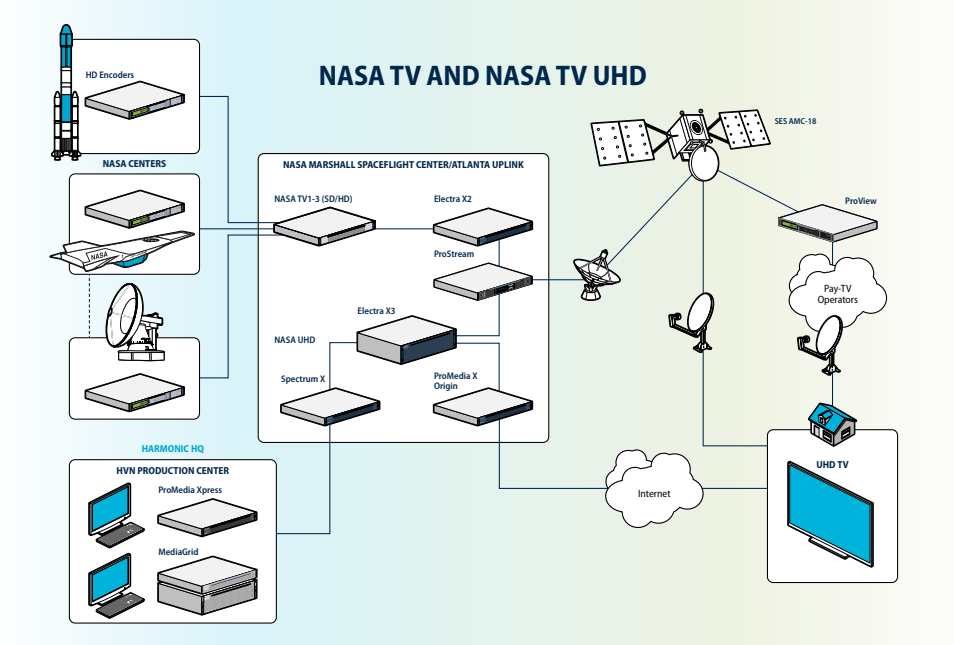


### CHANNEL PARAMETERS

- Uplink Provider: AMC-18C
- Transponder: 3C
- 105 degrees W
- C-band
- Downlink Frequency: 3,760 MHz
- Downlink Polarity: Vertical
- Transmission Format: DVB-S, 4:2:0
- FEC: 3/4
- Data Rate: 38.80 Mbps
- Symbol Rate: 28.0681
- Modulation: QPSK/DVB-S

### UHD PROGRAM = 104

- Compression Format: HEVC @ 13 Mbps
- Video PID: 0x1041 hex/4161 decimal
- MPEG I Layer II Audio PID: 0x1044 hex/4164 decimal
- AAC-LC PID: 0x1045 hex/4165 decimal



NASA TV UHD leverages the latest 4K Ultra HD technology to highlight beautiful imagery from the U.S. space program. Utilizing an end-to-end video delivery system from Harmonic, the channel offers live and linear 2160p60 video content, enabling consumers to enjoy crystal-clear footage on a wide range of television and IP-connected devices.

The NASA TV UHD signal is available on the AMC-18C satellite, with a North American footprint. A Digital Video Broadcast (DVB)-compliant integrated receiver-decoder (IRD) is required for reception.



## MINIMUM REQUIREMENTS FOR VIEWING NASA UHD

|   |  |
|---|--|
| C-Band Satellite Dish   |  |
| DVB-Compliant Satellite Receiver-Decoder (IRD) with IP Output | Harmonic ProView™ 7100 recommended; off-the-shelf units also acceptable<br>Configure the IRD input using the channel parameters listed on page 1<br>Configure the IP multicast and port number for the video output of the IRD |
| HEVC 4K Decoder   | Software or hardware acceptable (see below)  |
| 4K Television Monitor   |  |

## HEVC 4K DECODERS — SOFTWARE

|  |  |
|--|--|
| GPAC Software Decoder                  | Open-source multimedia player with HEVC support, enabling display of 4K HEVC on a PC<br>Download at: <a href="http://gpac.wp.mines-telecom.fr/downloads/gpac-nightly-builds/">http://gpac.wp.mines-telecom.fr/downloads/gpac-nightly-builds/</a> |
| Available Platforms                    | Windows 32-bit, 64-bit<br>Mac OS X 32-bit, 64-bit<br>Linux x86 32-bit, 64-bit<br>Android<br>iOS  |
| Installation Process (Windows Example) | Install the GPAC software<br>Open a Command prompt, then type: <code>cd "C:\Program Files\GPAC"</code><br>Then type: <code>mp4client.exe udp://IP multicast:port#</code><br>Example: <code>mp4client.exe udp://228.1.1.1:9990</code>             |

## HEVC 4K DECODERS — HARDWARE OPTIONS

|                      |  |
|----------------------|--|
| PC HDMI Card Example | ASUS graphics cards GTX970-DCMOC-4GD5 (PC decoder software)<br>Full height<br>HDMI 2.0 |
| Set-Top Box Example  | ViXS Systems X6E-02-GRD2 ViXS (ViXS Golden Decoder)<br>Supports IP multicast & DASH    |

## ONLINE STREAMING

Currently the NASA TV UHD channel can only be viewed via a satellite DVB-compliant IRD. In the near future, we hope to have the NASA UHD channel online and available for your viewing. Please check back with us for updates.

