

KU BAND FREE TO AIR (FTA) SATELLITE



Dishes Past and Present



Dish farm ca. 2011



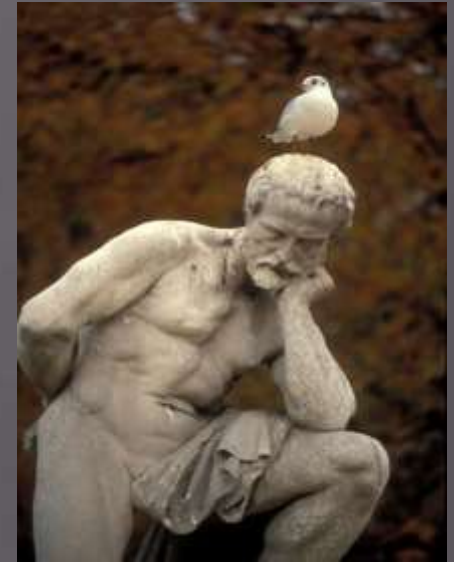
Temporary experimental mount



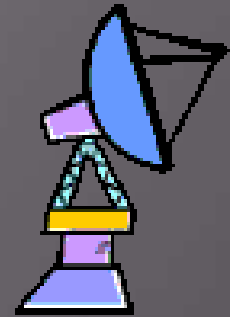
Temporary (satellite fishing) mount

What is FTA Satellite?

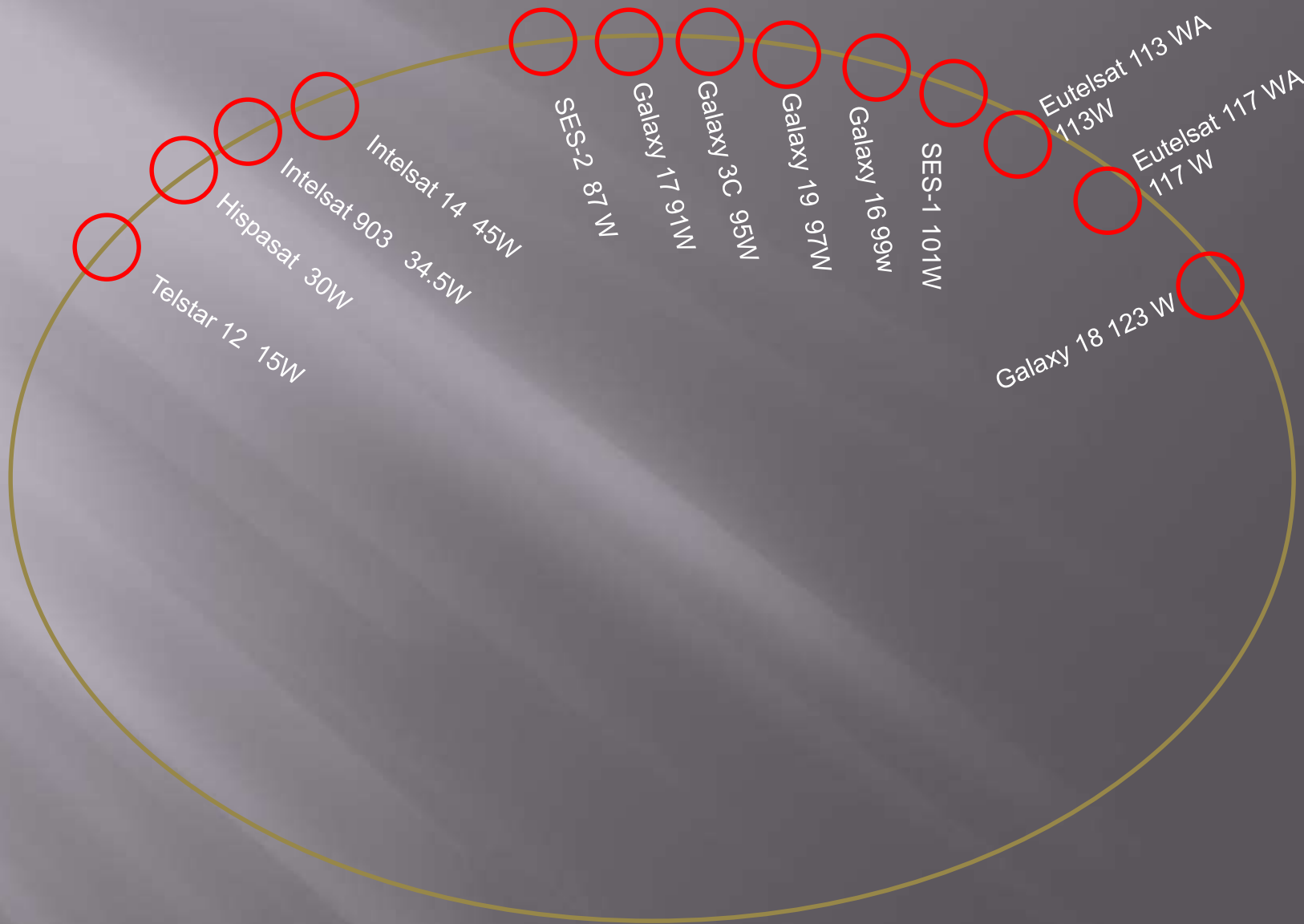
- ▣ Tune into foreign/domestic broadcasts
- ▣ Free (no monthly bills)
- ▣ Perfectly legal
- ▣ Requires dish, rcvr, LNB, TV
- ▣ Programming 24/7
- ▣ Radio + TV broadcasts
- ▣ Use of Ku band satellites in geostationary orbit
- ▣ News, music, sports, religion, education, films, sitcoms, soaps, cartoons,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



Ku FTA Satellites



- ▣ Geostationary satellites
- ▣ Ku band (“Kurtz underband”) 12 – 18 GHz
- ▣ 22, 600mi from earth (Clarke Belt)
- ▣ Each “bird” has it’s own orbital slot (longitude :15 West – 125 West)
- ▣ Each has unique name, e.g. Galaxy 19, Telstar 12 , Eutelsat 113 W AMC-6, Intelsat 14
- ▣ Uplink frequencies: 14 -15 GHz
- ▣ Downlink frequencies: 11.7 – 12.2 GHz
- ▣ Approx. 14 FTA satellites (“birds”) broadcasting TV/Radio
- ▣ Some satellites also xmit subscription satellite programs not accessible via FTA equipment (Biss, Nagra)



Ku FTA Satellite Clarke Belt a /a N2HUN

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, subtitles
- ▣ Most are standard def, more becoming hi def
- ▣ Picture and audio quality similar to domestic TV
- ▣ Subject to rain fade , but snow's not a problem
- ▣ Channel lineup can change, satellite names change, satellites get replaced
- ▣ Some birds carry backhauls (feeds) – live satellite b'casts of newsworthy events, e.g. press conferences, natural disasters, crimes, sports, fires

Reception/Installation Requirements

- Clear path to satellite of interest
- Minimum 30" offset dish
- 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
- Not Plug 'n Play

Clear path to sat of interest

QTH (Ringoes, NJ) Coordinates:
40.5N (Latitude)
74.5 W (Longitude)



Dish, LNB, Coax



Pole Mount



Pallet mount



Standard
satellite dish “J”
mount

Wood pallet
weighted down
with concrete,
bricks as a
temporary mount

Tripod Mount



Make sure it's plumb!



Best one is this type



Level the pallet first!

FTA RCVR, aka STB (Set Top Box)



X Square Premium Mini \$35

AMIKO Mini HD SE \$99

Setup at my QTH

Flat screen TV



FTA STB (buried
amongst spaghetti)

Misc. Satellite Installation Tools



Compass



Portable satellite receiver/meter



Inexpensive, basic meter



Level



Digging tools



RG/6 coax cutters, crimpers



RG6/U (75 Ohms)

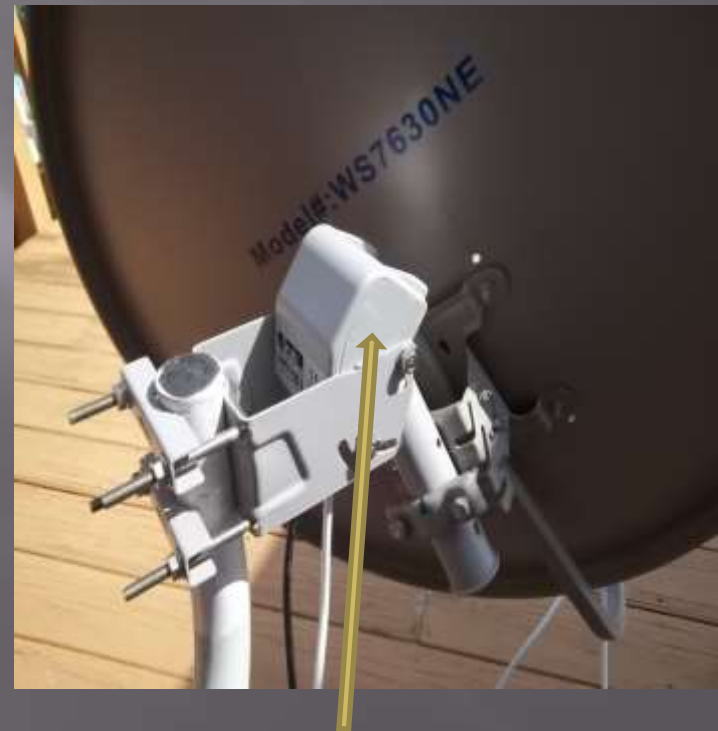
Stationary or Motorized ?

Stationary dish



Not motorized

Motorized (rotatable) dish



Motorized – Stab
Italia 90 H-H
(Horizon-to-Horizon
motor)

Stationary dish with multiple LNBs



Two LNBs for two
different FTA satellites

DiSeQC switch

Cost: Stationary vs. Motorized



- ▣ Stationary packages: \$220 - \$240
- ▣ Motorized packages: \$310 - \$340
- ▣ Cost does not include installation tools or extra lengths of RG/6 coax

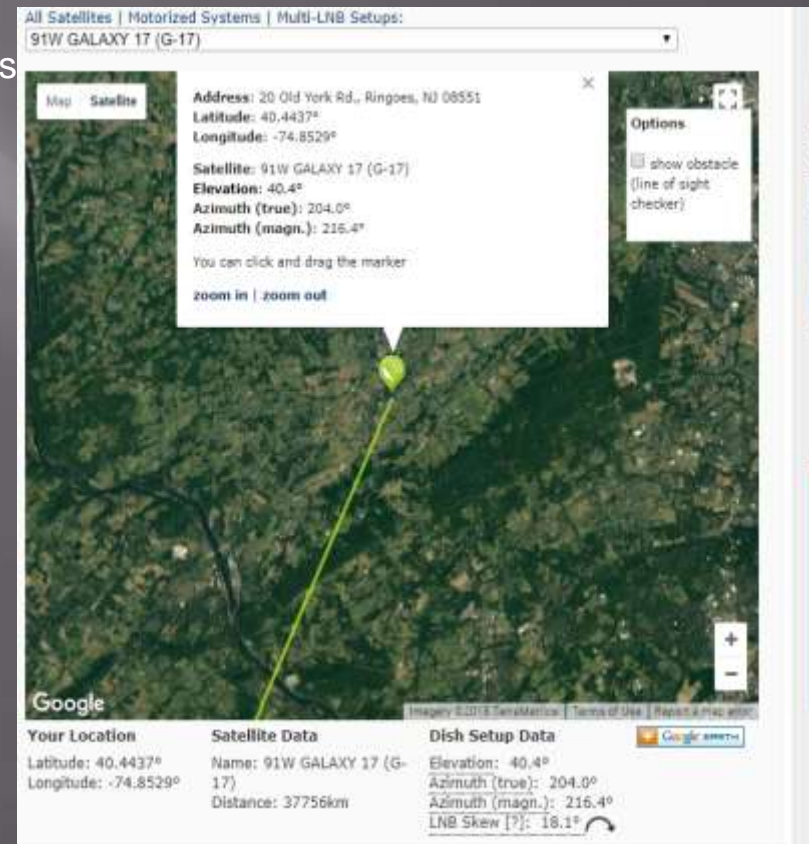
Satellites for FTA (USA)

- ▣ From 15 deg to 123 deg - East to West
 - Telstar 12 (15W)
 - **Hispasat (30W)**
 - Intelsat 903 (34.5W)
 - Intelsat 14 (45W)
 - SES 2 (87W)
 - Galaxy 17 (91W)
 - Galaxy 3C (95W)
 - **Galaxy 19 (97W)**
 - Galaxy 16 (99W)
 - SES 1 (101W)
 - Eutelsat 113 (113W)
 - Galaxy 18 (123W)



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

- Some programs on Smartphones
- Old-school method:
 - Look up you 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

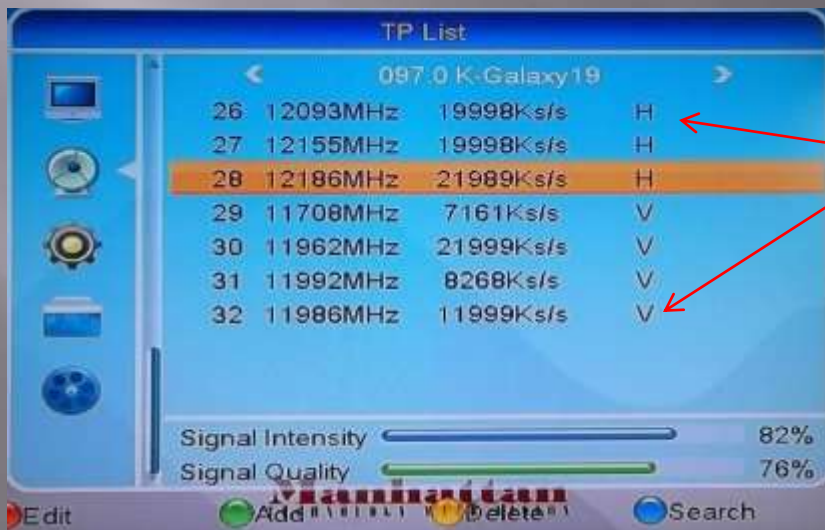
As per satellite look up table for Ringoes: Az = 188.2 deg (magnetic), El = 43 deg, Skew = +5 deg

Adjust dish Azimuth using compass, adjust dish elevation using scale on dish, turn LNB skew using scale on bracket. Move dish slightly up/down, sideways for meter swing.

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



Scanning a Satellite for FTA B'casts



Transponder list of downlink frequencies

A **transponder** receives and transmits radio signals at a specific frequency range. After receiving the signal a **transponder** will at the same time broadcast the signal at a different frequency. The term is a combination of the words transmitter and responder.

Satellite TV/Radio Channels

Satellite	Longitude	TV	Radio
Hispasat	30 W	49	53
SES-2	87W	22	0
Galaxy 17	91W	4 ABC feeds + other feeds	0
Galaxy 3C	95W	7	0
Galaxy 19	97W	175	62

Cuban TV on Hispasat

49 TV stations 59 radio stations

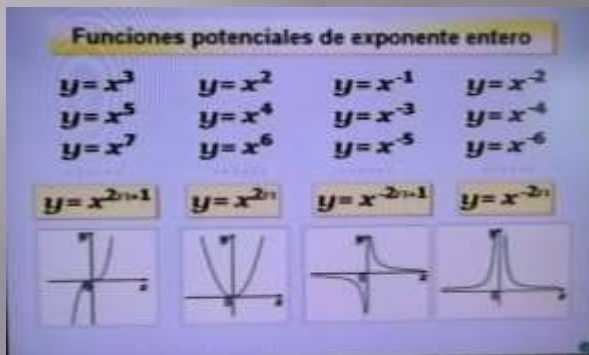
W.Europe, E. Europe, Africa, Middle East,
S. America, Cuba



Cubavisión Station ID, Habana



Cubavisión International, Habana



Educativo, Habana



Senal ACN, Habana



TV Marti – US b'cast to 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

South American TV on Hispasat



Canal 7, Santiago el Estero, Argentina



Tele SUR, Caracas, Venezuela



Canal LUZ Argentina



RBC TV, Lima, Peru

Middle East/Africa TV on Hispasat



Kuwait TV Kiddie Show



Syrian TV Cooking Show



Soccer – Sudan TV



Ethnic Music – Al Iraqia
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

Galaxy 3C 95W – Chinese B'casts



China Central TV - ID



China Global TV – News in Spanish



Phoenix Hong Kong TV



China Central TV Travel Show – Eng. Subtitles



Galaxy 3C Ku satellite data (Ringoos):

Azimuth: 222 deg (magnetic)

Elevation: 39 deg

Skew: 22 deg

Note: Strong signal to East Coast USA.

Galaxy 19 @ 97W - African Coverage

175 TV channels, 62 radio channels



NTA TV - Nigeria



Canal Algérie - Algeria



ORTM - Mali



Canal Algérie - 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!



TVGE – Equatorial Guinea



Addis TV – Ethiopia

Galaxy 19 @ 97W E/W European, Russian Coverage



DUNA World - Hungary



Animation - LRT – Lithuanian TV



TVRI - TV Romania International



TVP – Polonia TV - Poland



AZTV - Azerbaijan



Tele 5 – Poland – Anti-halitosis ad



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 Kuzcuk – 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"

Galaxy 16 99W



Shalom TV Israel



Feed – Air Force One

Texas Lottery Drawing

Drawings are held Monday through Saturday
at 10:30 AM, 12:37 PM, 5:00 PM, and 10:12 PM CST
satellite studios open up 9:30 AM, 12:20 PM, 5:50 PM, and 10:05 PM CST

For satellite coordinate info:
www.elephantproductions.com/coordinates

Live Control Room: 512-872-6759
livecoordinates@elephantproductions.com

TX Lottery Drawing Info

Galaxy 16 99w Ku satellite data (Ringo):

Azimuth: 227 deg (magnetic)

Elevation: 37 deg

Skew: 26 deg

Note: Good for "feeds".

Informational Resources for FTA

- ▣ Publications – The Spectrum Monitor (www.thespectrummonitor.com) , Monitoring Times (back issues at www.monitoringtimes.com), TeleAudioVision magazine (back issues at <http://www.tele-audiovision.com/eng/>)
- ▣ Vendor – www.hypermegasat.com. *Caveat emptor* if buying on EBay.
- ▣ Forums – www.LegalFreeToAir.com, www.SatelliteGuys.us
- ▣ Satellite Location Information – www.Lyngsat.com, vendor websites (e.g. www.sadounsatellite.com)
- ▣ 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



Courtesy of The Spectrum Monitor Magazine



Cuckoo says "Time's Up!"

Thank you for listening and 73's
de N2HUN!

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