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.

**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 and NASA TV UHD
### MINIMUM REQUIREMENTS FOR VIEWING NASA UHD

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

### HEVC 4K DECODERS — SOFTWARE

- **GPAC Software Decoder**
  - Open-source multimedia player with HEVC support, enabling display of 4K HEVC on a PC

#### Available Platforms
- Windows 32-bit, 64-bit
- Mac OS X 32-bit, 64-bit
- Linux x86 32-bit, 64-bit
- Android
- iOS

#### Installation Process (Windows Example)
- Install the GPAC software
- Open a Command prompt, then type: cd "C:Program Files\GPAC"
- Then type: mp4client.exe udp://"IP multicast:port#"
- Example: mp4client.exe udp://228.1.1.1:9990

### HEVC 4K DECODERS — HARDWARE OPTIONS

- **PC HDMI Card Example**
  - ASUS graphics cards GTX970-DCMOC-4GD5 (PC decoder software)
  - Full height
  - HDMI 2.0

- **Set-Top Box Example**
  - ViXS Systems X6E-02-GRD2 VIXS (ViXS Golden Decoder)
  - 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 feature, we hope to have the NASA UHD channel online and available for your viewing. Please check back with us for updates.