

- Free (unencrypted)
- Perfectly legal
- For expatriates around the world
- Mother country's motive is non-profit
- Usually in native language, some English
- Transmit both television and radio b'casts
- Most are standard def, some hi def
- Most transmit 24/7
- Subject to rain/heavy snow fade (Ku band only)
- Channel lineup can change
- Picture and audio quality similar to domestic TV
- Most broadcasts are real-time
- Some birds carry "feeds" – live satellite b'casts of newsw press conferences, natural disasters, crimes, sports





# Reception/Installation Requirements

- Clear path to satellite of interest
- Minimum 30 inch dish (Ku band)
- LNB (Low Noise Block Amplifier)
- RG/6 coax (75 Ohm)
- FTA receiver (STB – Set Top Box)
- Good, sturdy, plumb mount for dish
- TV set
- Power source
- Satellite finder/meter
- Compass
- Latitude/Longitude e.g. Ringoes 40.4N/74.5W
- Consult satellite look-up table for azimuth/elevation
- Patience
- Elbow grease
- Liquid refreshments

# Clear path to sat of interest



# Dish, LNB, Coax



# Mount





# Pallet mount



# Tripod





# Make sure it's plumb!



# FTA RCVR, aka STB (Set Top Box)



# Set Top Box (Rear)



TV to display menus and view programs





# Misc. Satellite Installation Tools



# Aiming Dish



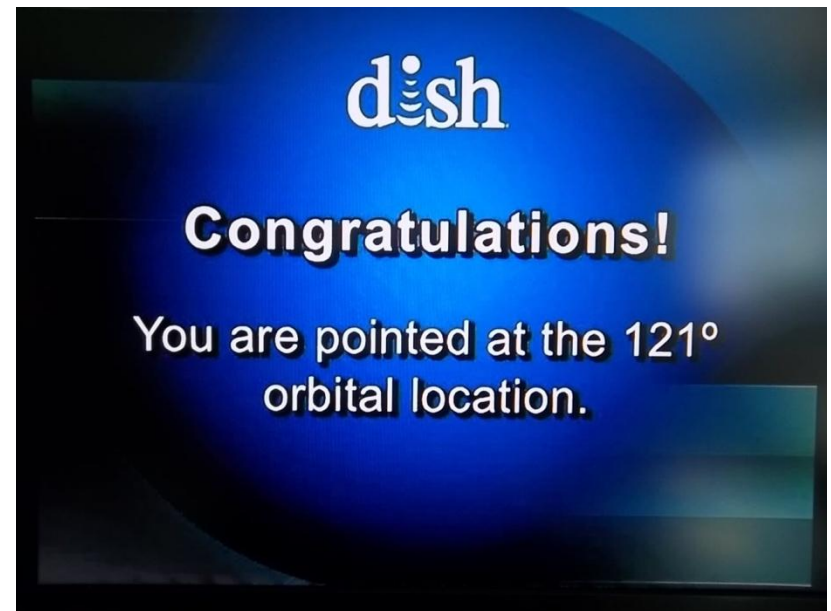


# Satellite Marker Cards



AMC-16 85W

Echostar 9 121 W



# Stationary or Motorized ?

Stationary dish



Motorized (movable) dish





# Stationary with multi LNB's

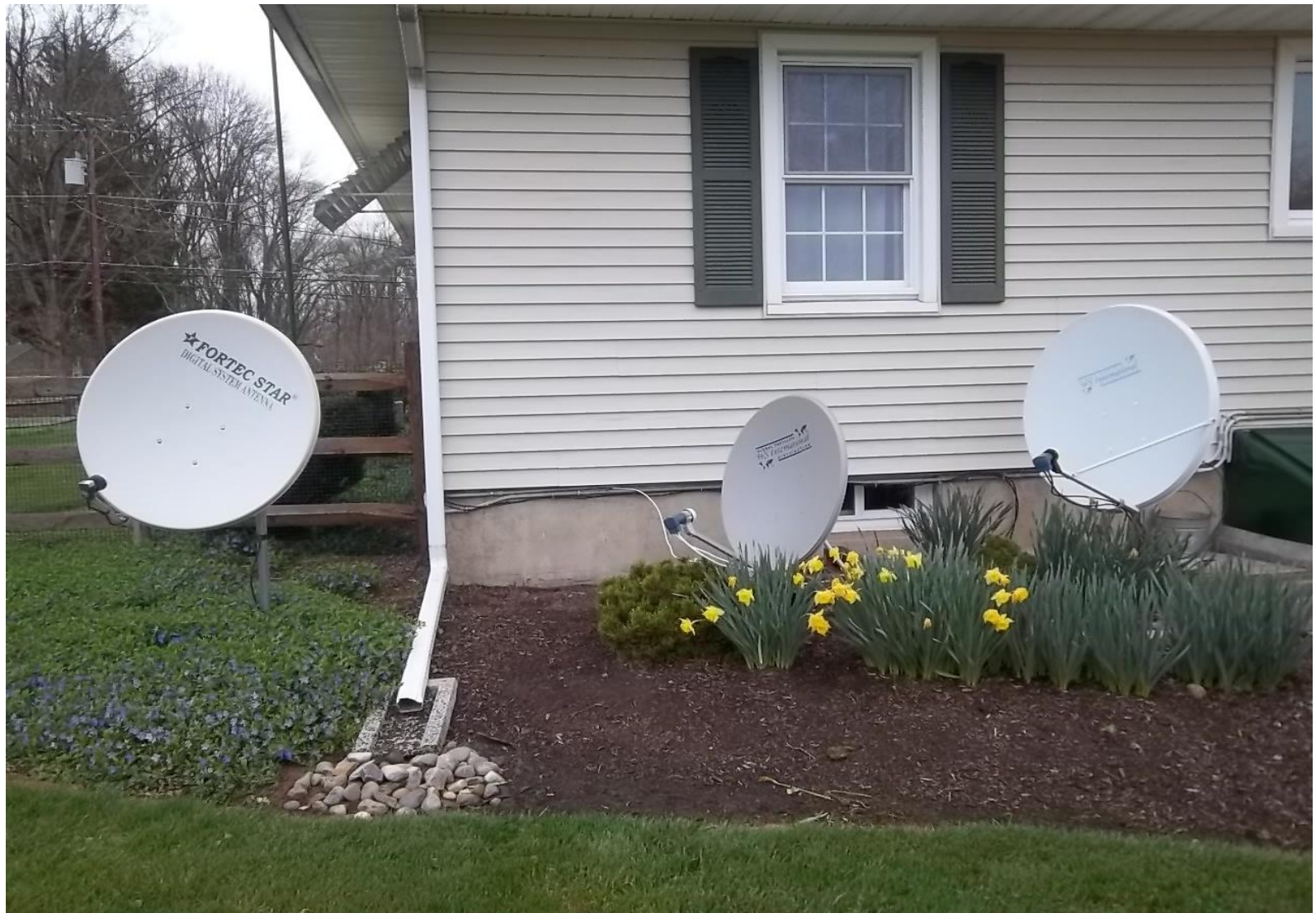


# Cost: Stationary vs. Motorized



- Stationary packages: \$130 - \$220
- Motorized packages: \$230 - \$260





# Satellites for FTA (USA)

- From 15 deg to 123 deg – East to West
  - Telstar 12 (15W)
  - Hispasat (30W)
  - Intelsat 14 (45W)
  - AMC 6 (72W)
  - AMC 9 (83W)
  - AMC 16 (85W)
  - SES 2 (87W)
  - Galaxy 25 (93W)
  - Galaxy 3C (95W)
  - Galaxy 19 (97W)
  - Galaxy 16 (99W)
  - SES 1 (101W)
  - SatMex 6 (113W)
  - Galaxy 18 (123W)
  - AMC 21 (125W)





# FTA TV/Radio Lineup

Satellite	Orbital Slot	# Radio	# TV
Telstar 12	15W	0	2
Hispasat 1C	30W	69	51
Intelsat 14	45W	0	2
AMC-6	72W	0	4
AMC-3	87W	0	21
Galaxy 3C	95W	13	7
Galaxy 19	97W	77	239
Galaxy 16	99 W	4	1
SES-1	101W	1	1
SatMex 6	113 W	2	13

## How do I find a satellite? (*Bird hunting*)

- Forget about binoculars and telescope
- Some programs on Smartphones
- Old-school method:
  - Look up your latitude and longitude
  - Decide on what satellite(s) you want to receive
  - Consult the satellite look-up table using your lat/long
  - Look-up table will display the azimuth, elevation, skew
  - Azimuth = degrees on compass to turn dish to
  - Elevation = up or down angle of the dish in degrees
  - Skew = adjustment for tilt of satellite
  - Set your dish to the azimuth/elevation/skew
  - Attached meters/receiver, etc
  - Move dish around to get a meter swing
  - Slightly tighten up nuts and bolts
  - Scan the satellite, look at program identifications
  - Decide if you are on the right bird

## Example: AMC-6 at 72W

Latitude/Longitude for Ringoes NJ = 40.4N / 74.5 W

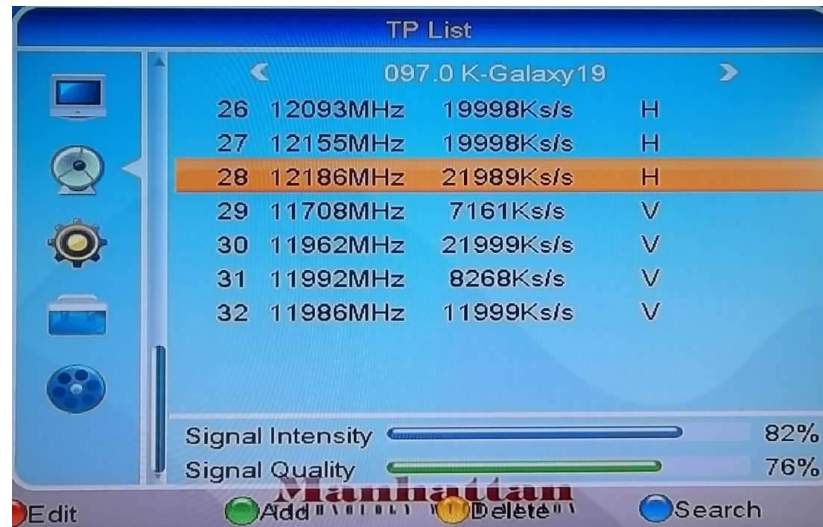
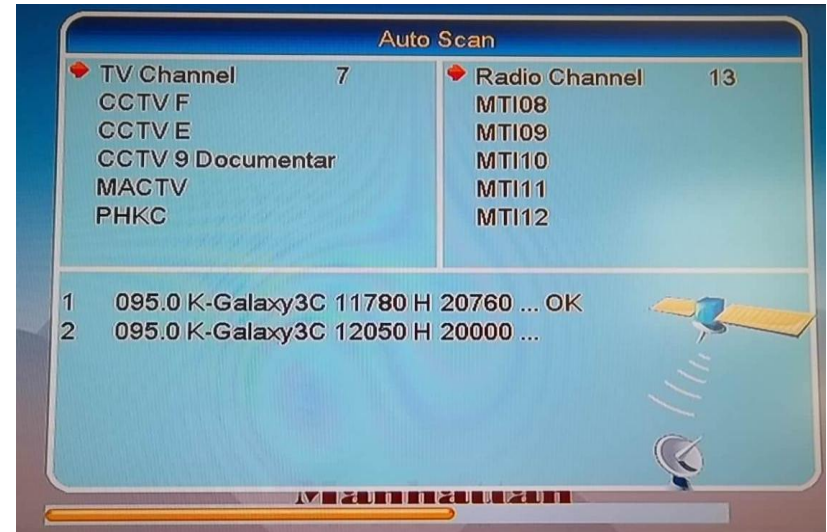
As per satellite look up table for Ringoes: Az = 188.2 deg (magnetic), El = 43 deg, Skew = +5 deg

Adjust dish Azimuth using compass, adjust dish elevation using scale on dish, turn LNB skew using scale on bracket.

Dish adjustment is as much an art as it is a science.



# Scanning a Satellite



# Telstar 12, 15W



TPAI, Angola

Telstar 12 Ku satellite data (Ringoos):

Azimuth: 123 deg (magnetic)

Elevation: 14 deg

Skew: -45 deg

*Note: very low on the horizon, best rx from East Coast US*

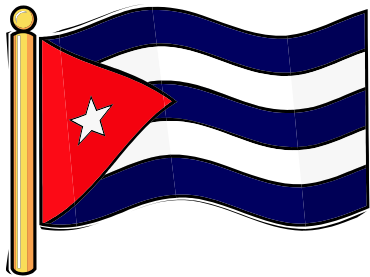


TVGE, Equatorial Guinea

# Hispasat @30W



- 69 radio stations
- 51 TV stations
- W.Europe, E. Europe, Africa, Middle East, S. America, Cuba



Hispasat 30 W Ku satellite data (Ringoos):

Azimuth: 136 deg (magnetic)

Elevation: 25 deg

Skew: -40 deg

*Note: Strong signal to East Coast US*



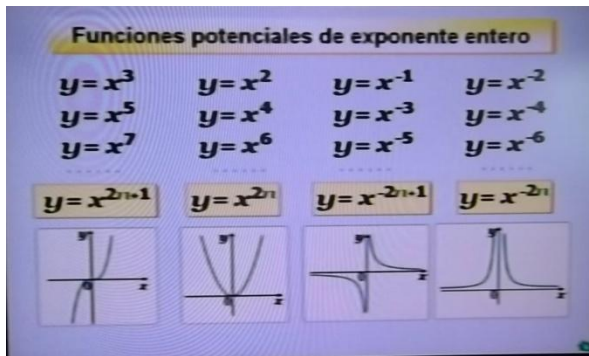
# Cuban TV on Hispasat



Cubavisión Station ID, Habana



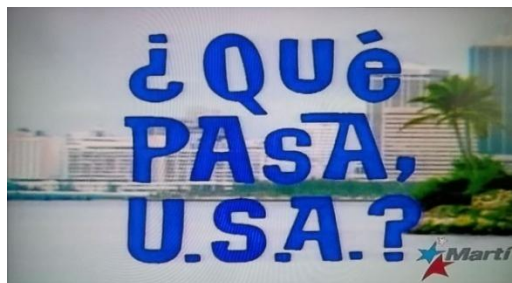
Cubavisión Late Night Line Up



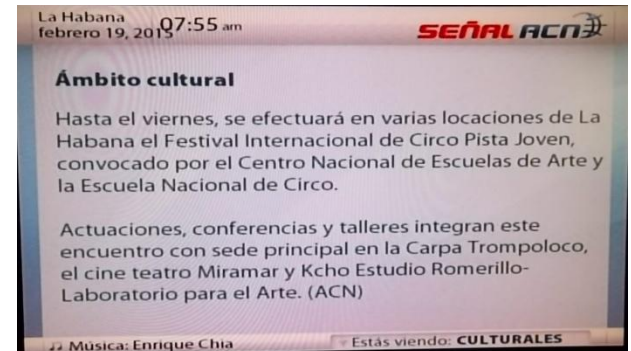
Educativo, Habana



Cubavisión International, Habana



TV Marti – US b'cast to Cuba



Senal ACN, Habana

# South American TV on Hispasat



Canal 7, Santiago el Estero, Argentina



Tele SUR, Caracas, Venezuela



Canal LUZ Argentina



RBC TV, Lima, Peru

# TVU – La Paz, Bolivia





## Middle East/Africa TV on Hispasat



Kuwait TV Kiddie Show



Syrian TV Cooking Show



Soccer – Sudan TV



Ethnic Music – Al Iraqlia -  
Bagdad



Saudi Arabian Horseracing



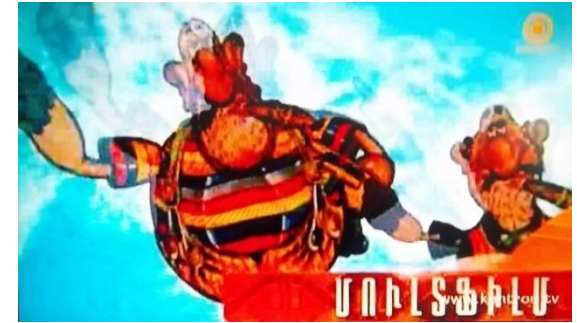
## European TV on Hispasat



Political talk – TV Galicia - Spain



Cooking – Canal Vasco - Spain



Cartoon Show - Armenia

## Far East TV on Hispasat



The Arts – VTV4 - Vietnam



TGN – Thai Global Network - Thailand

# Intelsat 14 45 W



RASD TV, Western Sahara

Intelsat 14 Ku satellite data (Ringoos):

Azimuth: 151 deg (magnetic)

Elevation: 34 deg

Skew: -30 deg

*Note: Not easy to get, not a strong signal .*

# Galaxy 3C 95W



China Central TV, China



MAC TV, Taiwan

Galaxy 3C Ku satellite data (Ringoess):

Azimuth: 222 deg (magnetic)

Elevation: 39 deg

Skew: 22 deg

*Note: Strong signal to East Coast USA.*



# Galaxy 19 @ 97W African Coverage



NTA TV - Nigeria



Canal Algerie - Algeria



ORTM - Mali



Canal Algerie - Algeria



Cooking Show - TV Monde  
- Morocco



Beekeeping Show – Tele Congo  
TV

Galaxy 19 Ku satellite data (Ringoos):

Azimuth: 225 deg (magnetic)

Elevation: 38 deg

Skew: 24 deg

*Note: Best bang for the buck!*



# Galaxy 19 @ 97W E/W European Coverage



DUNA World - Hungary



Animation - LRT – Lithuanian TV



TVRI - TV Romania International



TVP – Polonia TV - Poland



Telepace – Vatican TV



Tele 5 – Poland – Anti-halitosis ad

# Galaxy 19 @ 97W East of Europe



AZTV - Azerbaijan



Kazakhstan TV Station ID



News – TV Belarus



UTR – Ukrainian Television and Radio

# Galaxy 19 @ 97W Middle East Coverage



Talk Show - Oman



Islamic Republic of Iran (IRIB)  
News



Talk Show - Jordan



Soccer Round Up – Kuwait TV3



Ethnic music - Yemen



TV Kuzucuk – Kiddie Show -Turkey



Al Mayadeen - Lebanon



Al Hayat 2- Egypt



## Galaxy 19 @ 97W Far East Coverage



NAT TV Boxing News Thailand



LAOi TV, Laos



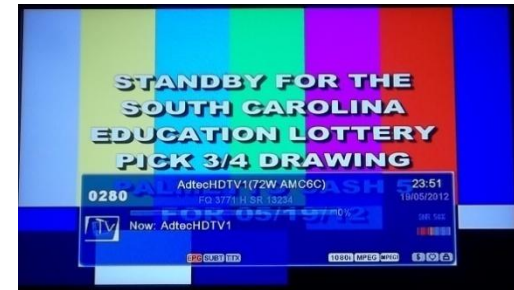
Travel Show from NetViet TV



NetViet TV's "Learn Vietnamese"



## Miscellaneous



# Galaxy 16 99W



Shalom TV - Israel



Feed - CBS



Russia Today (RT) Feed



NHK Feed

Galaxy 16 99w Ku satellite data (Ringoos):

Azimuth: 227 deg (magnetic)

Elevation: 37 deg

Skew: 26 deg

*Note: Good for "feeds".*

# Informational Resources for FTA


- Publications – TeleAudiovision Magazine, The Spectrum Monitor, Monitoring Times (back issues)
- Vendors – Hypermegasat, Titanium Satellite, Sadoun Satellite Sales, HarmonyFTA, DMS International, Skyvision , Galaxy Marketing, EBay.
- Forums – Legal Free To Air, SatelliteGuys
- Satellite Location Information – Lyngsat, Skyvision, vendor websites
- Public Library – “Miniature Satellite Dishes” by Dr. F. Baylin, “Home Satellite TV Installation and Troubleshooting Manual” by Baylin, Gale, and Long.
- Internet – Google, Yahoo, YouTube
- [www.satbeams.com](http://www.satbeams.com) – App for tablet/Smartphone for finding birds, dish alignment



# Articles

- *“Handy Video Tuning Tool: Your Wireless Camera” – Monitoring Times Magazine, 11/2011*
- *“Satlink Satellite Finder: FTA’ers Best Friend” – Monitoring Times Magazine, 1/2012*
- *“Over the Air TV DX’ing in the Digital Era” – Monitoring Times Magazine, 2/2012*
- *“The Tinkerer’s Best Friend, the Portable Power Station” – Monitoring Times Magazine, 3/2012*
- *“Rechargeable Battery Pack on a Shoestring Budget” – Monitoring Times Magazine, 6/2012*
- *“Setting Up a Ku-Band FTA Radio System” – Monitoring Times Magazine, 9/2012*
- *“Free To Air Satellite Reception Made Easy” – Monitoring Times Magazine, 2/2013*
- *“Monitoring Fishing Buoys” – Monitoring Times Magazine, 6/2013*
- *“Rocket Radio Reminiscences” – Monitoring Times Magazine, 9/2013*
- *“VHF - UHF Monitoring with a TV Dongle, The Spectrum Monitor, 3/2014*
- *“C-Band TV DX on a 6-Foot Dish” – The Spectrum Monitor, 4/2014*
- *“TIS/HAR: Radio on the Road” – The Spectrum Monitor, 6/2014*
- *“An Inexpensive VHF/UHF Spectrum Analyzer” – The Spectrum Monitor, 9/2014*
- *“Shortwave Utility and Amateur Monitoring with a DVB-T Dongle” – The Spectrum Monitor, 1/15*
- *“Self –Made Broadband Receiver” – TeleAudioVision Magazine, Jan/Feb 2015.*





Thank you for  
listening and see  
you in the Clarke  
Belt!

73's de N2HUN