beoutQ Investigation

Prepared By MarkMonitor

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1. Introduction

MarkMonitor was founded in 1999 and is the global leader in enterprise brand protection. The company offers comprehensive solutions and services that safeguard brands, reputation, and revenue from online risks. With end-to-end solutions that address the growing threats of online fraud, brand abuse, anti-piracy, and unauthorized channels

MarkMonitor Anti-Piracy division was founded in 2004 and provides live anti-piracy solutions for global sports rights holders and broadcasters, MarkMonitor's proficiency is in detecting, investigating and reporting on live audio/visual piracy.

The company's live anti-piracy engineers and analysts have years of experience in using technology to investigate the sources of live television piracy, and in this project worked alongside satellite experts with years of proven expertise and knowledge in their field.

MarkMonitor regularly produce investigative reports into sources of audio/visual piracy and have been the key providers of evidence in several successful high-profile court cases in this area.

2. Instructions

We were instructed to investigate and report on the beoutQ service on behalf of:

- the Asian Football Confederation (**AFC**);
- DFL Deutsche Fußball Liga e.V. (**DFL**);
- Fédération Internationale de Football Association (**FIFA**)
- Football Association Premier League Limited (**PL**);
- Lega Nazionale Professionisti Serie A (**Serie A**);
- Liga Nacional de Fútbol Profesional (**LaLiga**); and
- Union of European Football Associations (**UEFA**),

hereafter to be referred to as 'the claimants'.

The instructions were to conduct an independent technical investigation and analysis of a pirate television service known as 'beoutQ' which has been carrying out broad scale redistribution of copyright material owned by the claimants, without permission.

beoutQ is a collection of pirate channels (currently 10 channels titled beoutQ 1 - 10, the **beoutQ Channels**) available through various means including over the internet (including internet protocol television (IPTV) and direct streaming), DTH satellite and/or branded set-top boxes and/or subscription cards that pirate (or otherwise infringe) content in which the claimants hold valuable intellectual property rights.

Following an initial investigation of a beoutQ branded set-top-box (**BeoutQ STB**) in London, United Kingdom (which had been purchased in Saudi Arabia and sent to the UK for the purpose of this investigation), we found that the box would not perform its initial activation and therefore the channels usually available via the beoutQ STB were not accessible. The beoutQ STB checks for a firmware update via satellite signal in order to activate, and it is not possible for the box to make this connection from the UK. Please see Annex 3 – Satellite Footprints for details of the areas covered by satellite broadcast.

Therefore, the decision was made to conduct the investigation into the beoutQ service from the MENA region, where it was assumed (and later proved) the beoutQ STB would perform and function correctly, allowing the analysis of all aspects of the beoutQ service.

The aim of the investigation is to identify:

- how beoutQ operates from a technical perspective
- how beoutQ compiles and delivers the beoutQ Channels (and any other services available via the STBs) by whatever means (satellite, IPTV or any other service delivery method)
- any and all individuals and entities that are linked to the creation, delivery and broadcast of content contained on the beoutQ Channels

3. Executive Summary

The purpose of this section is to provide a high-level summary of the findings and conclusions of our investigation, as further set out in this report.

In providing this summary, it should be noted that the each of the:

- methodologies; and
- the manners of testing,

used in our investigations are widely recognised in the industry as being reliable.

Our investigation has, in our professional opinion, conclusively determined that:

1. The beoutQ pirate service pirates copyrighted content owned by the claimants. Specifically, the beoutQ pirate service does this through providing unauthorised and re-branded re-streams of copyrighted content owned by the claimants. Please see section 5 of the report for further details.

2. The beoutQ pirate service is available over satellite and internet transmission as follows:

    a) it is transmitted over orbital positions operated by ArabSat. Specifically, the beoutQ 'Live Sports' satellite service is transmitted on the BADR constellation satellites (BADR 4, 5 and 6) at 26° East. The transmission occurs over the following frequencies:

        i. carrier with center frequency 11,270 MHz horizontal polarization (33 MHz bandwidth), which carries the video component; and

        ii. carrier with center frequency 11,919 MHz horizontal polarization (33 MHz bandwidth), which carries the signalization necessary for the set-top box to decode the video channel.

    Please see section 5 of the report for further details; and

b) it is available to stream via IPTV applications which are available on the beoutQ app store, and which are viewed via the beoutQ set-top box. Specifically, there are third party applications and providers that also provide the beoutQ pirate service in applications available for download from the native beoutQ store. In this regard, our investigation has identified one such third party which appears to be based or otherwise connected with the KSA - EDVTV. Please see section 6 of the report for further details.

3. Is regionally targeted to the Middle East and, in particular, KSA. Specifically, the hardware and software in the beoutQ STB's has been designed and operates in such a way so as to make the beoutQ Channels available primarily in the KSA through sophisticated geo-fencing and virtual private networks technology. To simplify, the beoutQ STB's are specifically designed to block people from outside the Middle East region gaining access to the beoutQ Channels, and to enable people inside the region to gain access to the beoutQ Channels.

The results of our investigation strongly support the conclusion that the beoutQ pirate service is:

1. a highly technically sophisticated and organised operation; and

2. regionally targeted to the Middle East and, in particular, KSA.

In our experience, piracy operations are not often as technically sophisticated as beoutQ (which is demonstrated by the comparative lack of sophistication of the third-party applications available in the beoutQ App Store).

4. Materials Reviewed – Overview

Following a detailed unboxing of the beoutQ STB, and an analysis of the components used to create the box, we have found the following:

- The beoutQ STB is a DreamMax B9S2X Android box, produced in China
- The beoutQ product comes with all necessary components for the user to be able to use the box immediately (power supply, remote control, HDMI cable, instruction booklet)
- The instructions provide a clear set-up guide including a diagram, and the process for the first boot up of the device
- Inside the box, the circuit board is easily accessible, and contains the following chips:
    - 2 RAM chips
    - A NAND flash-memory chip
    - An ethernet signal transformer
    - A DVB receiver chip
    - An Amlogic chip
- One of the chips is produced in South Korea, while the circuit board was assembled in China

The native beoutQ app store, which is included in the beoutQ firmware on the beoutQ STB, was investigated. The app store contains 3rd-party streaming and IPTV applications (**"apps"**), which can be downloaded directly from the beoutQ app store, installed on the beoutQ set-top box, and at the time of the investigation there were 25 individual apps available via the app store. The full details of these 25 apps can be found in Annex 4.

While the apps all appear to be third-party, and not directly linked to the beoutQ service, they are hosted on the beoutQ app store, which is controlled and moderated by beoutQ (evidenced by the data packet capture when the user selects the App Store from the main menu on the beoutQ STB (details can be found in the App Store Investigation section, below). Therefore, beoutQ have made the decision to include the potential use of these apps on their platform in order to provide their users with an alternative means of illegally accessing the claimants' content, along with thousands of other global television channels.

Prior to the investigation, research led us to believe that three IPTV apps currently available on the beoutQ app store were providing unauthorised streams of the claimants' content. These three apps are:

- EVDTV (also known as HAY IPTV)
- IUDTV
- RED IPTV

Subscriptions to these three IPTV services were purchased, and the services were investigated for infringing content. Details of the investigation can be found in the IPTV Investigation sections of this report.

While our initial investigations concentrated on the above 3 applications, we understand that other apps available via the native beoutQ app store also provide access to copyright materials without authorisation.

5. Satellite Investigation – Overview

The aim of the investigation into the satellite component of the beoutQ service is to establish the satellite platform which carries the beoutQ signal, which we have subsequently verified is transmitted by carriers at the 26.0 East orbital position (see below).

In order to accurately carry out this investigation, an antenna capable of receiving the signal from 26 degrees East was set up in the MENA region. A professional satellite receiver was then used to lock on to the permanent signal carriers received, and a spectrum analyser was used to display the reception spectrum. Finally, a transport stream analyser was used to inspect the data content of each transport stream and correlate it with the public information available.

The transport stream analyser showed that two of the carriers were transmitting transport streams which did not comply with the DVB industry standard, and the two carriers' parameters matched exactly with details available publicly which list the carriers as being beoutQ carriers.

The spectrum analyzer allowed us to identify which polarization and frequency band was selected by the beoutQ box at any moment in time. This allowed us to identify that the beoutQ HD Sport Channels application was using only the horizontal polarization low frequency band, switching for a moment to the horizontal band high band when the beoutQ application was launched. It was proved as well that the beoutQ box, once that the HD Sport Channels application was launched, was working correctly if fed only with the horizontal low polarization.

To explain this in more detail: Two separate satellite signals can be transmitted at the same frequency but on different polarizations. This concept is known as frequency re-use orthogonal

polarization[1]. When a linear polarization takes place, an electric-field vector oscillates in the vertical or horizontal plane.

Most common satellites cover Ku-Band downlink frequencies in the range 10.70-12.75 GHz. A Low-noise block converter (LNB) is a device mounted on the feed at the focus of the parabolic dish antenna, that collect all the incoming signals from a given polarization, amplify them and down-convert the block of frequencies to lower intermediate frequencies (L-Band). This down-conversion is necessary for two main reasons: (i) permits reduction of losses in the co-axial cable between the antenna and the receiver, (ii) permits to reduce complexity and costs of the receiver.

A Universal LNB has a switchable local oscillator frequency of 9.75/10.60 GHz to provide two modes of operation: low band reception (10.70–11.70 GHz) and high band reception (11.70–12.75 GHz). The local oscillator frequency is switched in response to a 22 kHz tone from the connected receiver. The 22 kHz tone is superimposed with the supply voltage (13V or 18V), also supplied from the connected receiver, that enables the LNB to switch between the two different polarizations. This technology enables a Universal LNB to receive both polarizations (Vertical and Horizontal) and the full range of frequencies in the satellite Ku-band under the control of the satellite receiver, with the following combinations[2]:

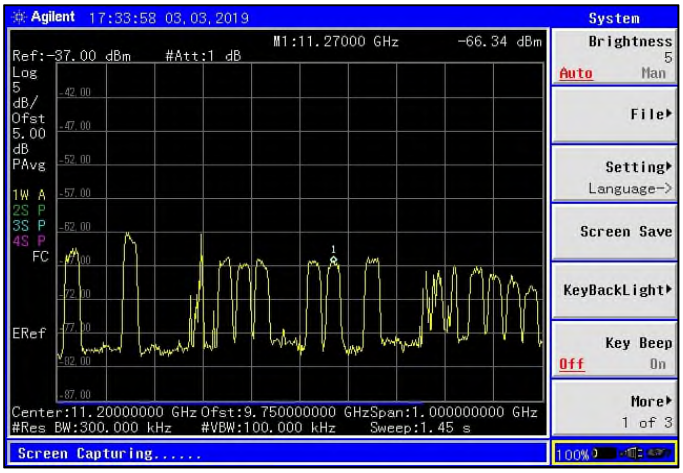
Supply		Block		Local oscillator frequency	Intermediate freq. range
Voltage	Tone	Polarization	Frequency band		
13 V	0 kHz	Vertical	10.70–11.70 GHz, low	9.75 GHz	950–1,950 MHz
18 V	0 kHz	Horizontal	10.70–11.70 GHz, low	9.75 GHz	950–1,950 MHz
13 V	22 kHz	Vertical	11.70–12.75 GHz, high	10.60 GHz	1,100–2,150 MHz
18 V	22 kHz	Horizontal	11.70–12.75 GHz, high	10.60 GHz	1,100–2,150 MHz

The spectrum analyzer used in our analysis allowed us to identify which polarization and frequency band was selected by the beoutQ box at any moment in time. This allowed us to identify that the beoutQ HD Sport Channels application was using only the horizontal polarization low frequency band, switching for a moment to the horizontal band high band when the beoutQ application was launched. It was proved as well that the beoutQ box, once that the HD Sport Channels application was launched, was working correctly if fed only with the horizontal low polarization.

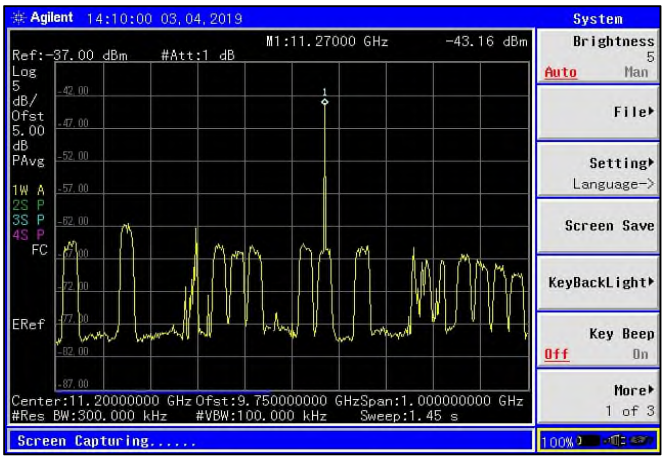
A local interference was created with a DVB-S/S2 modulator and combined with the satellite reception to the input of the beoutQ box, allowing to interfere and suppress each individual carrier received. The interference was then applied to each carrier on the horizontal polarization low band. It was then found that the carrier at 11,270 MHz horizontal was carrying the beoutQ video signal.

The spectrum analyser showed the suspected beoutQ signal before interference was created, which can be seen marked with a green dot:

[1] Paragraph 5.2.3 Satellite Communications Systems – Maral Bousquet – 5th Edition
[2] https://en.wikipedia.org/wiki/Low-noise_block_downconverter

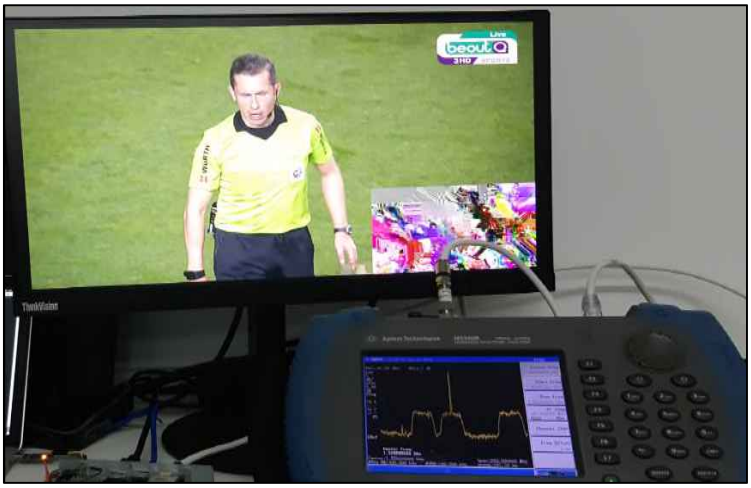


The spectrum analyser then showed the signal with the interference added, which can be seen as a large spike on top of the existing signal:



As a result of this local interference on this specific signal, the beoutQ broadcast, which was displayed on a monitor via an HDMI cable, showed clear visual evidence of disruption, by way of large artifacts appearing on the screen and the broadcast stuttering and freezing.

An example of this can be seen in the following picture, which shows the spectrum analyser instrument displaying the beoutQ signal with the added local interference showing as a spike on top of this. The effect of this interference on the beoutQ video signal can clearly be seen on the monitor, which shows a section of the screen being affected by an artifact:



A professional antenna of 4.9m in size was set up in the MENA region, able to discriminate between the orbital positions 26 degrees East and 25.5 degrees East. During the tests, this antenna was pointed to both orbital positions, able to identify from which orbital each carrier was transmitted. The carrier at 11,270 MHz horizontal polarization was then found to be transmitted from 26 degrees East.

The tests described above were repeated during the broadcast of live content owned by the Premier League, UEFA, DFL and La Liga via the beoutQ service. The signal frequency that transmitted the live video did not change during the duration of the investigation and remained at 11,270 MHz horizontal polarization.

The tests, including the creation of local interference on the beoutQ signal, resulted in the same disruption of the broadcast by means of clear artefacts appearing on the screen. These results show that the beoutQ HD Sports channels are being transmitted from the geostationary position of 26.0 East, which is operated by Arabsat.

A second carrier, carrying signaling content for the beoutQ box, was found at 11,919 MHz horizontal polarization, transmitted as well from 26 degrees East. This is also operated by Arabsat.

The details of the satellite investigation are shown in Section 9.

6. IPTV investigation – Overview

As described in the Material reviewed – overview section, the focus of the IPTV investigation were three IPTV apps, which were available to download from the beoutQ app store:

- EVDTV (also known as HAY IPTV)
- IUDTV
- RED IPTV

The apps are available to download for free from the beoutQ app store, but all require a paid subscription to access any content once the app has been downloaded.

- EVDTV currently offers 3952 live TV channels
- IUDTV currently offers 2031 live TV channels
- RED IPTV currently offers 3200 live TV channels

Live football is available to subscribers through all three IPTV apps via means of rebroadcasted transmission by beIN Sports, Sky Sports and other global television networks who legitimately own the rights to broadcast the copyright content and other intellectual property rights owned by the claimants. Also, the IUDTV service also provides the 10 beoutQ channels, as well as beIN Sports, Sky Sports and other networks.

To carry out the investigation, subscriptions were purchased for all three IPTV apps, and these were activated in the MENA region on several beoutQ boxes (all of which were purchased from retailers in KSA).

SSL certificates were inserted by us into the beoutQ set-top boxes' firmware in order for data packets to be captured and recorded. The data within these packet captures included the IP addresses of the source streams of the unauthorised content, as well as any processes that take place during the activation or running of the IPTV app service, such as the details of any authentication processes that take place to allow (or not allow) the user access.

Packet captures were taken during live broadcasts of football matches owned by the following claimants: The Premier League, UEFA, DFL and La Liga during the period between February 28th and March 6th, 2019.

Once the data packets had been captured and the contents analysed, we can see that the following ISPs were being used to deliver the unauthorised streams:

IPTV service	ISP name	IP address location
EVDTV	Worldstream B.V.	Netherlands
	CDN77	France
IUDTV	Worldstream B.V.	Netherlands
RED IPTV	CDN77	Netherlands & Czech Republic

No direct link was found between the three IPTV apps investigated and the beoutQ service, but as previously noted, the IPTV apps have been proved to provide access to unauthorised copyrighted content owned by the claimants, and the hosting of these IPTV apps on the beoutQ app store, which is controlled and maintained solely by beoutQ, shows a deliberate action by beoutQ to include these

illegal IPTV services to be part of the beoutQ package as a whole. We verified that the beoutQ app store is controlled and maintained solely by beoutQ by the information contained in the data captured in the data packets when the user selects the beoutQ App Store from the main menu on the beoutQ box. To access the beoutQ App Store, an X-API Key Token is submitted, and without this token, access to the App Store is denied, The X-API Key Token is generated by the beoutQ set-top box, hard-coded inside the Droid_Store_v2.0.0.8 app which is found in the Private folder of the box's system.

Therefore, whilst not delivering the content via these IPTV apps themselves, beoutQ is complicit in the illegal streaming of the claimants' content via these apps (as they can only be available in the beoutQ app store if allowed by beoutQ).

7. Overall Conclusions

Based on the above investigation, we have discovered that the beoutQ service, provided via the bespoke beoutQ hybrid set-top box, is being sold with the sole intention of supplying unauthorised and rebranded audio/visual content via two methods:

(1) The beoutQ satellite app provides live copyrighted content belonging to the claimants, rebranded with beoutQ logos and overlays, by way of a satellite transmission which is received by a subscriber's local satellite dish and decoded by the beoutQ set-top box. The investigation has shown without any doubt that the satellite signal which carries all of the beoutQ television channels is being transmitted by the ArabSat satellite at 26 East.

As described in the methodology, the satellite carrier signal being transmitted from 26 East was interfered with at a local level, which resulted in picture disruption on all beoutQ channels, proving that the beoutQ video signal is being transmitted on this carrier signal.

(2) The beoutQ service also allows the use of IPTV (Internet Protocol Television) services on the beoutQ set-top box as an alternative method of receiving unauthorised audio/visual content owned by the claimants. The beoutQ service did have its own IPTV app, seemingly created by and operated by beoutQ, but this is no longer available to download and install on the beoutQ set-top box. However, several other third-party IPTV apps are available from the beoutQ app store. These IPTV apps require a separate subscription to access the television content and provide access to over 3000 global television channels.

One of the most prominent IPTV services available on the beoutQ app store, EVDTV, is based in Riyadh, Saudi Arabia, and appeared in place of the World TV IPTV app, which was installed as part of the original beoutQ firmware. The location of EVDTV is found in the 'Contact Us' section of the service's website, universeiptvs.com.

8. Material Reviewed - Detail

The beoutQ Set-Top box

For the investigation, several identical beoutQ set-top boxes were purchased from Saudi Arabia, and as part of the analysis, a detailed look at the boxes themselves was undertaken.

The beoutQ STB's were purchased as follows:

In respect of Al Anzi Electronics, on Thursday, 30 August 2018 and 17:00 (Riyadh time) and 31 October 2018. Photographs of the locations and the items purchased are provided at the relevant exhibits;[1] and

In respect of Malek Electronics, on 20 February 2019 and 6 March 2019. Copies of the receipts for the purchases identifying that beoutQ STBs and activation cards were purchased are provided at the relevant exhibits.[2]

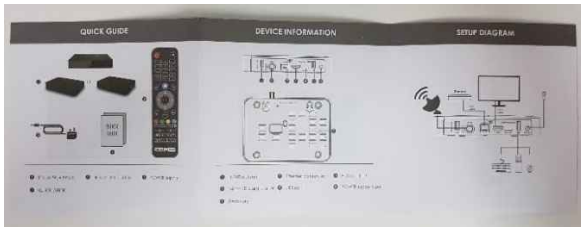
Unboxing

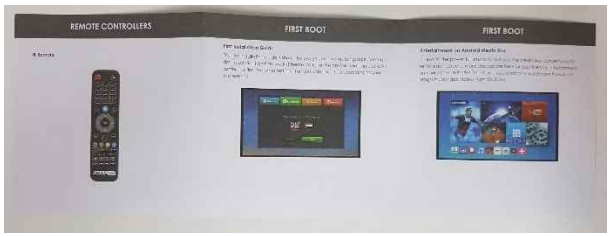
The following sequence details the initial unboxing of a new beoutQ set-top box, followed by an investigation inside the set-top box.

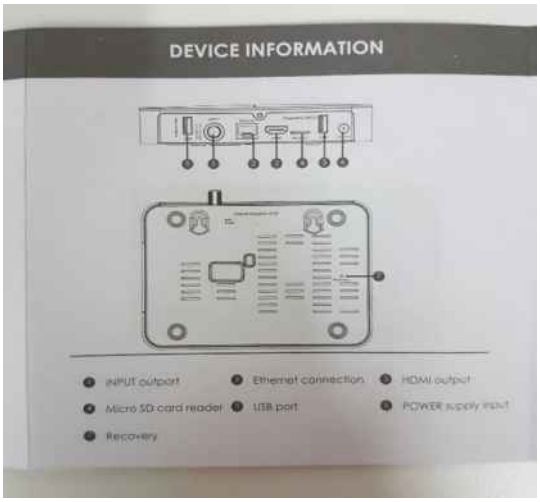
The cardboard packaging has an external sticker, which provides the Serial Number of the box, and the MAC address. Inside the packaging are the following items:

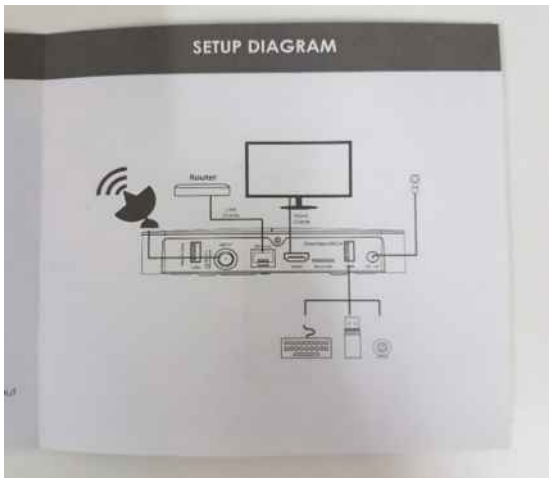
- The beoutQ set-top box
- beoutQ-branded remote control
- Instruction leaflet in English
- HDMI cable
- DC 12V power adapter plug

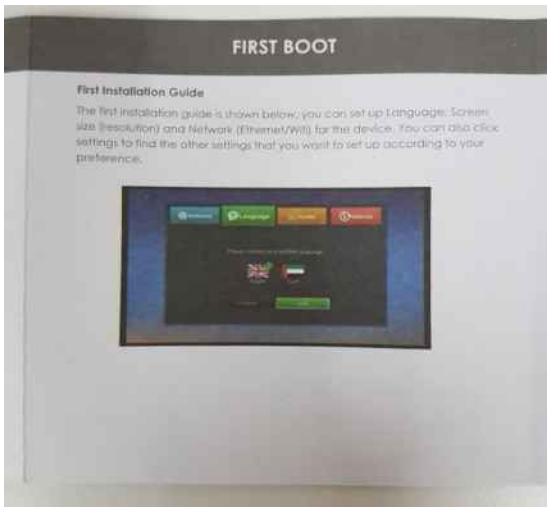
The instruction booklet detail:











Notes on the 'Quick Guide' instruction booklet

The instructions note the set-top box model as being a DreamMax B9S2X.

The device is shown to have:

- A Satellite signal input connector

- An Ethernet connection port
- A HDMI output port
- A Micro SD card reader
- A USB port
- A power supply input
- A recovery/reset button

The 'Setup Diagram' shows the user how to set up the set-top box in order to receive the beoutQ service:

- Satellite signal into the connector port via a coaxial cable
- Connection to an internet router via a LAN cable into the Ethernet connection port
- Connection to a TV/monitor via a HDMI cable into the HDMI port
- External devices can be connected via the USB port (for example, keyboard, USB drive, webcam)
- Power supply via the DC 12V power adapter into the power supply input on the set-top box

The two 'First Boot' pages in the instructions describe to the user the process for booting up the beoutQ set-top box for the first time:

- 'First Installation Guide' instructs the user on how to set the language, screen size (resolution), and network (ethernet or Wi-Fi)
- 'Entertainment on Android Media Box' describes how the beoutQ set-top box converts the user's television into a smart television, by providing access to the full Android platform

The Set-Top Box

The underside of the beoutQ set-top box carries a description of the box as a 'Hybrid Satellite STB' and also has a sticker which shows the Serial Number and MAC address of the set-top box, which match the details on the sticker on the cardboard packaging.

We understand the term 'hybrid' to refer to the set-top box's capability to deliver content received from satellite transmissions and internet protocol transmissions.

The back of the set-top box contains the connections and inputs as described in the instruction leaflet:

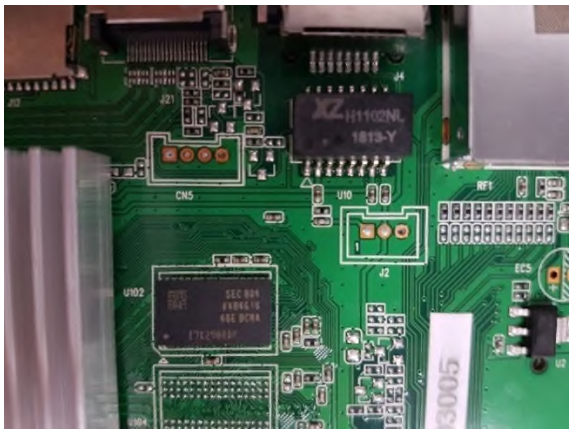
- A USB port
- A Coaxial INPUT out port
- An Ethernet connection port
- A HDMI output port
- A Micro SD card reader
- A second USB port
- A power supply input (DC 12V)

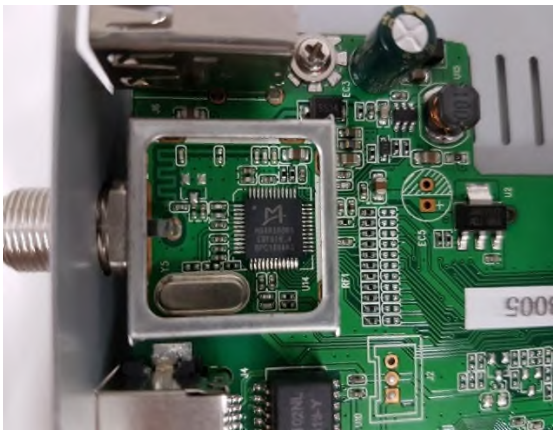
The back of the set-top box states that the box was produced in China, and that the make and model of the box is the DreamMax B9S2X, as was described in the instructions.

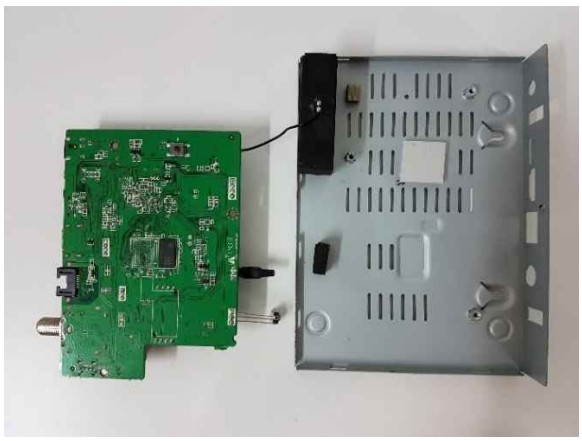
Inside the Set-Top Box

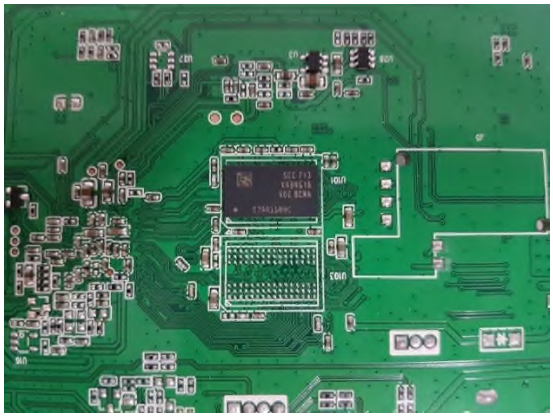
The black plastic housing can be removed by removing a single small screw on the back of the set-top box, allowing the housing to unclip from the metal base.

When the black plastic housing is removed, the circuit board of the set-top box is accessible.









The following chips are used:

Board location - U101

Chip type - RAM (1Gb)

Code - SEC 713 - K4B4G16 - 4GE BCMA E7AA110HC

Board location – U102

Chip Type – RAM (1Gb)

Code - SEC 804 - K4B4G16 - 4GE BCMA E7K290ADP

Board location - U6

Chip type - eMMC NAND flash memory - 4GB density, 1ynm 32GB NAND

Code - H26M41204HPR e-NAND 805A

Other details - Produced by SK Hynix – South Korean producer of chips

Board location - U10

Chip type - Ethernet signal transformer

Code - “XZ” H1102NL 1813-Y

Board location - U14

Chip type - Single-chip DVB-S2X Receiver, containing a digital demodulator and a channel decoder

Code - “M” M88RS6060 EBF016.4

Amlogic

SS5B7BA_ME003

BOARD serial no.

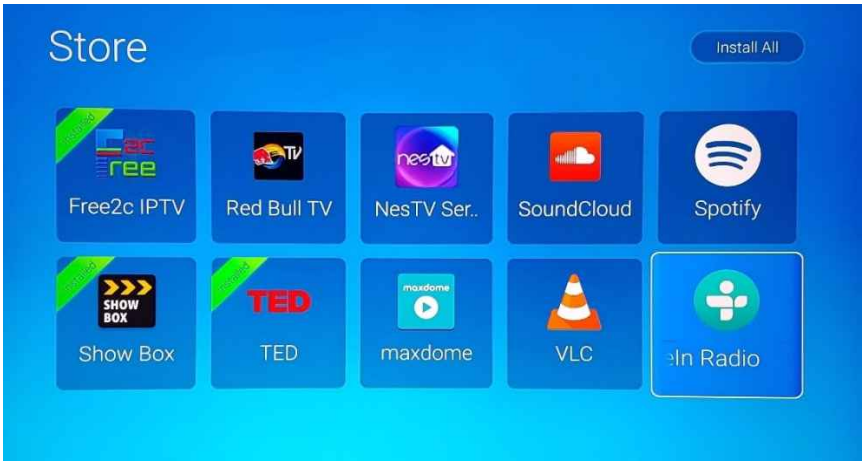
MB.163.03

201708.20

The beoutQ App Store

In order to be able to view television broadcasts via IPTV, a beoutQ customer will need to download a compliant IPTV app from the beoutQ app store, and then purchase a subscription for that IPTV service.

The beoutQ app store is accessed via the main menu on the beoutQ set-top box.



Research prior to the investigation told us that two apps currently available in the beoutQ App Store – EVDTV and IUDTV – were carrying beoutQ and/or beIN Sports channels. Also, a third app, RED IPTV, possibly carried this content. A full list of apps available at the time of the investigation from the beoutQ app store can be found in Annex 4, along with a brief explanation of each app.

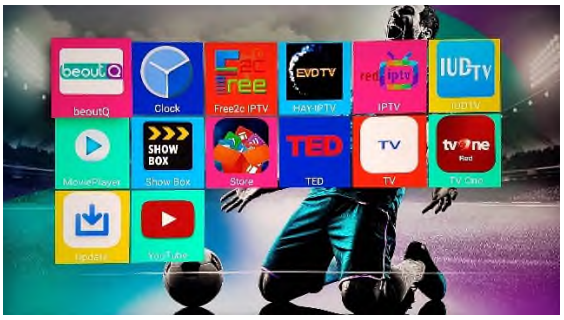
Data from packet captures obtained during this investigation show that the location of the applications is me003.com, which is an Amazon load balancer. The directory and all APKs for the apps available in the beoutQ app store are at this location, and the APKs are retrieved from here when the user selects an app to download and install onto their beoutQ set-top box.

From our initial investigation in London, we saw that the beoutQ set-top box contacted the same location (cdn.me003.com) to retrieve and download a beoutQ firmware update file (which was 136mb). This tells us that the firmware updates for the beoutQ set-top box and the APK files (and directory) for the beoutQ app store are stored in the same location, at me003.com, which is owned by Amazon.

The following information will show which beoutQ channels / channels carrying broadcasts of the claimants' matches, such as Sky TV, BT Sport, beIN Sports (**"Relevant Broadcasters"**), are available via each of the three IPTV apps analysed and will also provide screenshots of the channels.

EVDTV

The user's path to the app and content is as follows:



At the time of the investigation, EVDTV hosted 3952 live TV channels

The list of channels is split into several sub-categories - by country or genre:

The following channels are available via the EVDTV, which carry the claimants' content:

All UK Sky Sports channels

All UK BT Sport channels

Sky Sport 1-4 Germany

Sky Sport Italy

53 beIN Sports channels

Movistar Spain

Viasat

At the time of our investigation, no beoutQ channels are available via the EVDTV IPTV app.

Screenshots of live broadcasts of the claimants' copyrighted content via the EVDTV IPTV service can be found in Annex 5.

The following details have been established for the EVDTV IPTV service:

The APK (Android Package Kit) for this IPTV app is currently available to download from the beoutQ app store and is also available to download for other Android devices from the Google Play store.

Website: http://universeiptvs.com/

Company: KingSatIPTV

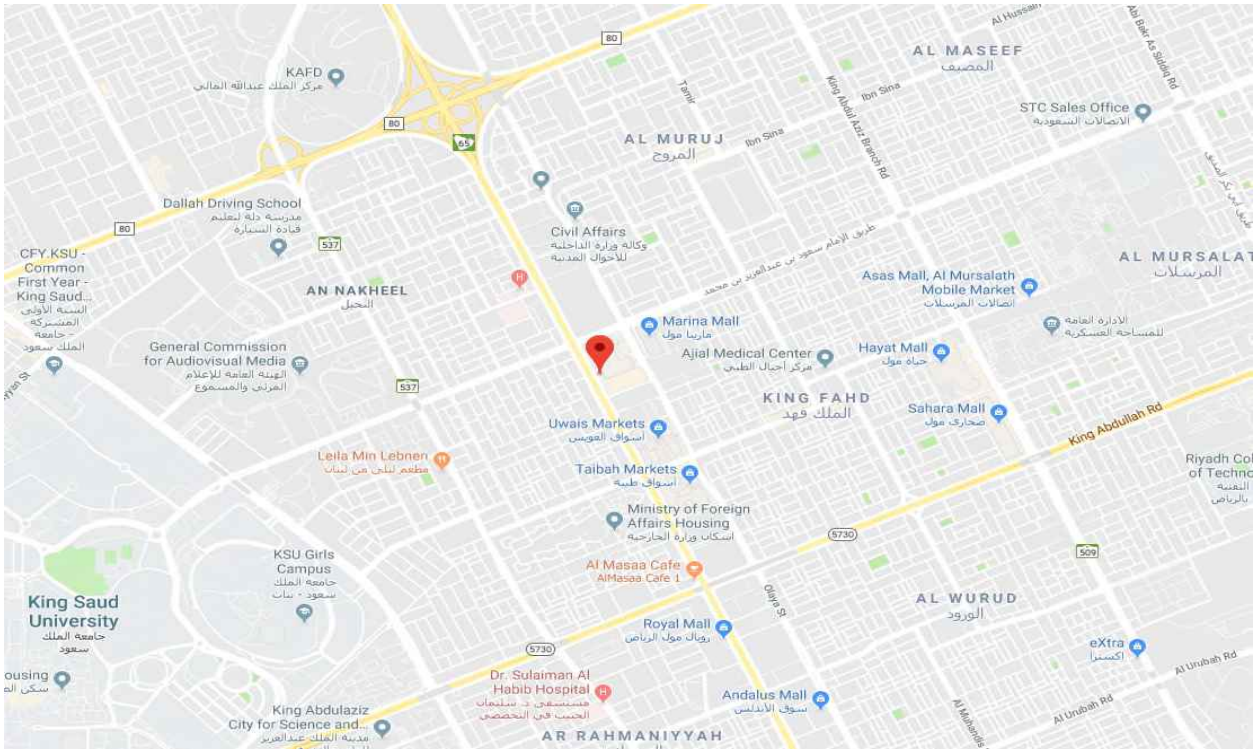
Website e-commerce provider: www.plazathemes.com

Tel/WhatsApp: +966 576 957 239

Twitter: @universeiptvcom

Facebook: https://www.facebook.com/KingSatIPTV/

Location:
https://www.google.com/maps/place/24%C2%B044'32.2%22N+46%C2%B039'26.3%22E/@24.742285,46.6551113,17z/data=!3m1!4b1!4m5!3m4!1s0x0:0x0!8m2!3d24.742285!4d46.6573?hl=en

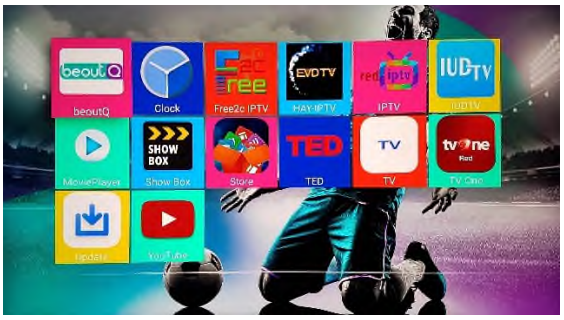


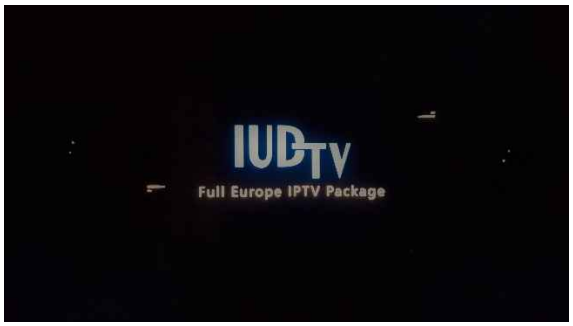
Riyadh, Saudi Arabia

The contact information set out above was obtained by searching for the EVDTV IPTV service via Google. The EVDTV app was found to be available on the Google Play store for Android devices. In order to distribute an app via Google Play, a developer must have an account, and the account which is providing the EVDTV IPTV app (KingSat IPTV) provides their web address in the contact details (universeiptvs.com). This website then provides further contact details, including the telephone/Whatsapp number, social media accounts, and their purported location (all of which are numbers / locations based in KSA).

IUDTV

The user's path to the app and content is as follows:





The list of channels in the IUDTV IPTV app is categorised by country. The app has a separate category comprising of 54 beIN channels and 10 beoutQ channels. These are a mixture of sport and entertainment channels. Please note that although 10 beoutQ channels are listed as 'beoutQ Sport', the actual channels rebroadcasted is the corresponding Bein Sports channel (e.g. the channel listed as 'beoutQ Sport 1 HD' shows Bein Sports 1 content, with Bein Sports branding, These are not retransmitted beoutQ satellite broadcasts. Screenshots depicting this can be found in Annex 5).

Also available via the IUDTV IPTV service are the following channels which carry the claimants' content:

All UK Sky Sports channels

All UK BT Sport channels

Sky Sport 1-4 Germany

Sky Sport Italy

Movistar Spain

Viasat

Screenshots of live broadcasts of the claimants' copyrighted content via the IUDTV IPTV service can be found in Annex 5.

The following details have been established for the IUDTV IPTV service:

The IUDTV IPTV app is available via the beoutQ app store but is not hosted on the Android Google Play Store. The APK (android package kit, i.e. the file used to distribute and install the app) is available to download from several sites, including:

- Leadcool.net (https://www.leadcool.net/download/)
  - A Chinese provider of IPTV set-top boxes, whose site also hosts app downloads for several IPTV services
  - The site is hosted on US based servers at Cloudflare (contact: registrar-abuse@cloudflare.com)
- APKintvbox.com (https://www.apkintvbox.com/download/iudtv-apk-download/)
  - A China-based reseller for multiple IPTV services
  - E-mail: info@apkintvox.com
  - WhatsApp: +86 176 8876 8267
  - The site registrant is based in Sichuan, China
  - The site is hosted on Hong Kong-based servers at HKDNS (contact: abuse@hkdns.hk)

Activation codes for IUDTV are available from several e-commerce websites, including AliExpress:

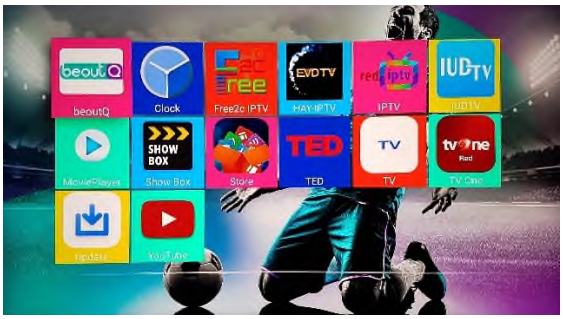
https://www.aliexpress.com/item/QHDTV-IUDTV-SUBTV-1-Year-Subscription-NEOTV-PRO-H-265-HD-French-Arabic-Sweden-Dutch-IPTV/32858265129.html

Twitter: @iudtvIPTV (account currently suspended at time of writing)

Unlike EVDTV, we were unable to locate any further detail on the IUDTV IPTV service, as we could not find a website directly linked to the service, only the third-party websites which are selling the service.

RED IPTV

The user's path to the app and content is as follows:



The list of channels in the RED IPTV app is categorised by country. There is a separate category comprising of 36 beIN channels and 1 beoutQ channel, namely beoutQ Sports 1 HD. At the time of the investigation, the other beoutQ channels which are available via the beoutQ satellite app (channels 2 – 10) are not available via the RED IPTV service.

Also available via this IPTV service are the following channels which carry the claimants' content:

All UK Sky Sports channels

All UK BT Sport channels

Sky Sport 1-4 Germany

Sky Sport Italy

Movistar Spain

Viasat

Screenshots of live broadcasts of the claimants' copyrighted content via this IPTV service can be found in Annex 5.

The following details have been established for the IUDTV IPTV service:

The RED IPTV apk/app is available to download for Android devices from the Google Play store:
https://play.google.com/store/apps/details?id=com.nathnetwork.ptvred

RED IPTV website: http://vp-forum.com/
Contact email: denon@606mail.com

Facebook: https://www.facebook.com/pages/category/Community/Red-IPTV-225642227965893/

Unlike EVDTV, we were unable to locate any further detail on the RED IPTV service, as the website linked to the service provided limited contact details.

9. Satellite Investigation – Detail

TIMEFRAME OF TESTS

The described test was performed between February 28th and March 6th, 2019.

The conclusions and data of this satellite analysis have been made based on the information gathered during this period. beoutQ frequencies and configuration might be subject to change in the future to prevent anti-piracy efforts.

METHODOLOGY

Search for beoutQ frequencies

Public information available online displays the frequencies and carriers operated by the beoutQ platform at 26 degrees East. The first step of the methodology was to confirm the accuracy of this information with a satellite reception test.

A 1.2 m Ku-Band reception antenna was set up in the Middle East region, pointed towards 26 degrees East. The antenna was able to receive both polarizations (vertical and horizontal) and both Ku-Band reception bands (low band, 10.7-11.7 GHz; high band, 11.7-12.75 GHz).

Detailed research was carried out by locking a professional satellite receiver on each of the permanent carriers on both polarizations and frequency bands. A spectrum analyzer was used to correlate the reception with the public information describing the satellite packages available. Finally, the transport stream carried by each signal was inspected by a transport stream analyzer, therefore obtaining a list of the services available on each carrier, which is provided in Annex 2.

The TS analyzer showed that two of the inspected carriers contained transport streams which were non-compliant with the DVB standard. These matched with two of the beoutQ carriers listed online[3], which are shown next. The analysis of the services of all other carriers showed no reference to beoutQ.

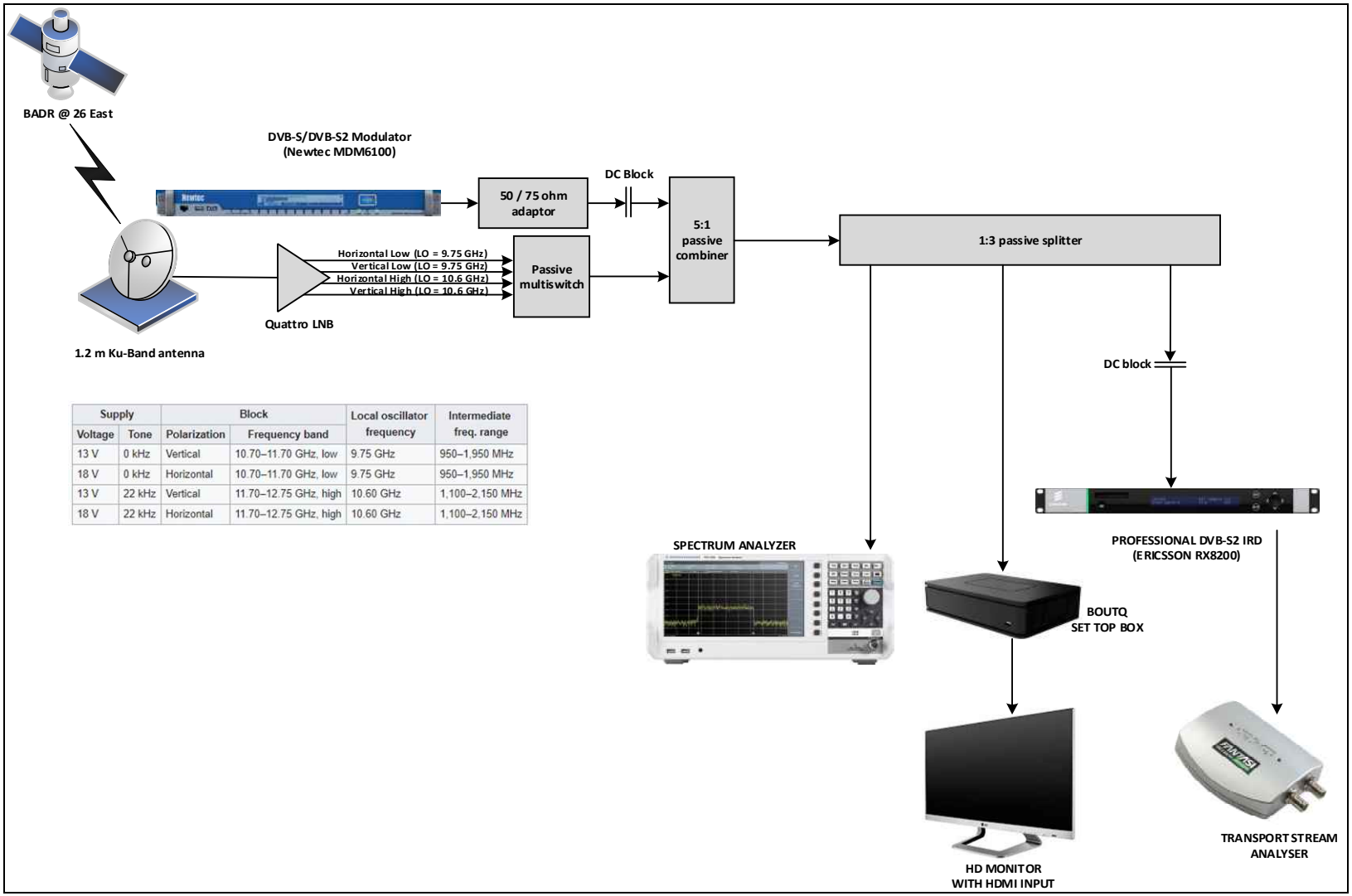
11270 H DVB-S2/8PSK HEVC	27500 5/6	**beOut Q Package**				BISS	Badr-7 East MENA 42-51 dBW
		beOut Q Sports 1 HD				HEVC/HD	
		beOut Q Sports 2 HD				HEVC/HD	
		beOut Q Sports 3 HD				HEVC/HD	
		beOut Q Sports 4 HD				HEVC/HD	
		beOut Q Sports 5 HD				HEVC/HD	
		beOut Q Sports 6 HD				HEVC/HD	
		beOut Q Sports 7 HD				HEVC/HD	
		beOut Q Sports 8 HD				HEVC/HD	
		beOut Q Sports 9 HD				HEVC/HD	
		beOut Q Sports 10 HD				HEVC/HD	

[3] www.flysat.com

11919 H DVB-S2/8PSK HEVC	27500 5/6	beOut Q Package					Badr-5 MENA FSS 43-51 dBW
		beOut Q Sports 1 HD				HEVC/HD	
		beOut Q Sports 2 HD				HEVC/HD	
		beOut Q Sports 3 HD				HEVC/HD	
		beOut Q Sports 4 HD				HEVC/HD	
		beOut Q Sports 5 HD				HEVC/HD	
		beOut Q Sports 6 HD				HEVC/HD	
		beOut Q Sports 7 HD				HEVC/HD	
		beOut Q Sports 8 HD				HEVC/HD	
		beOut Q Sports 9 HD				HEVC/HD	
		beOut Q Sports 10 HD				HEVC/HD	

Creation of the interference and description of the setup

To prove that the suspected frequencies carried the beoutQ content, a test bench was set up to create a local L-Band interference which was combined with the reception of the beoutQ set top box. This setup, shown in the next figure, allows any carrier received by the set top box to be disrupted at will.



Supply		Block		Local oscillator frequency	Intermediate freq. range
Voltage	Tone	Polarization	Frequency band		
13 V	0 kHz	Vertical	10.70–11.70 GHz, low	9.75 GHz	950–1,950 MHz
18 V	0 kHz	Horizontal	10.70–11.70 GHz, low	9.75 GHz	950–1,950 MHz
13 V	22 kHz	Vertical	11.70–12.75 GHz, high	10.60 GHz	1,100–2,150 MHz
18 V	22 kHz	Horizontal	11.70–12.75 GHz, high	10.60 GHz	1,100–2,150 MHz

The 1.2 m Ku-Band antenna was installed and equipped with a Quattro Low Noise Block (LNB) providing four L-Band interfaces, each one corresponding to the following combinations:

Supply		Block		Local Oscillator Frequency	Intermediate freq. range
Voltage	Tone	Polarization	Frequency band		
13 V	0 kHz	Vertical	10.70 – 11.70 GHz, low	9.75 GHz	950-1,950 MHz
18 V	0 kHz	Horizontal	10.70 – 11.70 GHz, low	9.75 GHz	950-1,950 MHz
13 V	22 kHz	Vertical	11.70 – 12.75 GHz, high	10.6 GHz	1,100-2,150 MHz
18 V	22 kHz	Horizontal	11.70 – 12.75 GHz, high	10.6 GHz	1,100-2,150 MHz

The four signals were connected to a passive multiswitch (Televes 7140 5 x 16 multiswitch). This device was able to switch any of the four satellite inputs to any of its outputs depending on the voltage and 22 kHz tone provided by the set top box. The input for terrestrial signals was not used.

The interference was created by a DVB-S/S2 modulator (Newtec MDM6100), whose output was then combined with the satellite signal after the output of the multiswitch. This signal was then split in three paths connected to:

a) Input of the spectrum analyzer (Agilent N9340B)

b) Input of the beoutQ set top box

c) Input of a DVB-S/S2 professional receiver (IRD) – model Ericsson RX8200

The HDMI output of the beoutQ set top box was connected to a screen for monitoring.

An ASI output of the IRD was connected to a TS Analyzer (DekTec DTU-245). The IRD voltage selection and 22 kHz tone were explicitly disabled to ensure that only the beoutQ box would be able to control the output of the multiswitch. As a result, the spectrum analyzer displayed at every moment the polarization and frequency band received by the beoutQ set top box.

Orbital position used by beoutQ – discrimination between 26E and 25.5E

At the date of the test, there were two geostationary satellite networks operating at 0.5 degrees distance:

a) Arabsat's BADR constellation satellites at 26° East;

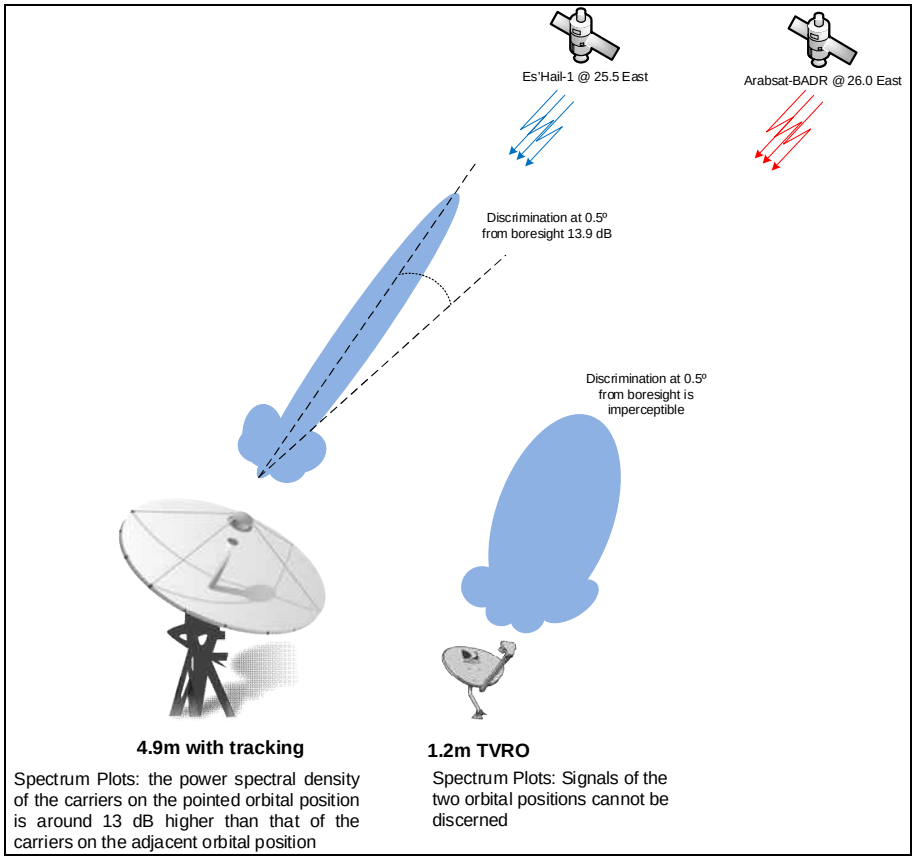
b) Es'Hail 1 Satellite (former Eutelsat 25B) at 25.5° East.

MENA footprints for both networks are provided in Annex 3.

Due to the wide main lobe of the antenna and the proximity of the Arabsat and Es'Hail networks, the 1.2m Ku-band antenna used for the test could simultaneously receive the signals coming from both orbital positions with acceptable quality but was not able to discriminate between the satellite networks, making impossible to infer the orbital position used by beoutQ. Therefore, it was necessary to use an additional dish of a larger size.

A larger dish reception antenna (4.9m) equipped with tracking was set up in the Middle East region: thanks to the 13.9 dB gain discrimination at 0.5 degrees from the boresight, this antenna was able to differentiate the two orbital positions and determine which one was effectively used by beoutQ frequencies.

The next figure illustrates the concept described above:



Logs from the STB board

By monitoring the UART pins of the STB, the output from the RS6060 debug information could be captured, including the communication to the RF front-end. This allowed to intercept the commands sent to the RF chip when the reception frequency was changed or interfered.

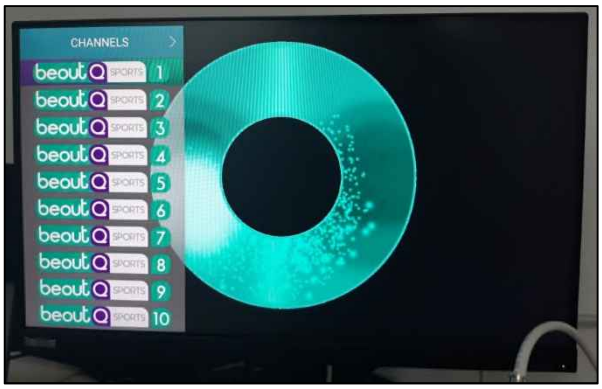
10. Satellite Results

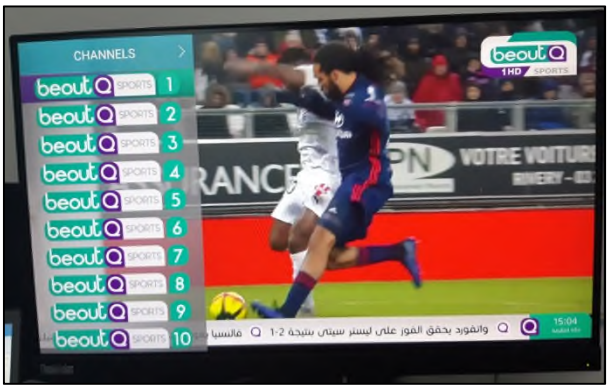
The matches analysed during the test were the following:

Date	Rights Holder	Match	Kick-Off (GMT)
Fri 01/03/2019	Bundesliga	FC Augsburg – Borussia Dortmund	19:30
Fri 01/03/2019	La Liga	Rayo Vallecano – Girona FC	20:00
Sat 02/03/2019	La Liga	Espanyol – Real Valladolid	12:00
Sat 02/03/2019	Premier League	Tottenham Hotspur – Arsenal	12:30
Sat 02/03/2019	Bundesliga	1FC Nuremberg – RB Leipzig	14:30
Sat 02/03/2019	Bundesliga	Borussia M'Gladbach – FC Bayern Munchen	17:30
Sat 02/03/2019	La Liga	SD Huesca – Sevilla	17:30
Sat 02/03/2019	Premier League	West Ham United – Newcastle	17:30
Sat 02/03/2019	La Liga	Real Madrid – Barcelona	19:45
Sun 03/03/2019	La Liga	Eibar – Celta Vigo	11:00
Sun 03/03/2019	Premier League	Watford FC – Leicester City	12:00
Sun 03/03/2019	Premier League	Everton – Liverpool	16:15
Sun 03/03/2019	Bundesliga	VFL Wolfsburg – SV Werder Bremen	17:00
Sun 03/03/2019	La Liga	Real Sociedad – Atletico Madrid	17:30
Tue 05/03/2019	UEFA Champions League	Borussia Dortmund – Tottenham Hotspur	20:00
Tue 05/03/2019	UEFA Champions League	Real Madrid CF – Ajax	20:00

Each of the matches indicated above were available live on the 10 HD beoutQ Sport Channels, accessible through the beoutQ HD Sports satellite app via the main interface of the beoutQ STB.

Once the beoutQ channel was selected, the beoutQ STB entered into a waiting/loading time of around 5-10 seconds before displaying the video. During this time, a rotating disc GIF would be played.





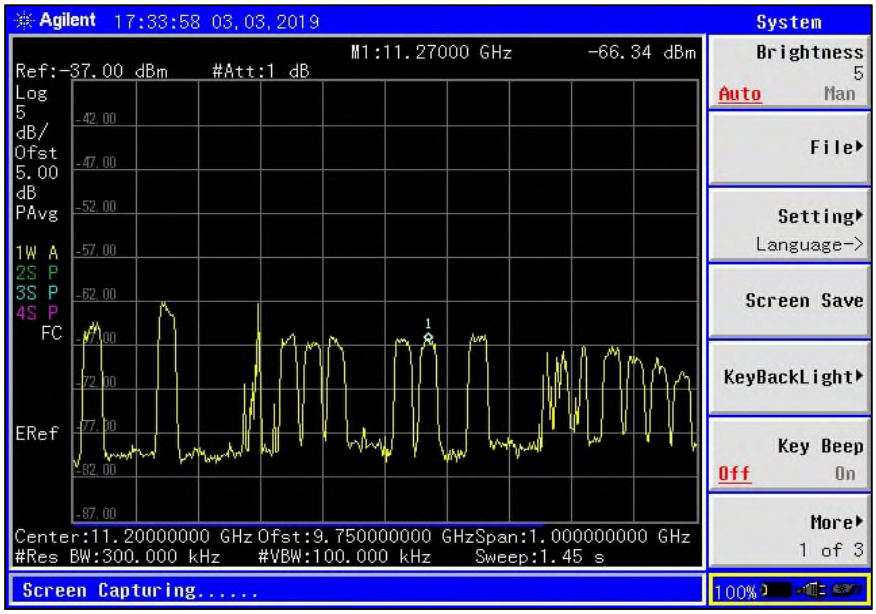
Analysis and direct interference on carrier at 11270 H (video carrier)

When the beoutQ channels were available on the screen, the spectrum analyzer was displaying the low band, horizontal polarization, meaning that the STB was sending to the multiswitch the 18V voltage and no 22 kHz tone.

It was observed that the spectrum analyzer was continuously displaying the low band, horizontal polarization also when switching from one HD beoutQ channel to the other one, meaning that all the HD beoutQ channels were being received from the same band and the same polarization.

To further prove that the beoutQ channels were received on the Horizontal polarization low band, the other three inputs of the multiswitch were unplugged (horizontal high, vertical low and vertical high). The reception of beoutQ channels was still possible, confirming that the beoutQ video channels were broadcasted on the horizontal polarization, low band (i.e. in the 10.7 - 11.7 GHz, horizontal).

The spectrum received by the STB via the 1.2m antenna is shown below (center frequency 11.2 GHz, span 1 GHz, Resolution BW 300 kHz, Video BW 100 kHz, 5 dB/div, marker on 11.27 GHz, offset frequency 9.750 GHz as LNB local oscillator frequency for the low band):



To identify the exact frequencies carrying the beoutQ channels, a high-power interference was generated by the DVB-S/S2 modulator whose output was then combined with the satellite signal after the output of the multiswitch.

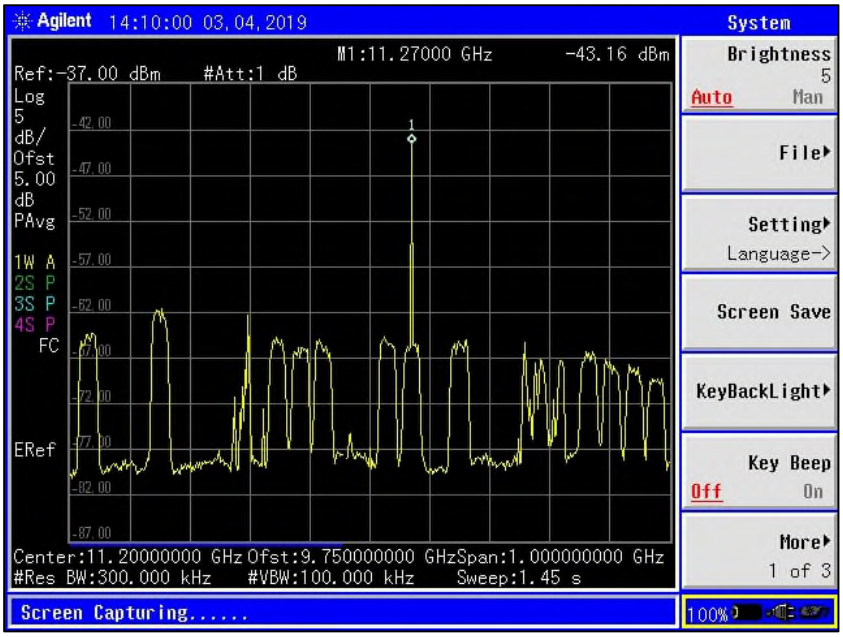
The interference was left on top on the same frequency for two minutes, to ensure that the affected signal was not carrying any signalization channel required periodically for the beoutQ reception (e.g. an authorization signal or decryption table). In this way, every carrier in the horizontal low polarization was interfered during the tests.

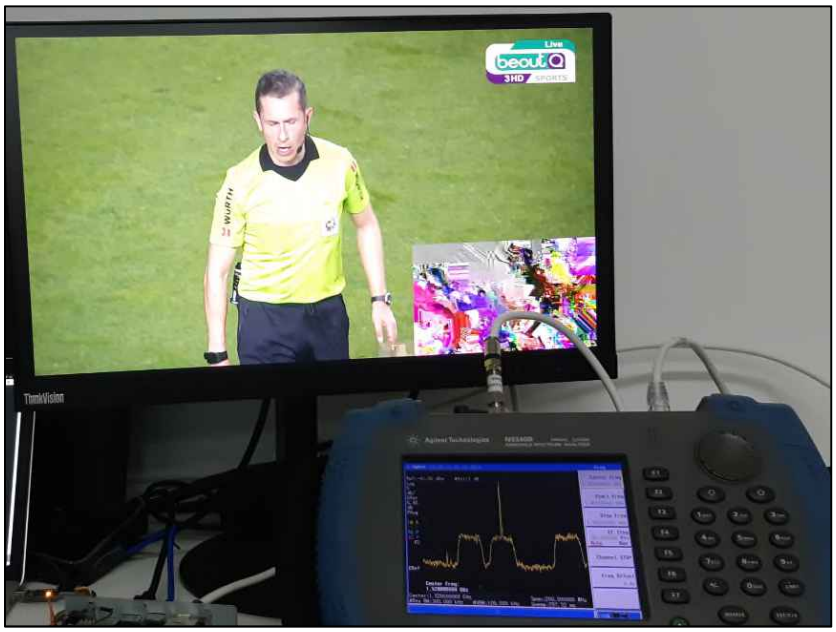
As soon as the carrier at frequency 1,520.00 MHz was interfered with, all the beoutQ channels were affected. Depending on the power level of the interference, the beoutQ video was shown to display artifacts or frozen images: starting from the minimum output power of the modulator and gradually increasing the level, the beoutQ signal showed no effect, then artifacts and macroblocks, finally freezing once the power level exceeded a certain threshold. This phenomenon proved that the carrier contained the beoutQ video signal.

This was confirmed also from the UART logs obtained from the beoutQ STB: every time the beoutQ signal was interfered and the video frozen or degraded, a continuous exchange of messages was observed between the CPU and the RF front-end requesting to tune to the 1,520 MHz carrier. This proves that the STB is programmed to tune to 1,520 MHz horizontal low band to display the beoutQ HD sport channels.

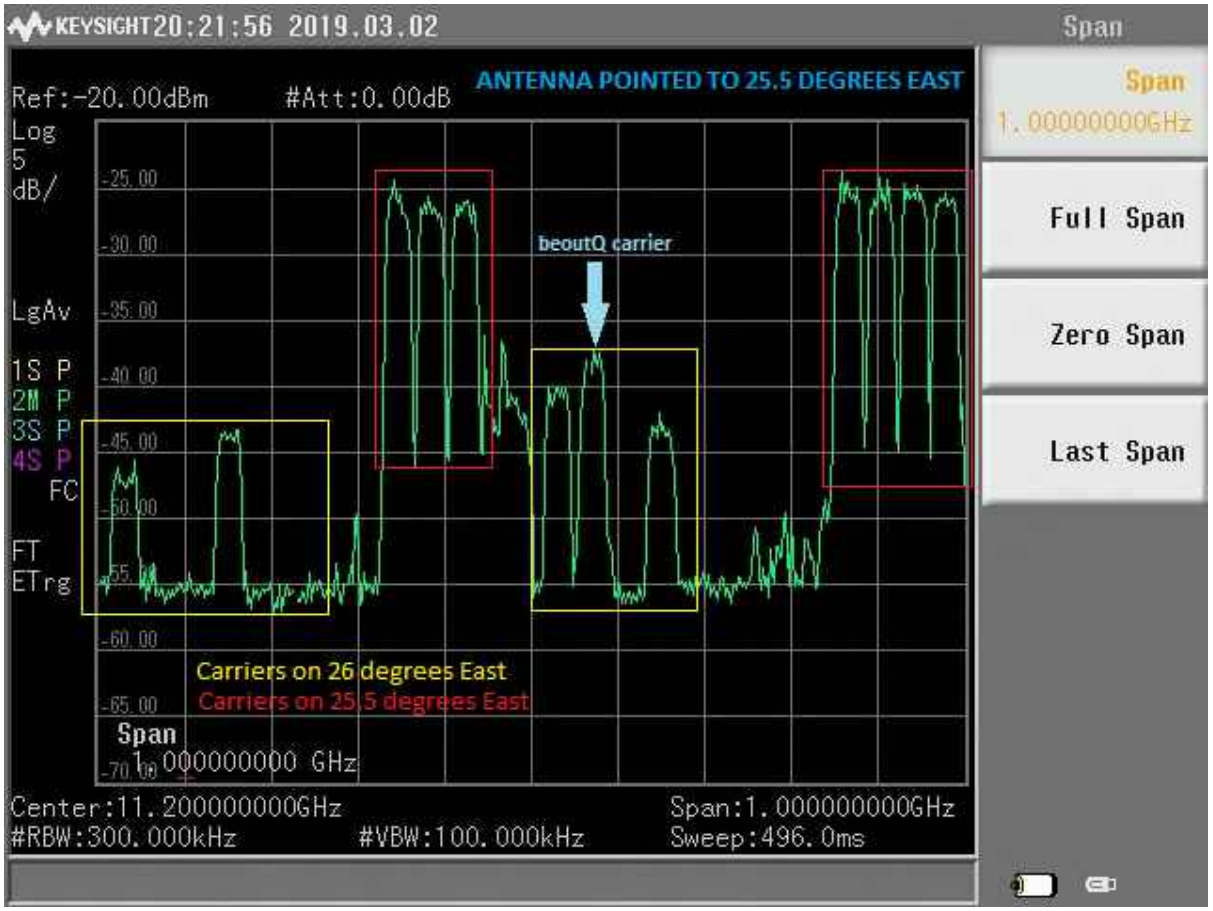
It is worth noting that the L-Band 1,520 MHz frequency corresponds to Ku-Band 1,520 MHz + 9,750 MHz = 11,270 MHz, as the 9,750 MHz is the Local Oscillator frequency for the LNB selecting the low band.

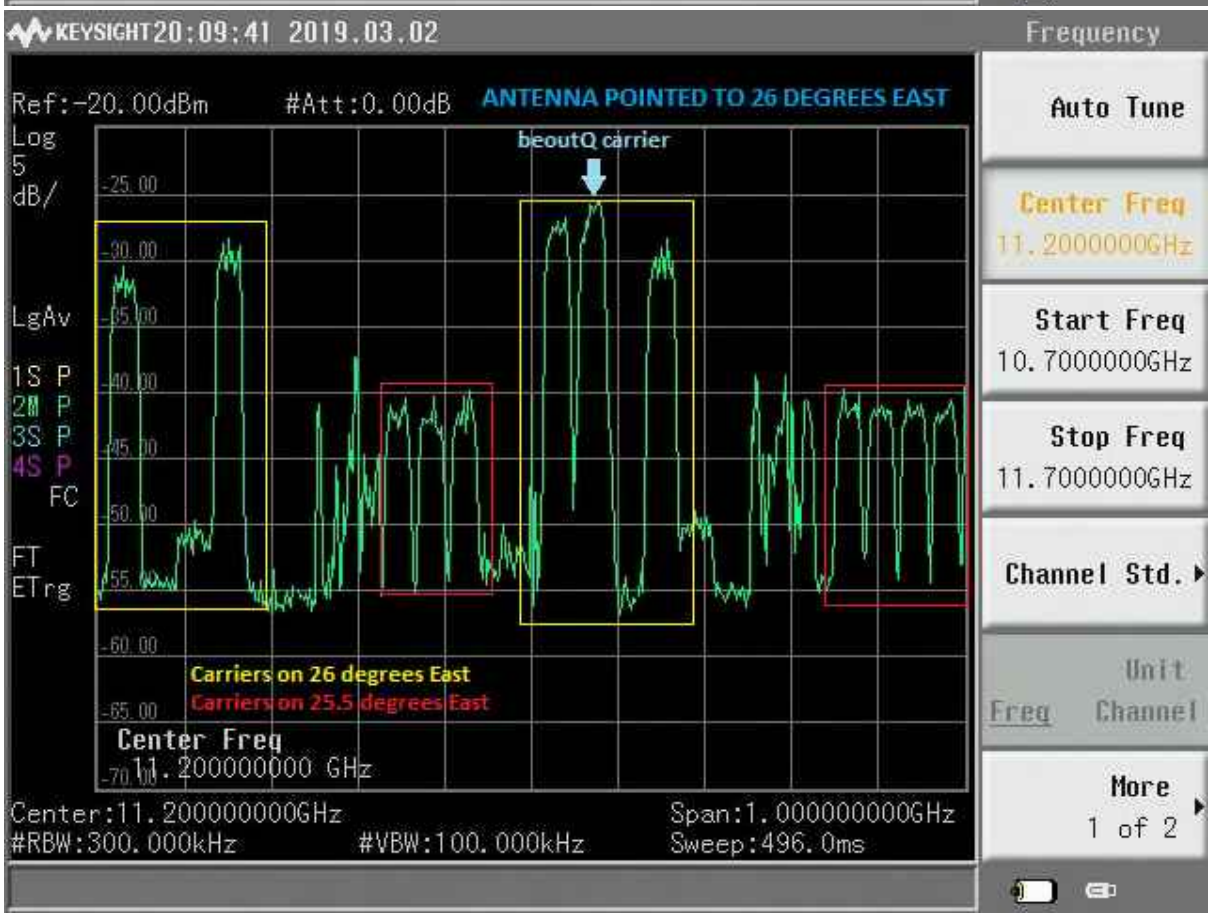
The spectrum with the interference at 1,520 MHz and an example of the artefact affecting the video is shown below:





As explained in section 2.3, the 1.2m antenna did not allow to infer the orbital position used by beoutQ, due to the antenna wide beam. Plots from the 4.9m antenna were used then to discern the satellite network carrying the beoutQ channels at frequency 11,270 MHz.


KEYSIGHT 20:21:56 2019.03.02
Span
ANTENNA POINTED TO 25.5 DEGREES EAST
Ref:-20.00dBm
#Att:0.00dB
Log
5
dB/
LgAv
1S P
2M P
3S P
4S P
FC
FT
ETrg
beoutQ carrier
Carriers on 26 degrees East
Carriers on 25.5 degrees East
Span
1.000000000 GHz
Center:11.200000000GHz
#RBW:300.000kHz
#VBW:100.000kHz
Span:1.000000000GHz
Sweep:496.0ms
Span
1.000000000GHz
Full Span
Zero Span
Last Span

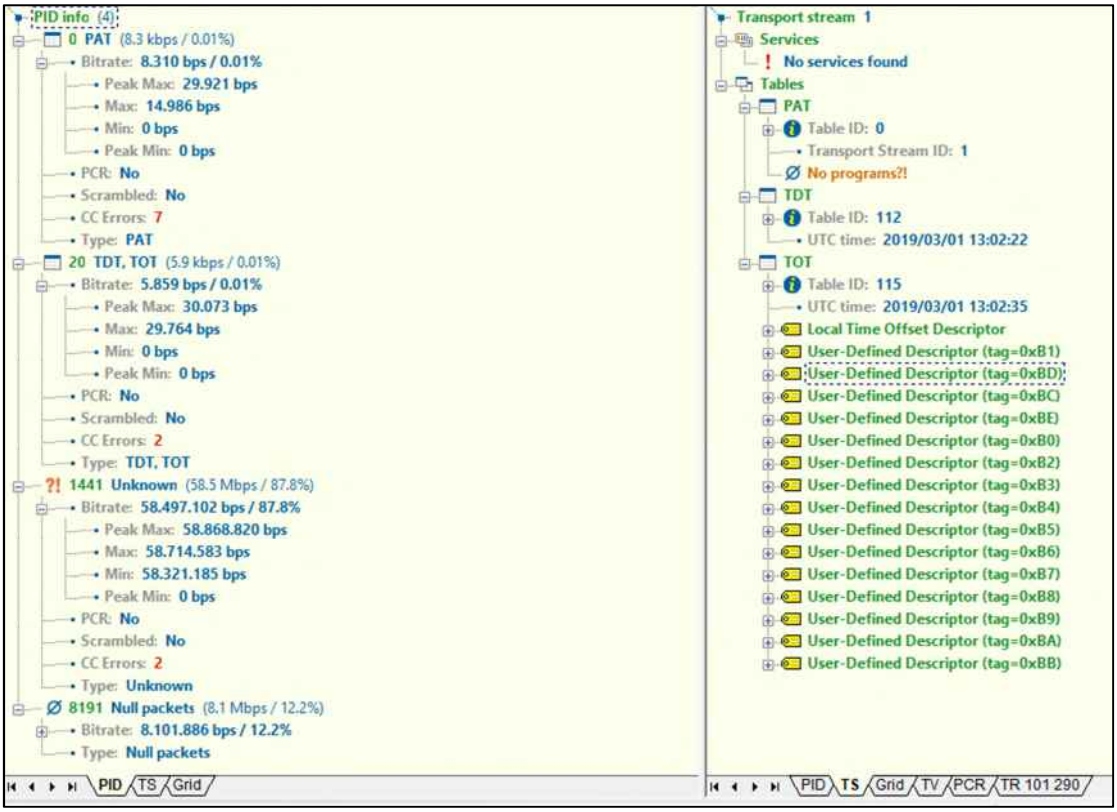

KEYSIGHT 20:09:41 2019.03.02
Frequency
ANTENNA POINTED TO 26 DEGREES EAST
Ref:-20.00dBm
#Att:0.00dB
Log
5
dB/
LgAv
1S P
2M P
3S P
4S P
FC
FT
ETrg
beoutQ carrier
Carriers on 26 degrees East
Carriers on 25.5 degrees East
Center Freq
11.200000000 GHz
Center:11.200000000GHz
#RBW:300.000kHz
#VBW:100.000kHz
Span:1.000000000GHz
Sweep:496.0ms
Auto Tune
Center Freq
11.2000000GHz
Start Freq
10.7000000GHz
Stop Freq
11.7000000GHz
Channel Std.
Unit
Freq
Channel
More
1 of 2

The plots clearly display which carriers are transmitted at 26 degrees East and which at 25.5 degrees East. The level of the carrier at 11,270 MHz horizontal low band is approximately 13 dB higher when the 4.9m antenna is pointed at 26 degrees East, therefore proving without any doubt and with clear technical evidence that the beoutQ video channel is transmitted on the Arabsat network at that orbital position.

The results of the interference exercise on every carrier present on the horizontal low polarization of 25.5 and 26 degrees East is summarized in the following table:

Center Frequency of the interference (MHz)	Type of interference	Effect
978	CW	no effect
1097	CW	no effect
1235	Modulated carrier, SR: 24.6 MSps, 20% roll-off, BW: 27.06 MHz	no effect
1272	CW	no effect
1295	CW	no effect
1330	CW & modulated	no effect
1372	CW	no effect
1437	Modulated carrier, SR: 36 MSps, 10% roll-off, BW: 39.6 MHz	no effect
1479	CW	no effect
1520	**CW**	**video frozen and artifacts**
1598	CW	no effect
1716	modulated carrier 36 MSps, 10% roll-off, 39.6 MHz	no effect
1756	modulated carrier 36 MSps, 10% roll-off, 39.6 MHz	no effect
1816	CW	no effect
1853	CW	no effect
1893	CW	no effect
1928	CW	no effect
1949	CW	no effect
1978	CW	no effect
2015	CW	no effect
2053	CW	no effect
2092	CW	no effect
2129	CW	no effect

The carrier at 11,720 MHz on 26 degrees East containing the video signal was demodulated by a professional IRD and the transport stream was analysed by the StreamXpert software. The results are showed as follows:



Most of the DVB tables commonly found in standard satellite TV broadcasting are either missing or incomplete in the analyzed transport streams. Their data structure is therefore unusual and not compliant with the DVB standard.

Analysis and direct interference on carrier at 11919H (signaling carrier)

When launching the beoutQ HD Sports satellite application, the plot displayed in the spectrum analyzer switched from the horizontal low band to the horizontal high band for a couple of seconds, suggesting that the STB briefly tuned to an additional channel before tuning back to the video channel and displaying the video.

This was confirmed by unplugging the horizontal high input of the multiswitch. In this case, the beoutQ HD Sports satellite application would start and show the same revolving disc GIF mentioned in the prior section but it would not display any live video. The spectrum analyzer would then show a flat spectrum, meaning that the STB required the horizontal high band to the multiswitch, which was not available as it was unplugged.

By plugging in back the horizontal high cable into the multiswitch, and after some seconds, the video appeared on the screen. During this process, the spectrum analyzer displayed first the horizontal high spectrum, switching afterwards to the horizontal low.

The preliminary conclusion of this exercise was that the beoutQ STB, prior to display of the video, required some information from an unknown carrier on the horizontal polarization high band, likely containing the signaling tables, which are absent from the video carrier transport stream.

Signaling tables provide information to enable automatic configuration of the receiver to demultiplex and decode the various streams of programs within the multiplex. DVB signaling tables

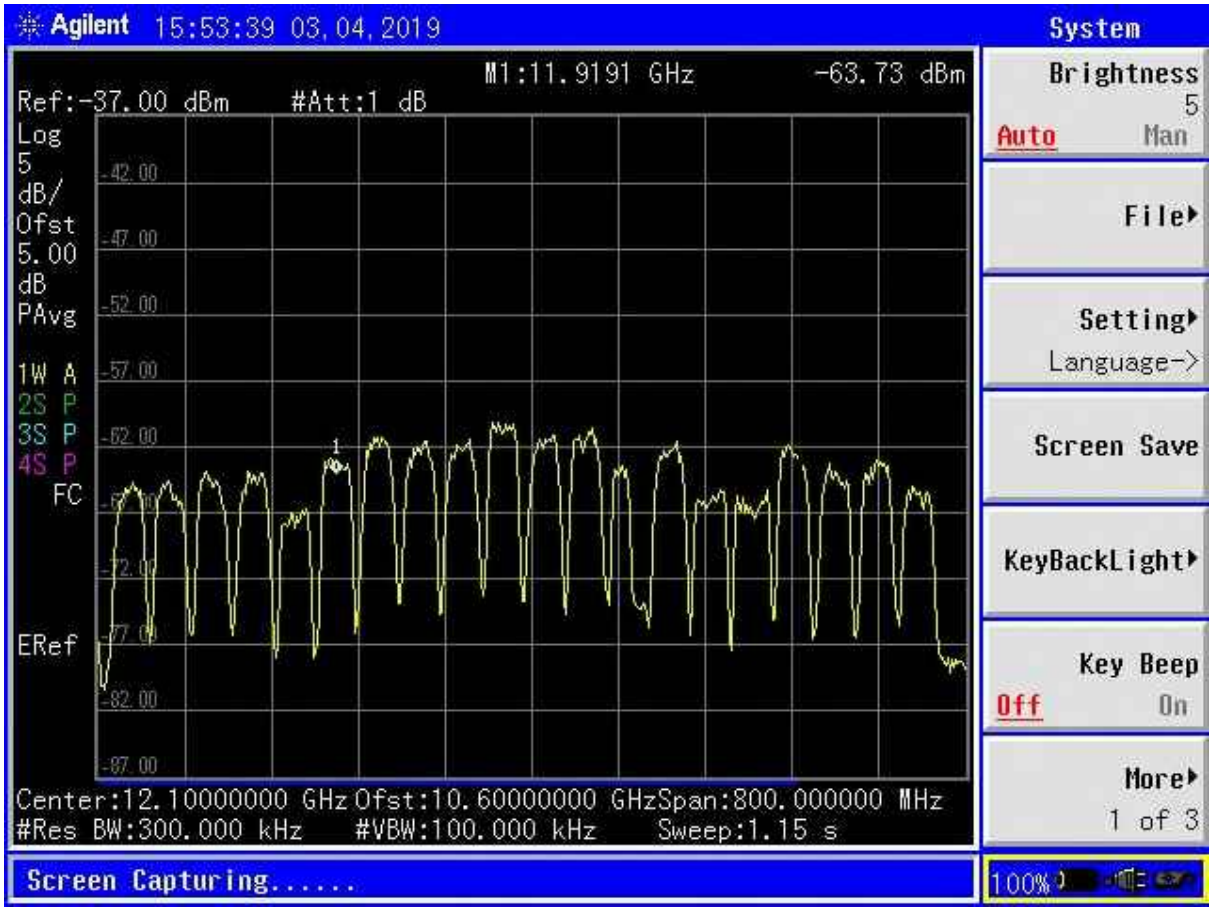
are fully specified and described in the European Standard ETSI EN 300 468 V1.15.1 (2016-03)[4]: without these tables (e.g. the Program Map Table, PMT) a decoder compliant with the ETSI standard cannot determine which stream belong to each program. The signaling tables are notably absent from the beoutQ video carrier on 11,270 MHz horizontal polarization.

As mentioned on page 46 of the report, the conclusions of our experiments interfering the carrier on 11,919 MHz horizontal polarization show that the beoutQ HD sports application needs to briefly tune to this carrier upon launch in order to display the video. This carrier therefore transmits some type of authorization or enabling mechanism, which is likely to contain these signaling tables necessary to correctly decode the signal on 11,720 MHz horizontal polarization.
To find the signalization of the beoutQ STB, every carrier present on the horizontal polarization high band (11.7 – 12.75 GHz) was sequentially interfered during the launch of the beoutQ Sports Channels app. No effect was observed except when interfering the carrier present on frequency 1,319 MHz. It is worth noting that the L-Band 1,319 MHz frequency corresponds to Ku-Band 1,319 MHz + 10,600 MHz = 11,919 MHz, as the 10,6 MHz is the Local Oscillator frequency for the LNB selecting the high band.

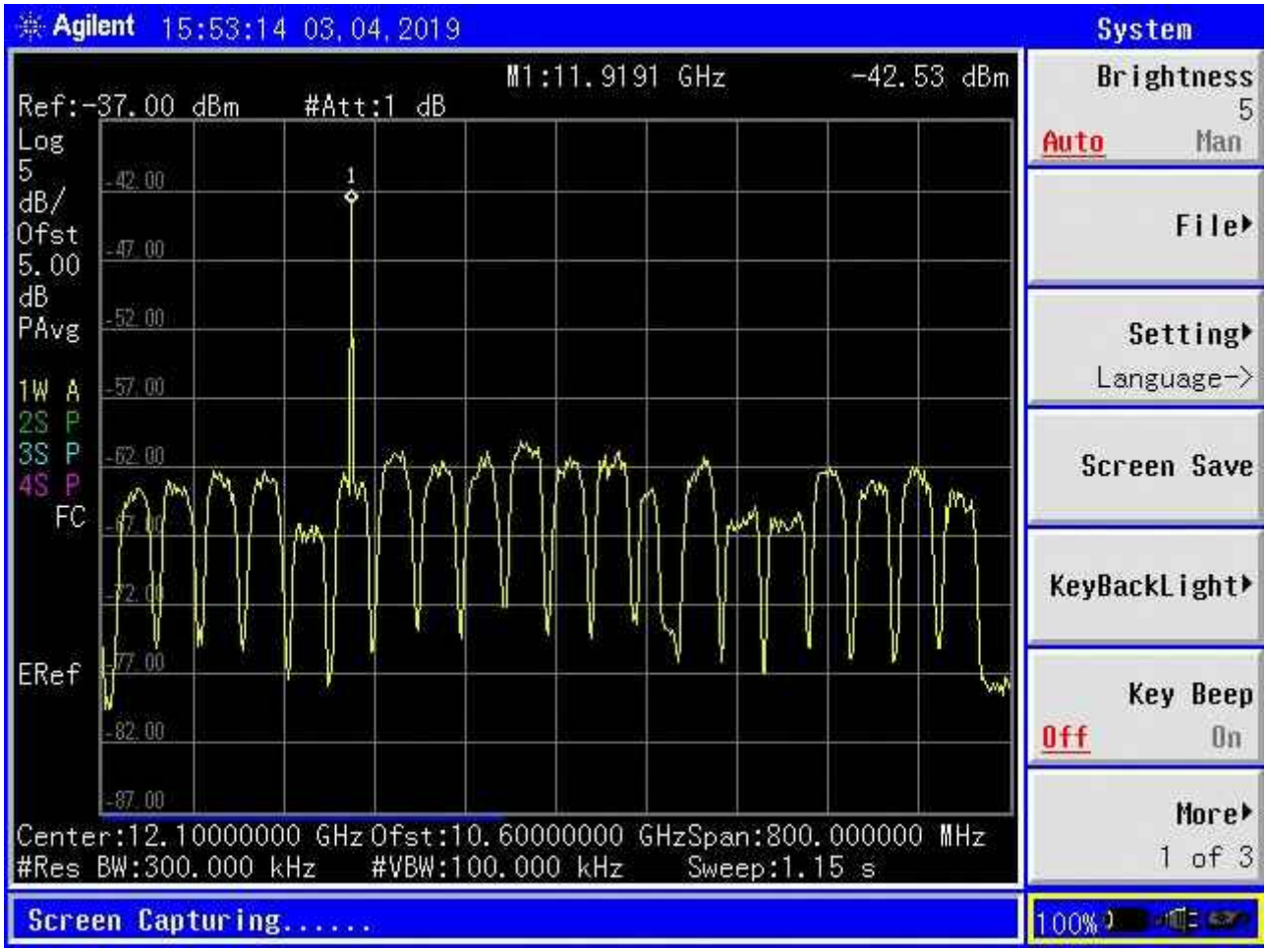
This was confirmed also from the UART logs obtained from the beoutQ STB: every time the carrier on 1,319 MHz was interfered during the launch of the beoutQ Sports Channels application, there was a continuous exchange of messages between the CPU and the RF front-end requesting to tune to the 1,319 MHz frequency. This proved that the STB was programmed to tune to 1,390 MHz horizontal high frequency to receive the signalization to start the beoutQ HD sports channels.

The spectrum received by the STB via the 1.2m antenna is shown below (center frequency 12.1 GHz, span 800 MHz, Resolution BW 300 kHz, Video BW 100 kHz, 5 dB/div, marker on 11.919 GHz, offset frequency 10.6 GHz as LNB local oscillator frequency for the high band):

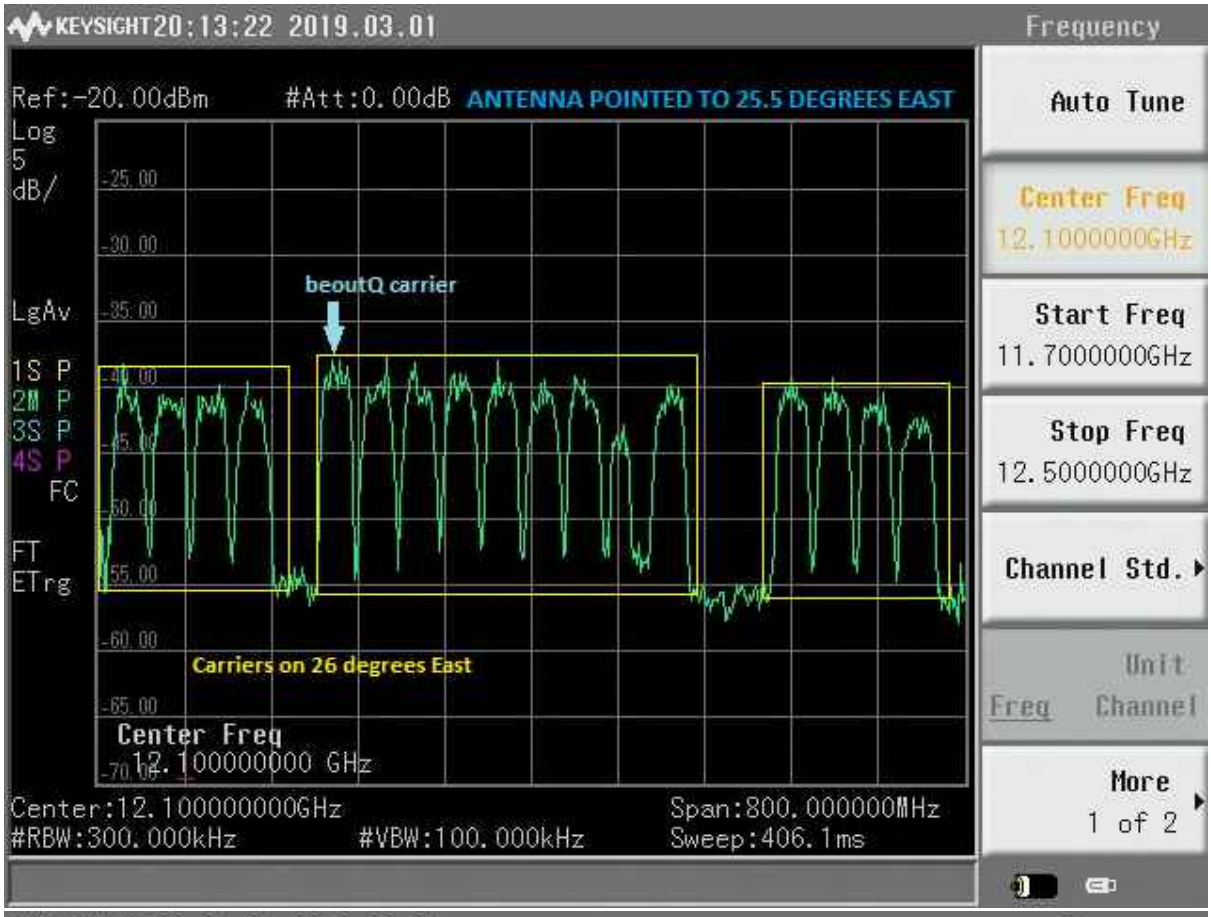
[4] https://www.etsi.org/deliver/etsi_en/300400_300499/300468/01.15.01_60/en_300468v011501p.pdf

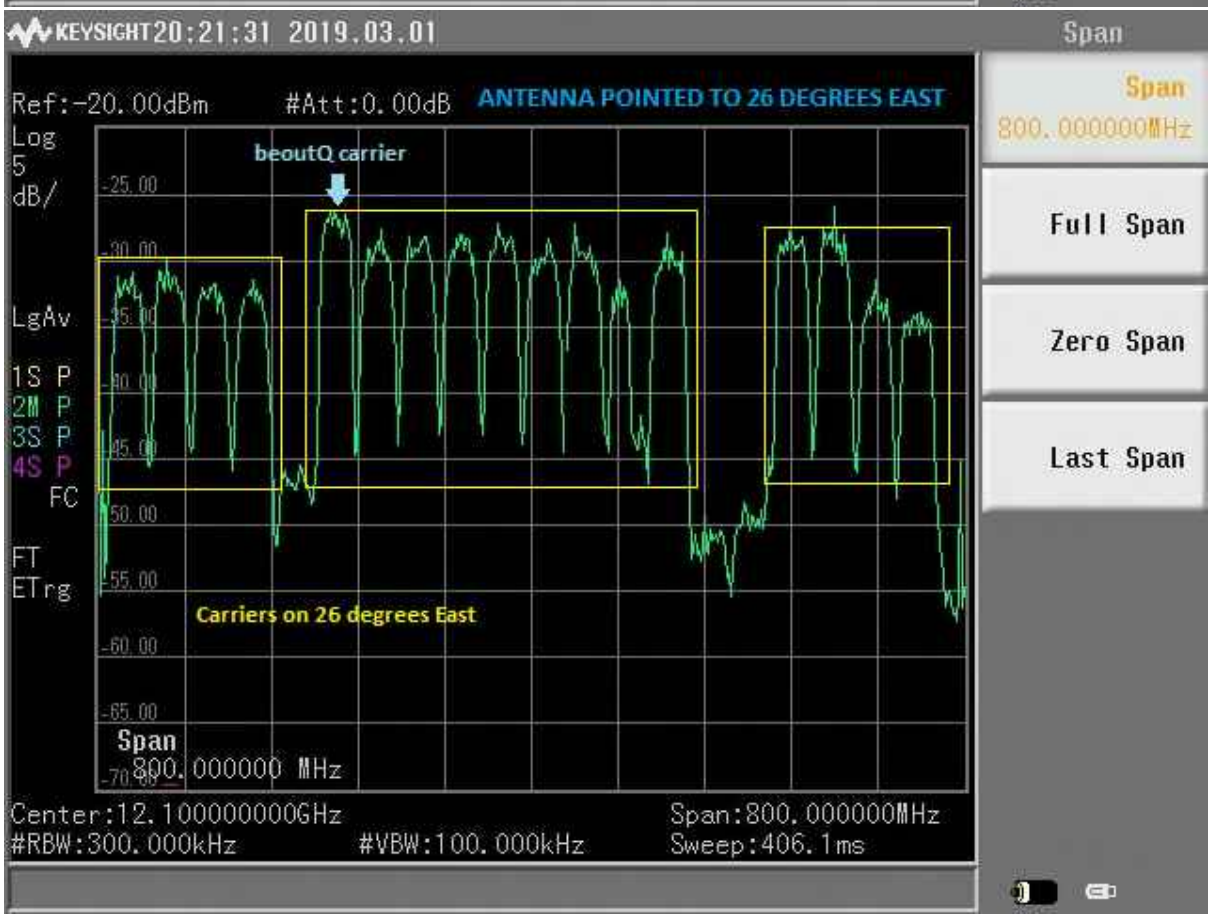


The following picture shows the same spectrum in presence of the local interference.



As explained in section 2.3, the 1.2m antenna did not allow to infer the orbital position used by beoutQ, due to the antenna wide beam. Plots from the 4.9m antenna were used then to discern the satellite network carrying the beoutQ channels at frequency 11,919 MHz.


KEYSIGHT 20:13:22 2019.03.01
Frequency
Ref:-20.00dBm
#Att:0.00dB
ANTENNA POINTED TO 25.5 DEGREES EAST
Log
5
dB/
beoutQ carrier
LgAv
1S P
2M P
3S P
4S P
FC
FT
ETrg
Carriers on 26 degrees East
Center Freq
12.100000000 GHz
Center:12.100000000GHz
#RBW:300.000kHz
#VBW:100.000kHz
Span:800.000000MHz
Sweep:406.1ms
Auto Tune
Center Freq
12.1000000GHz
Start Freq
11.7000000GHz
Stop Freq
12.5000000GHz
Channel Std.
Unit
Freq
Channel
More
1 of 2


KEYSIGHT 20:21:31 2019.03.01
Span
Ref:-20.00dBm
#Att:0.00dB
ANTENNA POINTED TO 26 DEGREES EAST
Log
5
dB/
beoutQ carrier
LgAv
1S P
2M P
3S P
4S P
FC
FT
ETrg
Carriers on 26 degrees East
Span
800.000000 MHz
Center:12.100000000GHz
#RBW:300.000kHz
#VBW:100.000kHz
Span:800.000000MHz
Sweep:406.1ms
Span
800.000000MHz
Full Span
Zero Span
Last Span

The plots clearly display that all carriers are transmitted at 26 degrees East. The level of the carrier at 11,919 MHz horizontal high polarization is approximately 13 dB higher when the 4.9m antenna is pointed at 26 degrees East, therefore proving without any doubt and with clear technical evidence that the beoutQ signaling channel is transmitted on the Arabsat network at that orbital position. In fact, there are no carriers in this frequency band transmitted at 25.5 degrees East.

The results of the interference exercise on every carrier present on the horizontal high polarization of 25.5 and 26 degrees East are summarized in the following table:

Center Frequency of the interference (MHz)		**Type of interference**	**Effect**
L-Band	**Ku-Band**		
1127	11727	CW	No effect
1166	11766	CW	No effect
1204	11804	CW	No effect
1243	11843	CW	No effect
1281	11881	CW	No effect
1319	**11919**	**CW**	**beoutQ HD Sports application does not start if interfered during app launch. No effect if interfered once the application has already started**
1358	11958	CW	No effect
1396	11996	CW	No effect
1434	12034	CW	No effect
1473	12073	CW	No effect
1511	12111	CW	No effect
1549	12149	CW	No effect
1582	12182	CW	No effect
1626	12226	CW	No effect
1665	12265	CW	No effect
1703	12303	CW	No effect
1741	12341	CW	No effect
1780	12380	CW	No effect
1818	12418	CW	No effect
1856	12456	CW	No effect
1923	12523	CW	No effect
2043	12643	CW	No effect
2067	12667	CW	No effect

Confirmation tests

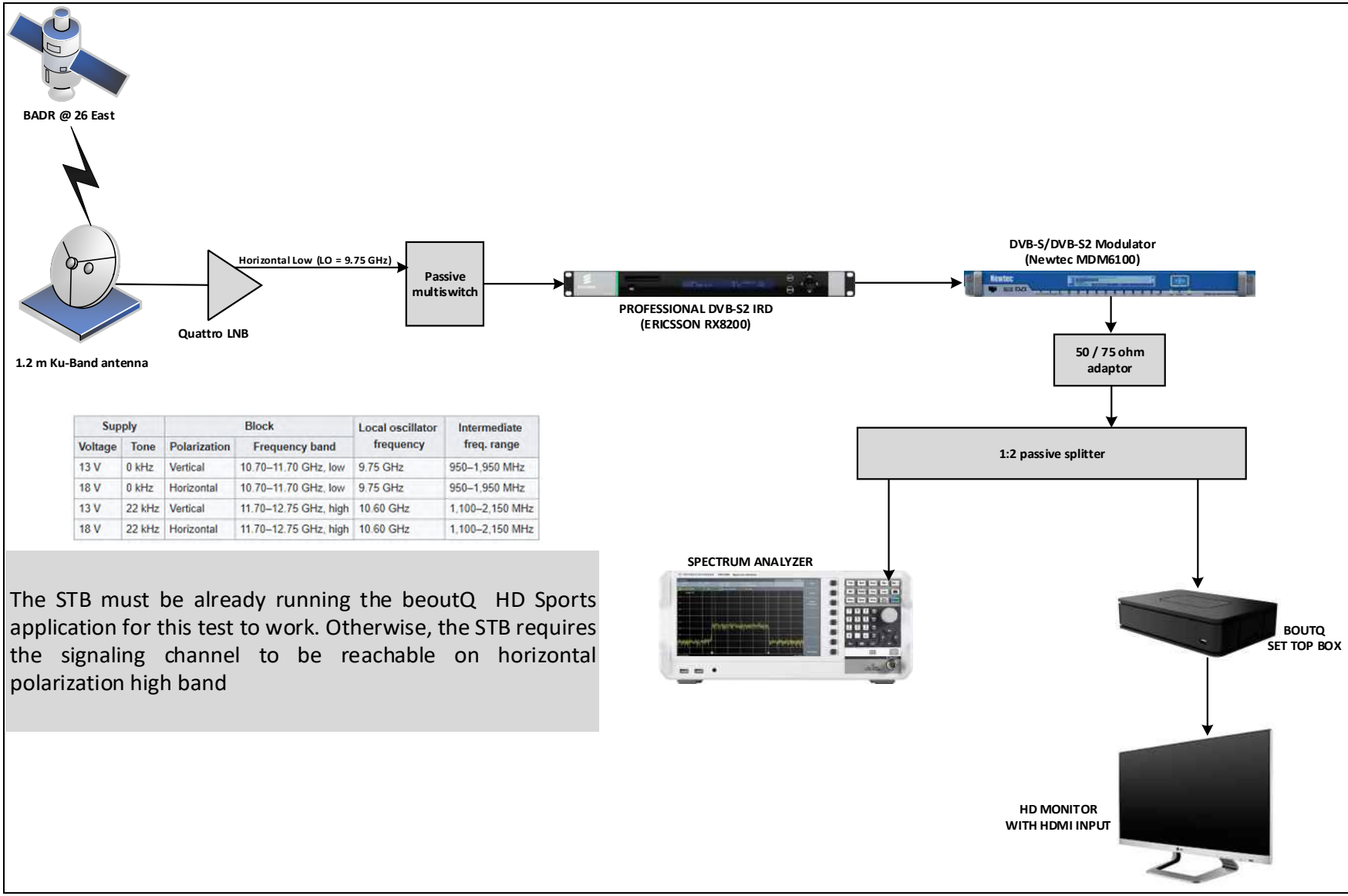
An additional test was set up to confirm the findings described on sections 3.1 and 3.2:

- That the beoutQ video channels were broadcast on a single carrier, located at 11,270 MHz horizontal polarization at 26 degrees East.
- That the beoutQ Sport Channels application required signalization from a single carrier, located at 11,919 MHz horizontal polarization at 26 degrees East, and that this signalization was only required once, during the application launch.

Confirmation of beoutQ video channel on 11,270 MHz (horizontal pol)

a) Using the same testbench as in sections 3.1 and 3.2, the beoutQ HD Sports application was launched
b) Once the beoutQ HD Sports channels were displayed on the TV, the satellite input of the STB was unplugged.
c) The IRD was connected directly to the multiswitch and configured to receive the beoutQ video channel on 11,270 MHz (corresponding to 1,520 MHz in L-Band), including the selection of horizontal polarization and low band using an 18 V level and no 22 kHz tone
d) Once the IRD was locked on the beoutQ carrier, one of its ASI outputs was connected to the input of the DVB-S2 modulator, which was then configured to transmit a carrier with the same characteristics of the beoutQ one (central frequency 1,520 MHz, 8PSK 5/6, 27.5 MS/s, pilots on, normal frame, 20% roll-off)
e) The output of the modulator was split and fed to the input of the spectrum analyzer for monitoring as well as to the beoutQ STB.
f) As soon as the STB input was connected, the TV screen showed the beoutQ video. Tuning to a different beoutQ channel produced the same results.

A diagram of the setup is as follows:

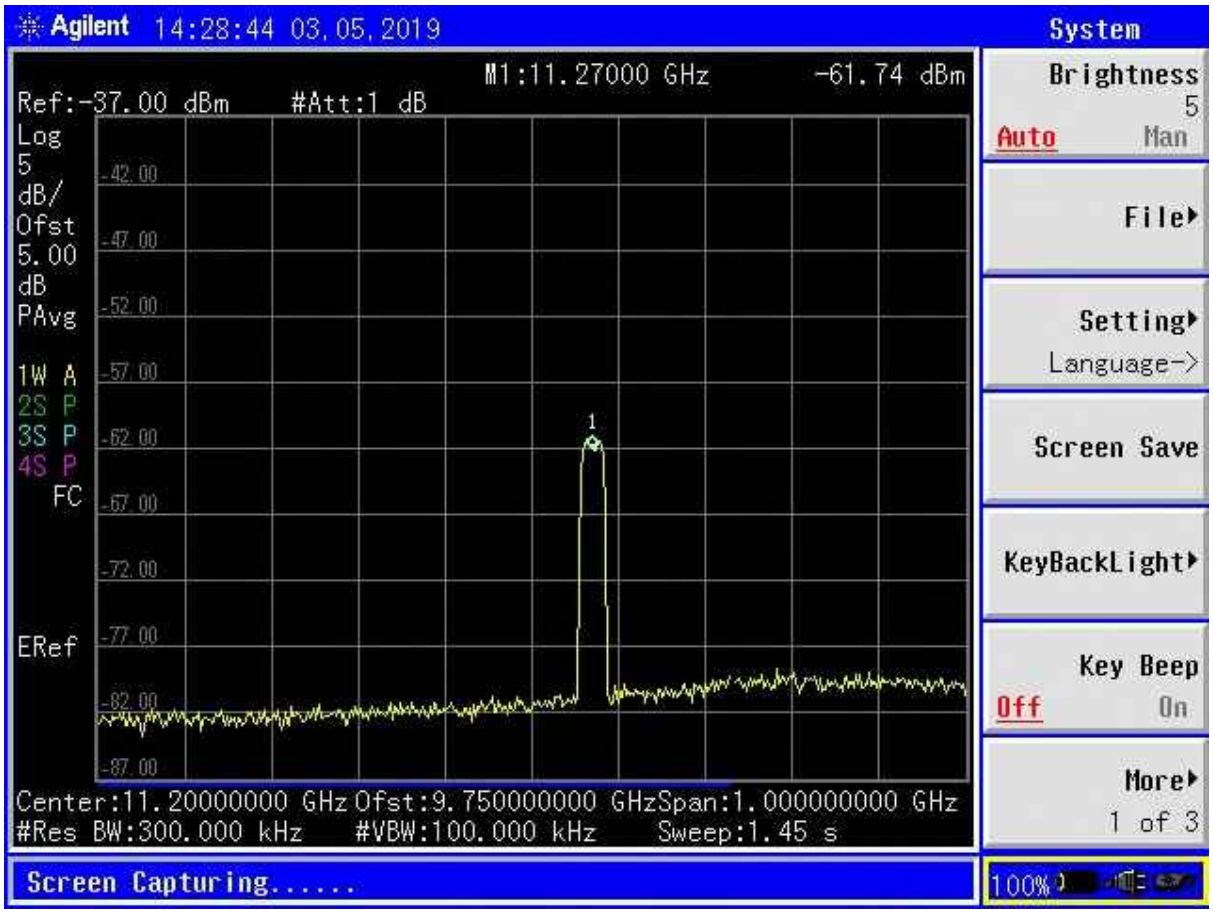


Supply		Block		Local oscillator frequency	Intermediate freq. range
Voltage	Tone	Polarization	Frequency band		
13 V	0 kHz	Vertical	10.70–11.70 GHz, low	9.75 GHz	950–1,950 MHz
18 V	0 kHz	Horizontal	10.70–11.70 GHz, low	9.75 GHz	950–1,950 MHz
13 V	22 kHz	Vertical	11.70–12.75 GHz, high	10.60 GHz	1,100–2,150 MHz
18 V	22 kHz	Horizontal	11.70–12.75 GHz, high	10.60 GHz	1,100–2,150 MHz

The STB must be already running the beoutQ HD Sports application for this test to work. Otherwise, the STB requires the signaling channel to be reachable on horizontal polarization high band

The test was run for two hours without any interruption in the video.

A plot of the spectrum feeding the STB is shown below. Note that only one carrier was received by the STB instead of a full polarization and band as in sections 3.1 and 3.2.



Confirmation of signaling channel on 11,919 MHz (horizontal pol)

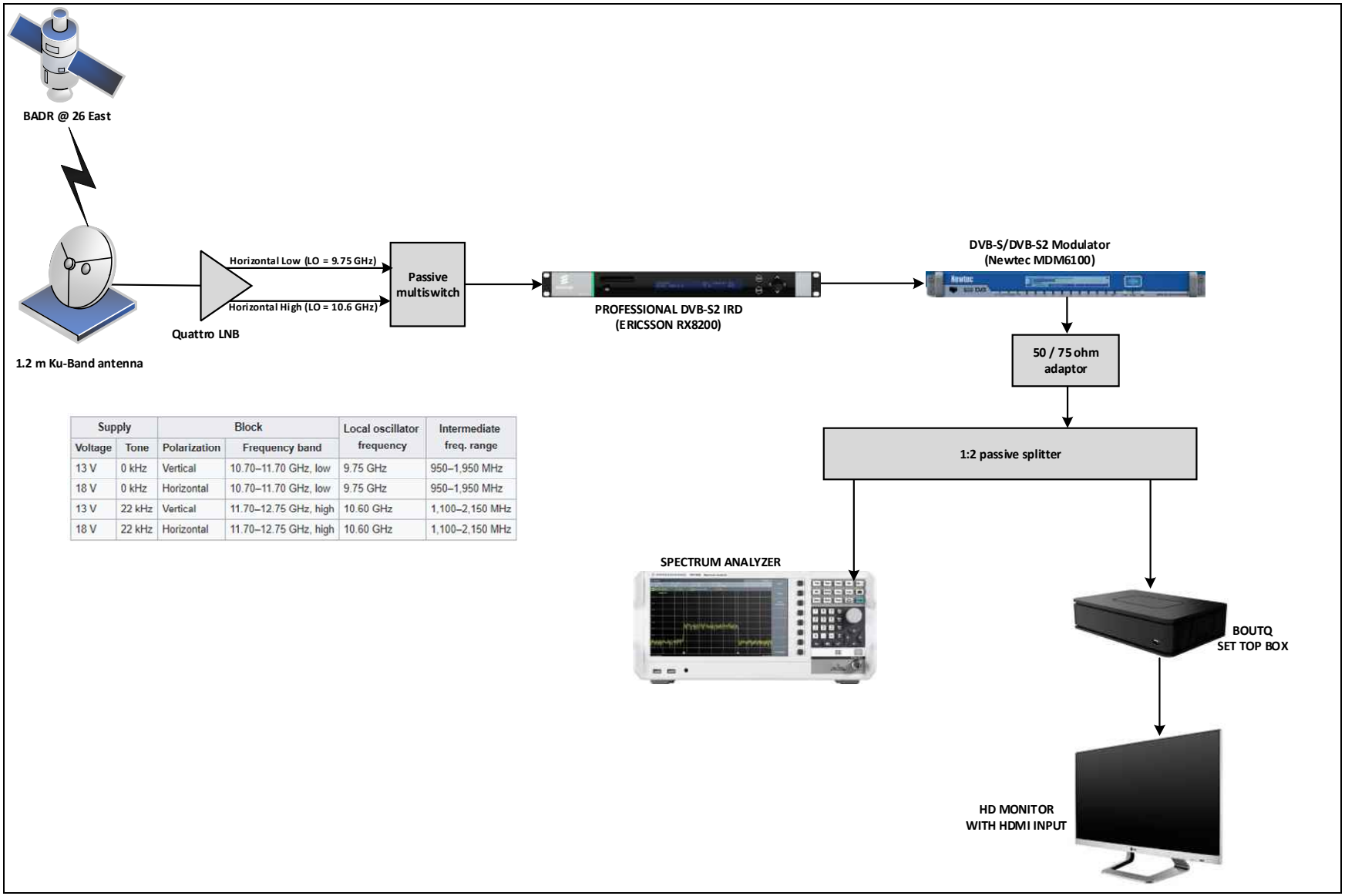
To confirm the need of the signaling, an additional test was performed using the same setup as in 3.3.1.

a) Both the horizontal high and horizontal low bands were connected to the multiswitch
b) The IRD was configured to receive the beoutQ signaling carrier on 11,919 MHz (corresponding to 1,319 MHz in L-Band) using an 18 V level and 22 kHz tone. It was verified that the IRD locked on the carrier
c) The modulator was fed with the ASI output of the IRD and configured to transmit a DVB-S2 carrier with the same characteristics as the beoutQ signaling carrier (central frequency 1,319 MHz, 8PSK 5/6, 27.5 MS/s, pilots on, normal frame, 20% roll-off). The output of the modulator was enabled
d) The beoutQ HD Sport application was started, showing on the monitor the rotating disc GIF
e) After one minute, the IRD was configured to receive the beoutQ video carrier on 11,270 MHz (corresponding to 1,520 MHz in L-Band) using an 18 V level and no 22 kHz tone. It was verified that the IRD locked on the carrier
f) The modulator was fed with the ASI output of the IRD and configured to transmit a DVB-S2 carrier with the same characteristics as the beoutQ video carrier (central frequency 1,520

MHz, 8PSK 5/6, 27.5 MS/s, pilots on, normal frame, 20% roll-off). The output of the modulator was enabled

g) The STB started to display the beoutQ video. Tuning to other beoutQ channels showed the same results

A diagram of the test is shown as follows:



Supply		Block		Local oscillator frequency	Intermediate freq. range
Voltage	Tone	Polarization	Frequency band		
13 V	0 kHz	Vertical	10.70–11.70 GHz, low	9.75 GHz	950–1,950 MHz
18 V	0 kHz	Horizontal	10.70–11.70 GHz, low	9.75 GHz	950–1,950 MHz
13 V	22 kHz	Vertical	11.70–12.75 GHz, high	10.60 GHz	1,100–2,150 MHz
18 V	22 kHz	Horizontal	11.70–12.75 GHz, high	10.60 GHz	1,100–2,150 MHz

Signaling channel carousel

To confirm the nature of the signaling channel, the following steps were taken:

a) Both the horizontal high and horizontal low bands were connected to the multiswitch
b) The IRD was configured to receive the beoutQ signaling carrier on 11,919 MHz (corresponding to 1,319 MHz in L-Band) using an 18 V level and 22 kHz tone. It was verified that the IRD locked on the carrier
c) The ASI output of the IRD was connected to the TS analyzer. 30 seconds of the ASI transport stream were recorded
d) The transport stream recorded was played out with the software StreamXpress. The modulator was fed with the ASI output of the TS analyzer and configured to transmit a DVB-S2 carrier with the same characteristics as the beoutQ signaling carrier (central frequency 1,319 MHz, 8PSK 5/6, 27.5 MS/s, pilots on, normal frame, 20% roll-off). The output of the modulator was enabled
e) The beoutQ HD Sport Channels application was started, showing on the monitor the rotating disc GIF
f) After one minute, the IRD was configured to receive the beoutQ video carrier on 11,270 MHz (corresponding to 1,520 MHz in L-Band) using an 18 V level and no 22 kHz tone. It was verified that the IRD locked on the carrier
g) The modulator was fed with the ASI output of the IRD and configured to transmit a DVB-S2 carrier with the same characteristics as the beoutQ video carrier (central frequency 1,520 MHz, 8PSK 5/6, 27.5 MS/s, pilots on, normal frame, 20% roll-off). The output of the modulator was enabled
h) The STB started to display the beoutQ video. Tuning to other beoutQ channels showed the same results. This proved that the beoutQ signaling channel is a carousel that, once recorded, can be played back to start the beoutQ HD Sport channels

Analysis and direct interference on carrier at 12341H (test carrier)

It was noticed that, while Flysat lists an additional beoutQ package on 12,341 MHz horizontal polarization, the tests described in previous sections clearly show that this transponder was not carrying any beoutQ related information at the time of the test.

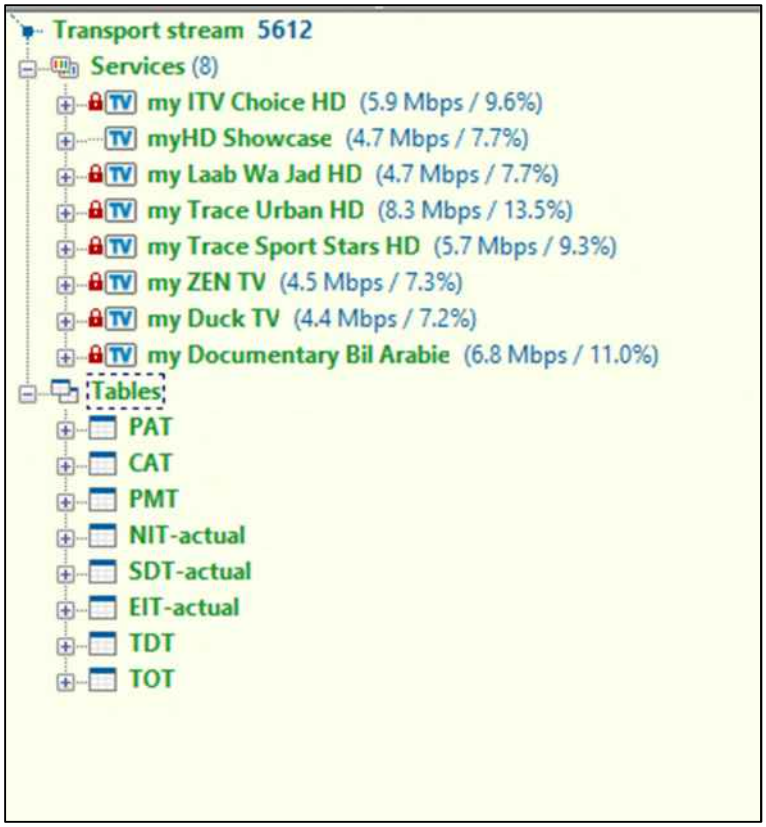
		beOut Q Package				BISS	
12341 H DVB-S2/8PSK HEVC	27500 5/6	beOut Q Sports 1 HD				HEVC/HD	Badr-6 MENA 44-52 dBW
		beOut Q Sports 2 HD				HEVC/HD	
		beOut Q Sports 3 HD				HEVC/HD	
		beOut Q Sports 4 HD				HEVC/HD	
		beOut Q Sports 5 HD				HEVC/HD	
		beOut Q Sports 6 HD				HEVC/HD	
		beOut Q Sports 7 HD				HEVC/HD	
		beOut Q Sports 8 HD				HEVC/HD	
		beOut Q Sports 9 HD				HEVC/HD	
		beOut Q Sports 10 HD				HEVC/HD	

By demodulating this carrier with a professional IRD and with the support of a TS analyzer, it was found that this signal contained a test video channel (color bars). No relation with beoutQ was found.

Analysis and direct interference on carrier at 12360V

The analysis of the UART logs showed that, when the beoutQ STB was booted up, the device would tune to frequency 1,760 MHz for a few seconds. At the same time, it was observed that the spectrum analyzer was displaying frequencies matching the vertical polarization high band. The satellite frequency corresponding to 1,760 MHz in high band is 1,760 MHz + 10,600 MHz = 12,360 MHz.

By demodulating this carrier with a professional IRD and with the support of a TS analyzer, it was found that this signal contained an encrypted TV mux, whose list of services is shown in the picture below. No relation with beoutQ was found. As explained previously, there was no impact on the beoutQ HD Sport application if the vertical high polarization was not present.



11. Satellite Conclusions

Our analysis shows beyond any doubt that the beoutQ channels received via the beoutQ HD Sport application on the beoutQ STB are transmitted from the Arabsat geostationary satellite network at 26 degrees East. At the date of the writing of this report (March 6th, 2019), the beoutQ bouquet is composed by two different carriers:

a) Carrier with center frequency 11,270 MHz horizontal polarization (33 MHz bandwidth), which carries the video component.

b) Carrier with center frequency 11,919 MHz horizontal polarization (33 MHz bandwidth), which carries the signalization necessary for the STB to decode the video channel.

The methodology to determine the orbital position used by beoutQ made use of a 4.9m antenna with sufficient discrimination to exclude any implication of the adjacent 25.5 East satellite in the beoutQ transmissions.

Neither frequency contains a transport stream complaint with the DVB standard, which means that the transport stream analyzer used does not provide any information about its content, just about its structure. Only the beoutQ STB is able to decode the signal.

It is possible that these carriers are used for other purposes, but this cannot be verified due to the above reasons. It is worth noting that public information available shows these two carriers as just beoutQ carriers.

In the case of the video carrier (carrier 16 in the report), it is quite likely that most of the throughput available (58.5 Mbps in our screenshot, or 87.8% of the total) is being used by the beoutQ video. We cannot make any further assumptions on the signaling carrier (carrier 38 in the report).

As the transponders are “bent pipe” type (meaning that a carrier is received from the Earth by the satellite payload, amplified, frequency converted and retransmitted toward the Earth without any signal processing), the beoutQ channels could be transmitted on Arabsat transponders without the Satellite Operator knowledge; nevertheless it’s also responsibility of the Satellite Operators to duly monitor each carrier content and make sure that Customers are using the leased capacity in a legitimate manner. Satellite Operators must cooperate with claimants and provide full technical assistance to avoid pirate transmissions on their Space Segment: in this case they could switch off the transponders mentioned in the technical report to stop beoutQ satellite broadcasting.

12. IPTV Investigation – Detail

TIMEFRAME OF TESTS

The described test was performed between February 28th and March 6th, 2019.

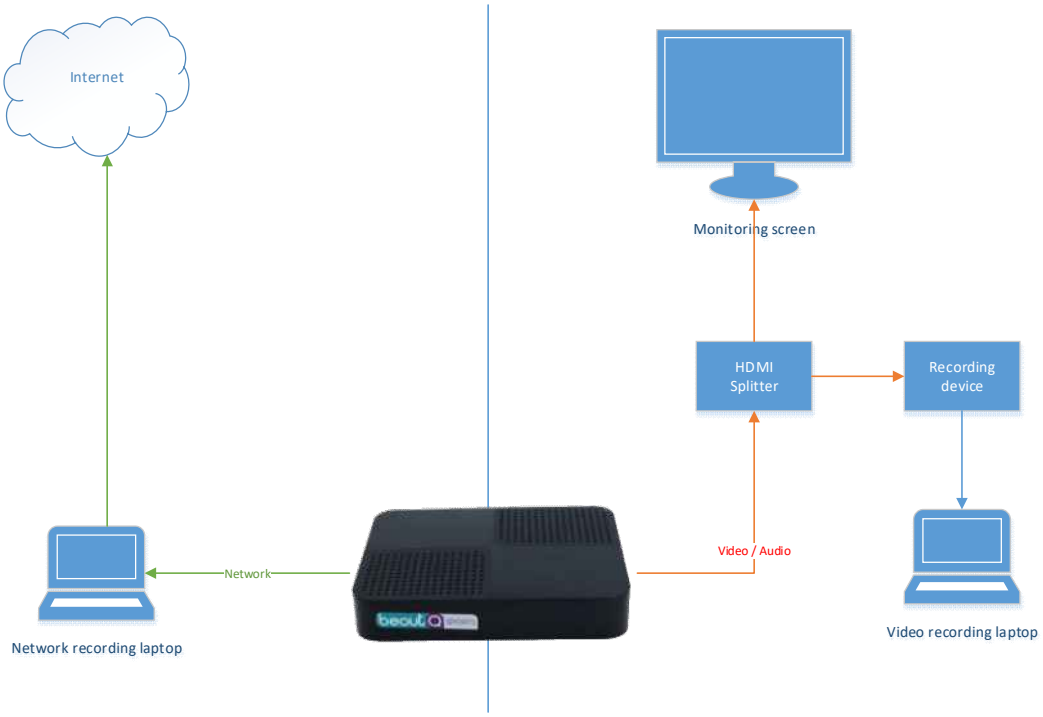
The conclusions and data of this IPTV analysis have been made based on the information gathered during this period. beoutQ frequencies and configurations might be subject to change in the future to prevent anti-piracy efforts.

METHODOLOGY

The preparation steps which were undertaken in order to perform the IPTV investigation were are follows:

- Obtain a pre-activated beoutQ set-top box from a vendor in the MENA region
- Set the beoutQ STB to ‘recovery mode’ and connect the box to a laptop
- Run a pre-written script (“patch-firmware.sh”), written by MarkMonitor engineers, which adds the necessary SSL certificate to the beoutQ STB. The certificate is required to capture the data packets form the beoutQ STB.

Once the preparation has been completed, the following set-up was established in order for all network traffic received and sent by the beoutQ STB to be monitored and captured:



In the above configuration, all network traffic will travel through the network recording laptop. This laptop runs a script - “start-router.sh” - in order to route traffic to the internet, and also runs a second script - “start-mitm.sh” - to intercept any SSL connections and decrypt them, to enable the data packets within to be viewed.

Hardware used

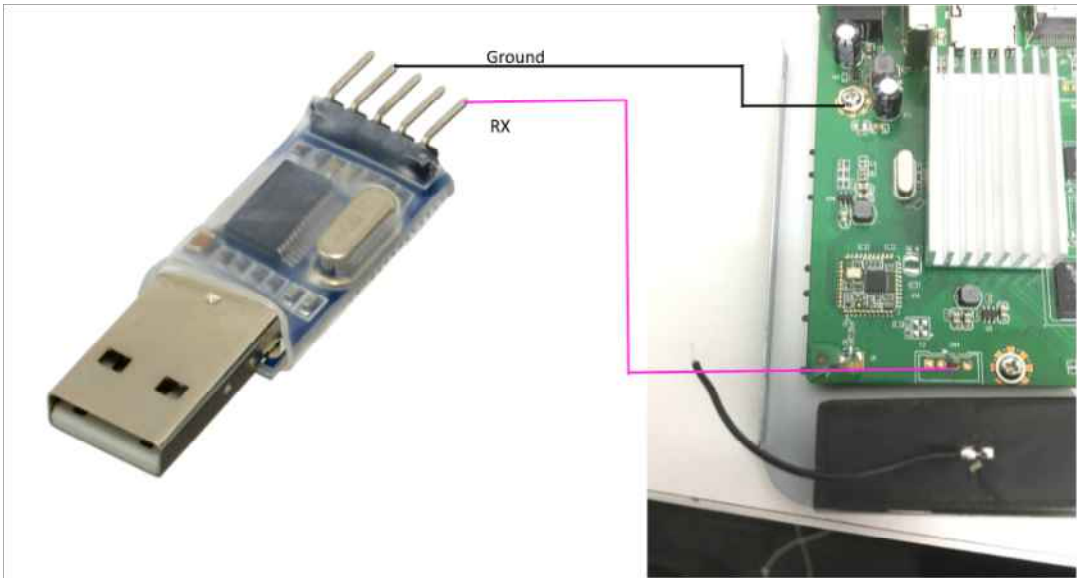
1) A Dell laptop running Kali Linux R4, with an extra USB network interface – this was used to run the scripts and for network recording

2) A Dell laptop running Windows 7 – This was used to record the video footage during the monitored broadcasts

3) A HDMI splitter – used to split the signal to enable the broadcast to be monitored on a display screen and simultaneously be recorded

4) A Hauppauge video recorder – used to send the video to the video recording laptop

Monitoring UART set-up



For full end-to-end testing, the following testing plan was created:

Step number	Action	Network	Evidence
1	Unpack the box		Video of unpacking and pictures
2	Remove WIFI antenna		Picture
3	Solder pin for UART recording		Picture
4	Download partitions from STB		Zip file
5	Patch system partition with our SSL CA		Bash script output as screenshot
6	First start of box	Local network with MITM	Packet capture, UART log, phone video
7	Activate Sat app	Local network with MITM	Packet capture, UART log, Video
8	Download partitions from STB		Zip file
9	Install EVDTV app	Local network with MITM	Packet capture, UART log, Video
10	Activate EVDTV app	Local network with MITM	Packet capture, UART log, Video
11	Install RED IPTV app	Local network with MITM	Packet capture, UART log, Video
12	Activate RED IPTV app	Local network with MITM	Packet capture, UART log, Video
13	Install IUDTV app	Local network with MITM	Packet capture, UART log, Video
14	Activate IUDTV app	Local network with MITM	Packet capture, UART log, Video
15	Open live TV app	Local network with MITM	Packet capture, UART log, Video
16	Failed packets - Reactivate EVDTV app	Local network with MITM	Packet capture, UART log, Video
17	Try activating sat app again	Saudi VPN with MITM	Packet capture, UART log, Video
18	Download partitions from STB		Zip file

For each scheduled event:

Step number	Action	Network	Evidence
1	Start IPTV app	VPN / Local	Video and packet capture
2	Change channel	VPN / Local	Video and packet capture
3	Stop the app	VPN / Local	

VPN and IP-based Geofencing

Multiple levels of geofencing were discovered which are implemented within the beoutQ STB.

Geofencing security was found to be in place at the following locations:

1) The beoutQ STB itself (including the app store and the auto software updates)
2) The beoutQ HD Sport satellite app
3) 3rd party applications

Upon start-up, the beoutQ STB checks for IP addresses in the region of Saudi Arabia. However, IP addresses based in Dubai and VPN (into Saudi Arabia) via the HideMyAss VPN service allowed the service to accept connections successfully.

The beoutQ HD Sport satellite application however has a much stricter set of IP addresses it allows. To activate the beoutQ STB, all VPNs we have tried have been blocked. From a Dubai IP address, access to the back responses from the server was established. However, a voucher code was required to be submitted to the authentication server. When the box is in a VPN or outside the Saudi region, the message sent to the box (that is never displayed to the end user but is seen in captured packet data) is “Country blocked”.

Once the beoutQ HD Sport satellite application is activated, however, it ignores the failed authentication requests from outside the region (blocked/failed or otherwise) but does check the satellite signals which are being received from the number of frequencies it connects to via the satellite dish.

In contrast, the 3rd party IPTV applications such as EVDTV, IUDTV and RED IPTV all block the use of VPN addresses, but do allow connections from many more regions, including Dubai and UK.

From the three different types of blocking methods that are implemented across the various parts of the beoutQ service, it would indicate that the developers of the apps are not the same entities, and that the beoutQ STB, the beoutQ HD Sport satellite app and the 3rd party IPTV applications are all developed by separate parties.

Prior to this investigation, attempts were made to investigate the beoutQ service from the UK. A beoutQ STB was purchased from Saudi Arabia and shipped to the UK. As above, the set-top box attempted to verify the location of the user by means of both a satellite connection and an IP location check, and the system failed to launch.

One of the beoutQ STBs which was activated in the MENA region and used during this investigation was brought back to the UK for further analysis. Although the beoutQ HD Sports application does not function (as the box is now outside of the satellite footprint area and cannot receive a satellite signal), the IPTV apps continue to work, and content is available to be viewed via a standard UK internet connection (without use of a VPN). The set-top box location was verified in the MENA

region during the activation but does not require any location data once the IPTV app has been set up. We do not know how long this will continue to work.

Also, as part of this investigation, a Redline IPTV box was acquired from within the UK, which carries the beoutQ channels as part of its service. This is an IPTV service which is taking the beoutQ channels and rebroadcasting them via IPTV. Unlike the beoutQ STB, the Redline IPTV box has no satellite capability, and functions only as an IPTV set-top box, meaning that no restrictions are or can be in place, and the service can be used anywhere with an internet connection.

beoutQ Set-Top Box Start-up Process Analysis

Linux version 3.14.29

CPU: AArch64 Processor

The beoutQ STB initializes the Bluetooth, wireless, Infrared receiver on boot.

It also initiates the RS6060 chip it uses as DVB S2 S satellite receiver.

After the initial hardware set-up, the box continues to:

1) Connect to google servers google.com and connectivitycheck.gstatic.com to check connectivity.
2) Checks against (cloudfront) “apkinfo.me003.com/apk-list/ME003/SS5B7BA?preinstall=false” for its list of apps (Check the APP section in this document)
3) Performs an NTP check to ntp.sjtu.edu.cn to sync the time server
4) Performs a check against (cloudfront) “apkinfo.openflower.org/apk-list/ME003/SS5B7BA?preinstall=true” This action returned a timeout. This action seems to be for apps that are preinstalled and need auto-updating
5) Makes an SSL connection to ota.me003.com, which is an amazon elastic load balanced server. The reason for this connection is currently not clear
6) The RS6060 chip on boot locks on to frequency=1760000 for around 10 seconds then moves on to frequency=1319000 (More on this can be found in the satellite investigation)

beoutQ HD Sport Satellite App Activation process

On activation of the satellite app, the beoutQ STB was seen to perform the following actions:

1) Sends data to live.darkside-iptv.com:8080, including a tokenID and a Key. This server always responded back with “Access Denied” from NginX.
2) Calls to a bit.ly redirection link at bit.ly/2uG9lvd. This returns http://46.105.233.106:8085/ligtv.
3) Posts the same data as step 1 to bomba2017.hopto.org:8000 with the same “Access Denied” response
4) Posts the same data as step 1 to revendedor.amxiptv.club:8000 with the same “Access Denied” response
5) Posts the same data as step 1 to revendedor.amxiptv.club:8000 with the same “Access Denied” response
6) Posts the same data as step 1 xtream.swiftiptv.com:6500 with the same response.
7) Performs a HTTP2 request which is sent to onthemoon.sx/t2/service.php, including the Mac address and serial number of the box. As well as the fingerprint and version of the beoutQ HD Sport Satellite app, it sends the internal IP of the device as well as the last scanned set of

wifi access points it was able to find (this includes the SSID and the BSSID of the APs in range). It also sends the action = putty (the purpose of this is currently unknown)
The response is a PHP error from outside the region including a cookie that is set (in this case) “beoutQ=e558057091b6ba566fecee21fdd2ad3b”
This looks to be the main authentication server.
From the error we can tell this server runs c-Panel and nginx and is hosted in Moscow.
We can also see the file path confirming its role as an authentication server
“/home/authv1/public_html/t2/service.php”

8) Posts the same data as step 1 to live.darkside-iptv.com:8080 with the same “Access Denied” response
9) Posts to bitlty with the same details as step 1 but with response of redirect http://46.105.233.106:8085/ligtv
10) Posts the same data as step 1 to xtream.swiftiptv.com:6500 with the same “Access Denied” response
11) Posts the same data as step 1 to bomba2017.hopto.org:8000 with the same “Access Denied” response
12) Sends a second HTTP2 request to onthemoon.sx with the same information and response
13) Sends a third HTTP2 request to onthemoon.sx with the data of the beoutQ STB MAC address and action = latest. The response to this is the “This device is not trusted”
14) A dialog box appears on the screen/display asking for a voucher code. A valid voucher code was not available, so ‘1234’ was entered in order for the network traffic from this data exchange to be captured
15) Sends a fourth HTTP2 request to onthemoon.sx, with this time the voucher code of ‘1234’, the mac address of the beoutQ STB and the action = register. The response received is “Unknown voucher” (as expected)

From the above data packets captured during the beoutQ HD Sport satellite app activation, we can see that the authentication server is at onthemoon.sx, with the IP address 185.22.155.114.

The IP and server are hosted by a Russian web host/ASN named AS BAXET, who are registered in Moscow. The commercial website is http://justhost.ru, and the RIPE listing names Anton Pankratov as a contact at Baxet, From LinkedIn, Anton is a JavaScript Developer at Baxet, and is elsewhere named as the CEO of the company.

```
WHOIS Source:      RIPE NCC
IP Address:        185.22.155.114
Country:           Russian Federation
Network Name:      BX-NETWORK
Owner Name:        LLC Baxet
CIDR:              185.22.154.0/23
From IP:           185.22.154.0
To IP:             185.22.155.255
Allocated:         Yes
Contact Name:      Anton Pankratov
Address:               Zelenograd, Sosnovaya alleya, 4, str 2, 33,
Moscow, Russia
Email:             noc@baxet.ru
Abuse Email:       noc@baxet.ru
Phone:             +7 495 6680903
```

The RIPE listing for onthemoon.sx shows that the domain was registered by https://njal.la, a domain registration service which is used to hide the identity of the true owner of the domain. They are marketed as being “a privacy-aware domain registration service”.

The Domaintools history for this domain shows that it was first registered in on 4th August 2017, and identity protection was used from the start. Each update or change to the registration has been checked using Domaintools, and the identity of the owner is protected throughout the domain’s existence.

The onthemoon.sx domain itself will have been purchased via registry.sx

beoutQ App store Investigation

The beoutQ app store connects initially to apkinfo.me003.com including the model of the beoutQ STB and also a token. The response received from the server is a json list of apps, icons, package names, sizes, date, label, version, and MD5 of the file plus a directory of locations to download from (the full list of which can be seen in the next section showing an actual response from the me003 server).

List of apps at: https://apkinfo.me003.com/apk-list/ME003/SS5B7BA?preinstall=false

Example token: x-api-key = BlvdnTG6AasF7cliUsU45yyB3kS0dTm4BEq40Tqd

Repo root: https://apk.me003.com/ME003

A full list of apps can be found in Annex 4

App Installation process

When a user installs an app from the beoutQ app store onto the beoutQ STB, the box performs the following steps:

1) While opening the Appstore, the box sends http request to 143.204.106.105 (*apkinfo.me003.com)* with the following parameters:

   GET /apk-list/ME003/SS5B7BA?preinstall=false HTTP/1.1
   x-api-key: …[EDITED]….
   User-Agent: Dalvik/2.1.0 (Linux; U; Android 7.1.2; SS5B7BA_ME003 Build/NHG47L)
   Host: apkinfo.me003.com

   Server response contains aws tokens and a json formatted list of apps available on the app store:
   Http Header:

   HTTP/1.1 200 OK
   Content-Type: application/json;charset=UTF-8
   Content-Length: 9496
   Connection: keep-alive
   Date: Tue, 05 Mar 2019 11:20:00 GMT
   x-amzn-RequestId: 9d33fffc-3f38-11e9-84c3-f3a5a2303f5a
   x-amz-apigw-id: WEM2_E1-joEFdMQ=
   X-Amzn-Trace-Id: Root=1-5c7e5b5f-656ef77afbc9ea9dafce26c5;Sampled=0
   X-Cache: Miss from cloudfront

Via: 1.1 9dcd873e8ff5cd4b8587beac61f23412.cloudfront.net (CloudFront)
X-Amz-Cf-Id: 3L7iLfZkXVzzc5rhPhTvbWAm_LXSPh5IZYI2oQ5zcGswYJMLcXdv5Q==

Http Body:


```
{
   "repo_root":"https://apk.me003.com/ME003",
   "apks":[
      {
         "size":30148900,
         "date":1517137708506,
         "icon":"com.HBO-2001034.png",
         "label":{"default":"HBO GO"},
         "version_name":"10.1.0.34",
         "package_name":"com.HBO",
         "version_code":2001034,
         "md5":"f07dd3ba6cfe460db54e507133c7ccb9",
         "apk_url":"com.HBO-2001034.apk"
      },
     …..[EDITED]…
    ]
}
```


The beoutQ STB performs a check of the version of each application and if there is a newer version of the application available will notify the user to update in a form of a flag on the icon.

2) The app store makes multiple requests to 143.204.106.31 (*apk.me003.com)* to get app images:

Http header
GET /ME003/com.easething.playeriud-6.png HTTP/1.1
User-Agent: Dalvik/2.1.0 (Linux; U; Android 7.1.2; SS5B7BA_ME003 Build/NHG47L)
Host: apk.me003.com
Connection: Keep-Alive
Accept-Encoding: gzip

The response is the image with the following headers:

HTTP/1.1 200 OK
Content-Type: image/png
Content-Length: 2713
Connection: keep-alive
Last-Modified: Sun, 28 Jan 2018 11:02:25 GMT
Accept-Ranges: bytes
Server: AmazonS3
Date: Mon, 04 Mar 2019 14:31:33 GMT
ETag: "addb59a5d5e53af5d80dee04c796b115"
Age: 74908
X-Cache: Hit from cloudfront

Via: 1.1 eee0602d0c6f247647395ec879baf443.cloudfront.net (CloudFront)
X-Amz-Cf-Id: tblB410llmoqi01ydCsWUEgzXU5vvukl03-t95OjVe8nHejY-iNd0g==

3) The beoutQ STB establishes http2 connection with 143.204.106.31 and downloads "com.myspecial.launcher.hayiptv-10.apk" from apk.me003.com/ME003/com.myspecial.launcher.hayiptv-10.apk

4) The beoutQ STB installs the APK and displays it on the application list page

Further Potential for the beoutQ App Store

As part of the investigation, the beoutQ app store itself was intercepted, allowing the ability to include and host any third-party APK that was compiled with ArmV7 architecture. To test, a browser and some other test applications were installed to see how the beoutQ STB reacts to this external intrusion. From the initial analysis of this, the beoutQ STB does not enforce any signatures or blacklisting of APKs. This shows that beoutQ have the ability to add more IPTV applications to their app store at any time and with very little effort.**EVDTV IPTV App investigation**

Activation of EVDTV App

On activation of the EVDTV IPTV app, the following actions are performed:

1) A connection is made to download configuration files from:
rutv.ovh/android/providers-lifetime/hayiptv/config.xml
Before activation this contains:

- The EPG location:
http://uaetab.xyz:8080/xmltv.php?username=UUU&password=UUU
- The splash screen that shows at start up

http://rutv.ovh/android/providers-lifetime/hayiptv/provSplash.png

- The background image
http://rutv.ovh/android/providers-lifetime/hayiptv/provBackground.jpg
- VOD content from
http://uaetab.xyz:8080/panel_api.php?username=UUU&password=UUU

2) A call to each of the URLs to gather further information. The first of which is to (31.220.1.194)
uaetab.xyz:8080/panel_api.php?username=UUU&password=UUU

Which redirects to:
http://iptvr.net:2095/panel_api.php?username=UUU&password=UUU

3) A cookie is set and an Auth:0 is responded. This is expected as the server has not yet been authenticated.

4) Attempts to retrieve the EPG data from uaetab.xyz however another redirect sends it to iptvr.net to (104.27.153.188). The response from the server to get the EPG data returns a 401 Unauthorized. This is expected as the beoutQ STB has not yet been activated. This box looks to be a cloudflare server.

5) Once the b eoutQ STB has been activated (by typing in the activation code provided), the app makes a new connection to uaetab.xyz including our activation code as both the username and password forwarded to the request:
uaetab.xyz:8080/panel_api.php?username=88112000611&password=88112000611
This is redirected once more to the iptvr.net domain:
http://iptvr.net:2095/panel_api.php?username=88112000611&password=88112000611

6) The response to the new URL is a JSON list of user information, including username, status of the activation code, expiration date, active connections, when it was created, maximum number of simultaneous connections and what formats it supports. A sample can be seen here:


```
{
  "user_info":{
    "username":"88112000611",
    "password":"88112000611",
    "auth":1,
    "status":"Active",
    "exp_date":"1564846524",
    "is_trial":"0",
    "active_cons":"0",
    "created_at":"1549211724",
    "max_connections":"1",
    "allowed_output_formats":[
      "m3u8",
      "ts",
      "rtmp"
    ]
  },
  "server_info":{
    "url":"tv2ip.nl",
    "port":"80",
    "https_port":"25463",
    "server_protocol":"http"
  }
```


7) A full list of channels and categories are sent to populate the channel listing on the front page of the application (Full list of 4000 channels can be seen further down) an example of what is sent in one is here:


```
"36474":{

  "num":31,

  "name":"VIP BeIN Sports 10 HD",

  "stream_type":"live",

  "type_name":"Live Streams",

  "stream_id":"36474",

  "stream_icon":"http:\/\/163.172.48.123\/channel-logo\/MIX\/BeIN%20Sports%2010%20HD.png",
```

"epg_channel_id":"beINsports10.qa",

"added":"1532097338",

"category_name":"BeIN Sports",

"category_id":"72",

"series_no":null,

"live":"1",

"container_extension":null,

"custom_sid":"",

"tv_archive":0,

"direct_source":"",

"tv_archive_duration":0

}

8) Connects to each channel listed in the above response and downloads the "Stream_icon" image to display next to the channel name on the UI. This takes a lot of time to download and the app connects to multiple servers during this process. Images look to be sourced from multiple locations including: laredocordcutters.com, Wikimedia, okteve.com, oklivetv.com, pici.life, www.lyngsat-logo.com, mikesandroid.info and even an amazon s3 bucket s3-eu-west-1.amazonaws.com/photo.elcinema.com. A full list can be seen at the bottom of this document.

9) Retrieves the EPG data for the channels from
iptvr.net:2095 /xmltv.php?username=88112000611&password=88112000611
This is close to 15mb of data in XML format including display-name, channel id, Icon location, programme name and description.

<u>Streaming Content via EVDTV</u>

Once a channel has been selected from the frontend, the following actions are performed:

1) A call is made to (31.220.1.194)
uaetab.xyz:8080/live/88112000611/88112000611/<CHANNEL ID>.ts

This is the domain from the configuration followed by the username and password (both being the activation code) and channel id.

2) This is immediately redirected to (104.27.153.188)
http://iptvr.net:2095/live/88112000611/88112000611/13548.ts

3) This is then redirected to the following IP with a long base64 encoded token. This includes the cloudflare headers from the last request.

http://185.246.211.113:25461/live/88112000611/88112000611/13548.ts?token=HhANV0IOFlhEB1RRCl5QUggCCwJTB1pcVltVAFdSAwlQBwRVBgcCUFMUSUFLEhdTWF1sDQESA1QGDQcBGBJCSwBAOl9VRA5AVwdSWwtSRxobRFoJABIDVAANAgEFCAYPUx5HRlgCFlhEB1BQDl9dFBUSVhwRVUsLVFRsXVFGXlsAEF9YRApYTkRZCzxcAwhXV1QRXkcAG0kXUUBJFgoVfQhbF1dFA0dCL1gRBl8UBEJcVBMwAFxcBlpVXkxaWVRZEVsKWEJGdw0LRgQNQUY1fGpzEUhHUlARR1lHXBYKFQlWBlMUHURXDRNYERFBRF8UeHURSEdVQRFQVkBQW14VAkdGFhQdRF0ROUQAEEwUAFdUVUFGXxIJRxkaXlhMb1RXC1wAVUUPWwwVFF9BCURJFFRfXQ0RX0s6RVFXGw4SDwlVA1cUTA==

4) After connecting to the URL, the box then starts playing the transport stream video, and the television broadcast can be viewed by the user.

The above investigations were repeated for the RED IPTV and IUDTV IPTV apps, and the results and findings are as follows:

RED IPTV App Investigation

Activation of RED IPTV

1) After opening the app, the following request is sent to 212.224.72.111:

https://android.rediptv.com/settings.php?&page=info&mac=02A3B512A6AD&sn=01011804452985&cs=amlogic&check=476082798

Response:

[{"name":"REDIPTV","pid":1,"servers":{"1":"https://android.rediptv.com:443"}},{"name":"RICHTV","pid":2,"servers":{"1":"https://android.rediptv.com:443"}},{"time":1551791652}]

2) After opening the settings view, the following request is made:

https://android.rediptv.com/login.php?usercode=0000000000&pid=1&mac=02A3B512A6AD&sn=01011804452985&customer=redline&model=SS5B7BA_ME003&cs=amlogic&check=4101389703

In response, server returned HTTP 403 with the body “Connection failed”

3) After entering the user/subscription code in the settings page, the following HTTP GET request is made to the server:

https://android.rediptv.com/login.php?usercode=5864712568&pid=1&mac=02A3B512A6AD&sn=01011804452985&customer=redline&model=SS5B7BA_ME003&cs=amlogic&check=2615922064

Response:

[{"userCode":"5864712568","userId":"2977424","months":"6","startDate":"20190305","expireDate":"20190905","package":"PLATINUM","adult":0,"status":"ACTIVE"}]

Streaming Content via RED IPTV

After opening the app, the following actions occur:

1) A call is made to (212.224.72.111)

https://android.rediptv.com/settings.php?&page=info&mac=02A3B512A6AD&sn=01011804452985&cs=amlogic&check=476082798

Response:

[{"name":"REDIPTV","pid":1,"servers":{"1":"https://android.rediptv.com:443"}},{"name":"RICHTV","pid":2,"servers":{"1":"https://android.rediptv.com:443"}},{"time":1551818612}]

2) A call is made to (212.224.72.111)

https://android.rediptv.com/login.php?usercode=5864712568&pid=1&mac=02A3B512A6AD&sn=01011804452985&customer=redline&model=SS5B7BA_ME003&cs=amlogic&check=2615922064

Response:

[{"userCode":"5864712568","userId":"2977424","months":"6","startDate":"20190305","expireDate":"20190905","package":"PLATINUM","adult":0,"status":"ACTIVE"}]

3) A call is made to 212.224.72.111:

https://android.rediptv.com/ch.php?usercode=5864712568&pid=1&mac=02A3B512A6AD&sn=0101 1804452985&customer=redline&lang=eng&cs=amlogic&check=1944166783

Response is binary data.

4) A call is made to 212.224.72.111:

https://android.rediptv.com/fav.php?usercode=5864712568&pid=1&mac=02A3B512A6AD&sn=010 11804452985&page=list&itemtype=1&cs=amlogic&check=2840836247

Response:

[{"Message":"Connection Failed"}]

5) A call is made to 212.224.72.112 to get the video stream:

http://watch.rediptv.com/?watch=TR/5050-tr&token=b6705e2c414fc1624282c984f4ba8aa0&t=0&s=1&p=1&c=AE&r=1024

Response is a redirect to a different server:

http://212.224.72.201:2200/TR/5050-tr/index.m3u8?token=b6705e2c414fc1624282c984f4ba8aa0

6) Client automatically follows the previous link and a new request is made:

http://212.224.72.201:2200/TR/5050-tr/index.m3u8?token=b6705e2c414fc1624282c984f4ba8aa0

The response contains another playlist file that is hosted on the same server and client follows the link automatically:

http://212.224.72.201:2200/TR/5050-tr/tracks-v1a1/mono.m3u8?token=b6705e2c414fc1624282c984f4ba8aa0

The response is a .m3u8 playlist file that contains video chunks of live stream. Chunks are hosted on same server. Sample requests to get chunks of video content:

http://212.224.72.201:2200/TR/5050-tr/tracks-v1a1/2019/03/05/20/42/50-10800.ts?token=b6705e2c414fc1624282c984f4ba8aa0

7) After switching to another channel, the sequence of requests is the same, but the server is different:

Initial playlist: http://185.180.15.223:2200/EX/beIN2hd-ar/index.m3u8?token=b6705e2c414fc1624282c984f4ba8aa0

Playlist that holds video chunks: http://185.180.15.223:2200/EX/beIN2hd-ar/tracks-v1a1/mono.m3u8?token=b6705e2c414fc1624282c984f4ba8aa0

Receiving a video chunk: http://185.180.15.223:2200/EX/beIN2hd-ar/tracks-v1a1/2019/03/05/20/43/05-10600.ts?token=b6705e2c414fc1624282c984f4ba8aa0

IUDTV App Investigation

Activation of IUDTV

1) The activation code is submitted to panel.iudtv.org (104.31.74.243):

http://panel.iudtv.org/IudtvApi/authlogin?code=1903gkpt6434t0zr&serial=MydalAle798024V

Response:

{"result":true,"code_info":{"code":"1903gkpt6434t0zr","status":1,"exp_date":"2019-06-05 07:44:02","timezone":"GMT","exp_timestamp":1559720642},"renew_info":{"renew":{"msg":"Your code nearly expired. Please click Renew Button renew now or go next link Renew","reseller_id":"39","link":"https:\/\/goo.gl\/yaXMJ8","qrimg":"http:\/\/api.leadcool.net\/iud\/IUDTV_leadcoo.png"},"load":{"img":null,"lifetime":null},"ad":{"img":null}}}

2) Channel list is received from the same server

Streaming Content via IUDTV

To stream live content from IUDTV, the user must open the app on the beoutQ STB and select a channel. The app will then make the following requests:

1) Initial request to get video stream is sent to (IP: 212.8.248.233)
   http://ipsatpro.biz:8080/live/1903gkpt6434t0zr/1903gkpt6434t0zr/693.ts

2) Server returns a link to follow (IP: 194.88.104.108):

http://6server6.xyz:8080/live/1903gkpt6434t0zr/1903gkpt6434t0zr/167.ts?token=TxtRAxVZQAgRBwABAABUBQcHAFMKBAZRAFYEWlYGWANVDgtRUFRUBAQTSBAXFkQGVl1uClYSDlQPBR9BRxFcE2tQXUBcE1YFAAlVAkZOFBdeXVRBCAEBUAgKAlQLVg1NFklQBkQLQAALAFEERk4UBk9EVBFcUVg6XVdFClEHG1taTFUOShMNXGxVAV8FDFJBDRIBQR4SXRZJEAlBdw9QE1VNXBFGeAxGVlYWUxAHUkNjVV0GUV9ZCExcWgBTFlAOWkoZIQlcElNdSERiLjF1QRsSUwpGQlURXBAJQQBQCFkWFRsBCUQMRkFIRghGI3NBGxJUG0ZVWhZQXV1BCEBNEhYVGwsVbhBXQEUWVwUPUxEVChNTEBwWCFhKbABdDFcEV01QDQhCQAgRAEYeRg9ZDV5EXhFtQF0BGwgRVgtaD0NJ

13. Conclusion of IPTV Apps Investigation

While the streaming technology used by the IUDTV, EVDTV and RED IPTV apps has similarities, evidence could not be found of similarities with either the authentication processes or their java applications to conclude they are made or run by the same party. Our conclusion is that each of these apps is owned / operated by a different third party.

In contrast to the beoutQ HD Sport Satellite application, none of the three applications investigated implement any security measures to combat the use outside of the local region and only block widely known VPN IP addresses. It is clear that the developers of the beoutQ HD Sport Satellite application are using far more sophisticated technology and have put in place more sophisticated security measures with the aim of ensuring that only authorised users within the correct geolocation (effectively, the Middle East region) can use the service and view the content on the pirate beoutQ channels. None of the 3rd party apps that we observed and investigated showed signs that the developers shared the same security concerns as beoutQ, and while there were some restrictions in place, the overall security of the 3rd party IPTV apps was very relaxed in comparison.

The IPTV apps analysed in this investigation were hosted by the beoutQ app store and are freely available to download by beoutQ subscribers. These apps are also available outside of the beoutQ app store, namely on the Google Play app store and on other websites and are available to be installed on other Android devices. So, whilst beoutQ are using the popularity of these IPTV apps as an added feature of their service (and vice-versa, we have observed that the app developers are using beoutQ's name by advertising that the apps are available on the beoutQ service and to receive the beoutQ channels), it is not believed that the third party apps are owned and/or operated by the same entities or directly linked to the beoutQ service and its developers.

It is the conclusion of this investigation that these IPTV apps are not directly linked in terms of the development, creation and maintenance of the services they provide, it is clear that by hosting these IPTV apps on their own app store, which is the only app store available to beoutQ subscribers and which is moderated solely by beoutQ, beoutQ are complicit in the illegal broadcasting of the claimants' copyrighted content via the 3rd party IPTV apps as well as the beoutQ satellite transmission via the beoutQ HD Sport satellite application.

14. ANNEX 1 – List of Carriers received by the set top box on 26 degrees east

Ref. number	Orbital Position	Frequency (GHz)	LNB OL (GHz)	L-Band Frequency (GHz)	Polarisation	Symbol Rate (MS/s)	Modulation	FEC	Impact of interference on beoutQ boxes	Comments
1	25,5	10730	9750	980	H	30	DVB-S 8PSK	3/4	None	
2	26	10730	9750	980	V	27,5	DVB-S2 8PSK	3/4	None	
7	25,5	11045	9750	1295	H	27,5	DVB-S2 8PSK	2/3	None	
8	25,5	11065	9750	1315	V	27,5	DVB-S2 8PSK	2/3	None	
9	25,5	11084	9750	1334	H	27,5	DVB-S2 8PSK	2/3	None	
10	25,5	11103	9750	1353	V	27,5	DVB-S2 8PSK	2/3	None	
11	25,5	11123	9750	1373	H	27,5	DVB-S2 8PSK	2/3	None	
12	25,5	11142	9750	1392	V	27,5	DVB-S QPSK	3/4	None	
13	25,5	11180	9750	1430	V	27,5	DVB-S2 8PSK	2/3	None	
14	26	11230	9750	1480	V	27,5	DVB-S2 8PSK	3/4	None	
15	26	11230	9750	1480	H	27,5	DVB-S2 8PSK	5/6	None	
16	26	11270	9750	1520	H	27,5	DVB-S2 8PSK	5/6	Video stops	beoutQ video channel
17	26	11270	9750	1520	V	27,5	DVB-S QPSK	5/6	None	
18	26	11350	9750	1600	H	30	DVB-S QPSK	3/4	None	
19	26	11390	9750	1640	V	27,5	DVB-S2 8PSK	2/3	None	
20	25,5	11547	9750	1797	V	27,5	DVB-S2 8PSK	2/3	None	
21	25,5	11566	9750	1816	H	27,5	DVB-S2 8PSK	2/3	None	
22	25,5	11585	9750	1835	V	27,5	DVB-S2 8PSK	2/3	None	
23	25,5	11604	9750	1854	H	27,5	DVB-S QPSK	3/4	None	
24	25,5	11623	9750	1873	V	27,5	DVB-S2 8PSK	2/3	None	
25	25,5	11642	9750	1892	H	27,5	DVB-S2 8PSK	2/3	None	
26	25,5	11669	9750	1919	V	27,5	DVB-S2 8PSK	2/3	None	
27	25,5	11678	9750	1928	H	27,5	DVB-S2 8PSK	3/4	None	
28	26	11727	10600	1127	H	27,5	DVB-S2 8PSK	3/4	None	

Ref. number	Orbital Position	Frequency (GHz)	LNB OL (GHz)	L-Band Frequency (GHz)	Polarisation	Symbol Rate (MS/s)	Modulation	FEC	Impact of interference on beoutQ boxes	Comments
29	26	11747	10600	1147	V	27,5	DVB-S QPSK	3/4	None	
30	26	11766	10600	1166	H	27,5	DVB-S2 8PSK	3/4	None	
31	26	11785	10600	1185	V	27,5	DVB-S QPSK	3/4	None	
32	26	11804	10600	1204	H	27,5	DVB-S QPSK	3/4	None	
33	26	11823	10600	1223	V	27,5	DVB-S2 8PSK	3/4	None	
34	26	11843	10600	1243	H	27,5	DVB-S QPSK	3/4	None	
35	26	11862	10600	1262	V	27,5	DVB-S QPSK	3/4	None	
36	26	11881	10600	1281	H	27,5	DVB-S2 8PSK	5/6	None	
37	26	11900	10600	1300	V	27,5	DVB-S QPSK	3/4	None	
38	26	11919	10600	1319	H	27,5	DVB-S2 8PSK	5/6	beoutQ application does not start if interfered during app launch	beoutQ signaling channel
39	26	11938	10600	1338	V	27,5	DVB-S QPSK	5/6	None	
40	26	11958	10600	1358	H	27,5	DVB-S QPSK	5/6	None	
41	26	11977	10600	1377	V	27,5	DVB-S QPSK	5/6	None	
42	26	11996	10600	1396	H	27,5	DVB-S QPSK	3/4	None	
43	26	12015	10600	1415	V	27,5	DVB-S QPSK	3/4	None	
44	26	12034	10600	1434	H	27,5	DVB-S QPSK	5/6	None	
45	26	12054	10600	1454	V	27,5	DVB-S QPSK	5/6	None	
46	26	12073	10600	1473	H	27,5	DVB-S2 8PSK	3/4	None	
47	26	12092	10600	1492	V	27,5	DVB-S QPSK	5/6	None	
48	26	12111	10600	1511	H	27,5	DVB-S QPSK	5/6	None	
49	26	12130	10600	1530	V	27,5	DVB-S QPSK	3/4	None	
50	26	12149	10600	1549	H	27,5	DVB-S2 8PSK	5/6	None	
51	26	12169	10600	1569	V	22	DVB-S2 QPSK	3/4	None	

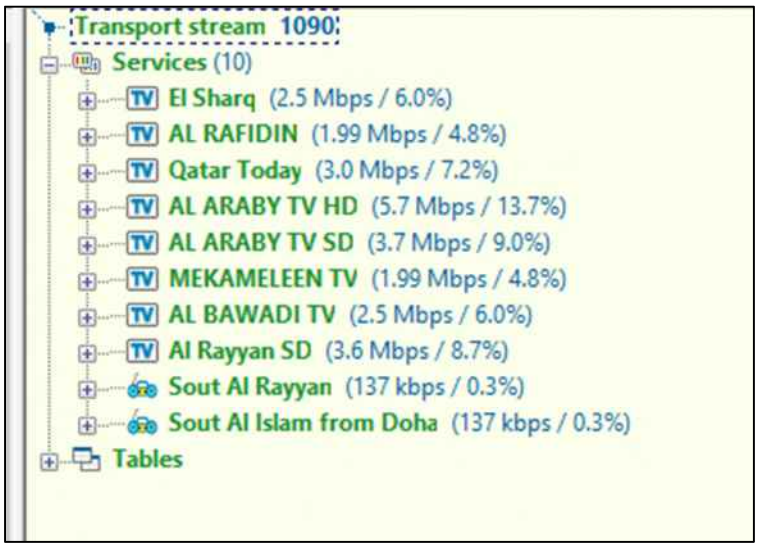
Ref. number	Orbital Position	Frequency (GHz)	LNB OL (GHz)	L-Band Frequency (GHz)	Polarisation	Symbol Rate (MS/s)	Modulation	FEC	Impact of interference on beoutQ boxes	Comments
52	26	12182	10600	1582	H	16,2	DVB-S QPSK	3/4	None	
53	26	12207	10600	1607	V	27,5	DVB-S2 8PSK	5/6	None	
54	26	12226	10600	1626	H	27,5	DVB-S QPSK	3/4	None	
55	26	12245	10600	1645	V	27,5	DVB-S2 8PSK	3/4	None	
56	26	12265	10600	1665	H	30	DVB-S QPSK	3/4	None	
57	26	12303	10600	1703	H	32	DVB-S2 8PSK	3/4	None	
74	26	12284	10600	1684	V	30	DVB-S2 8PSK	3/4	None	
58	26	12322	10600	1722	V	30	DVB-S2 8PSK	3/4	None	
59	26	12341	10600	1741	H	27,5	DVB-S2 8PSK	5/6	None	
60	26	12360	10600	1760	V	27,5	DVB-S2 8PSK	3/4	None	STB tunes to this frequency upon boot
61	26	12380	10600	1780	H	27,5	DVB-S QPSK	5/6	None	
62	26	12399	10600	1799	V	27,5	DVB-S2 8PSK	3/4	None	
63	26	12418	10600	1818	H	27,5	DVB-S2 8PSK	3/4	None	
64	26	12437	10600	1837	V	27,5	DVB-S QPSK	5/6	None	
65	26	12456	10600	1856	H	27,5	DVB-S QPSK	3/4	None	
66	26	12476	10600	1876	V	27,5	DVB-S QPSK	3/4	None	
67	26	12523	10600	1923	H	27,5	DVB-S QPSK	3/4	None	
68	26	12523	10600	1923	V	27,5	DVB-S QPSK	3/4	None	
69	26	12563	10600	1963	V	27,5	DVB-S QPSK	3/4	None	
70	26	12643	10600	2043	H	27,5	DVB-S QPSK	5/6	None	
71	26	12667	10600	2067	H	3,2	DVB-S2 8PSK	3/4	None	
72	26	12683	10600	2083	V	27,5	DVB-S QPSK	3/4	None	

Ref. number	Orbital Position	Frequency (GHz)	LNB OL (GHz)	L-Band Frequency (GHz)	Polarisation	Symbol Rate (MS/s)	Modulation	FEC	Impact of interference on beoutQ boxes	Comments
73	26	10850	9750	1100	H	27,5	DVB-S2 8PSK	2/3	None	

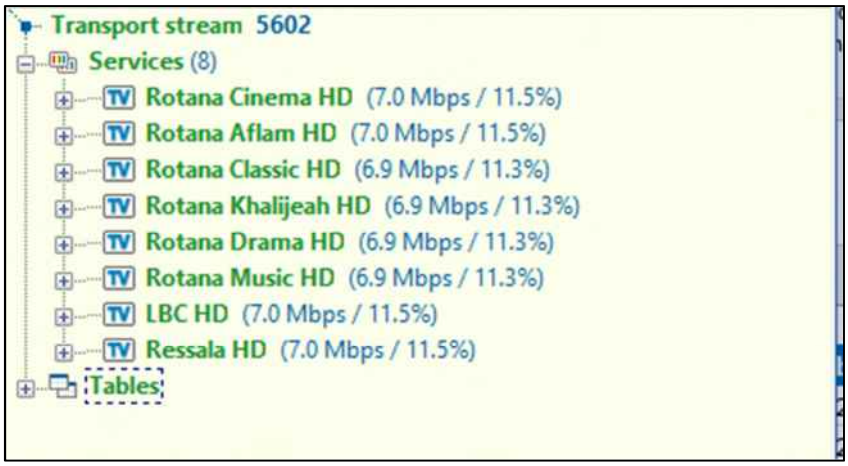
15. ANNEX 2 – Transport Stream analysis per received carrier

All screenshots are ordered by the reference number shown on Annex 1.

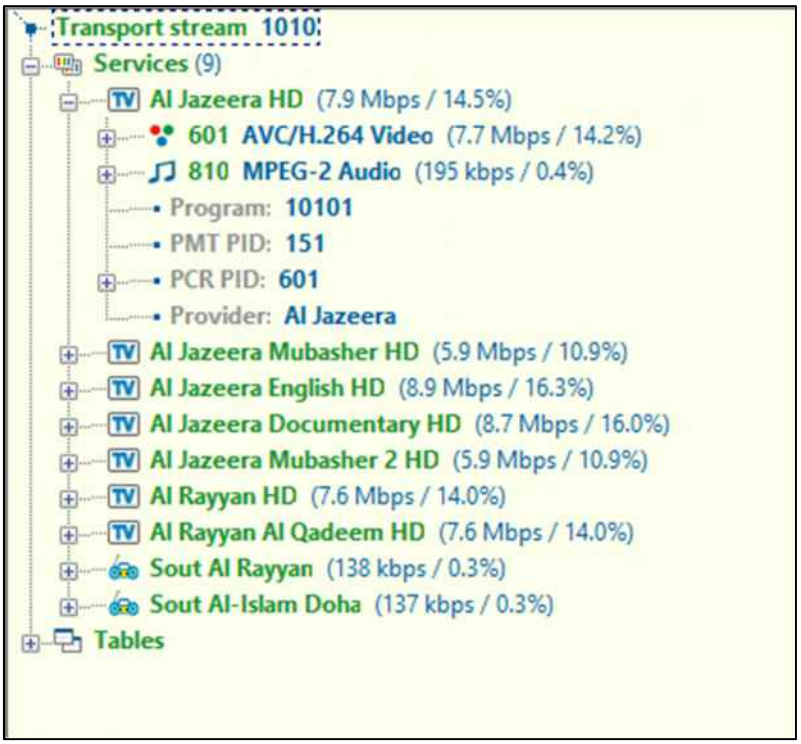
Carrier 1



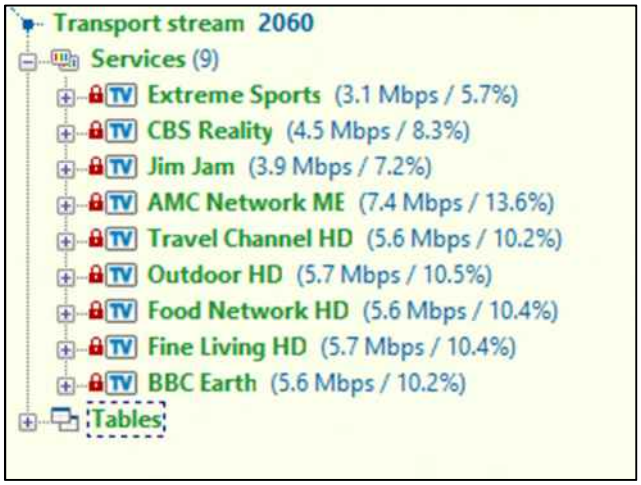
Carrier 2



Carrier 7

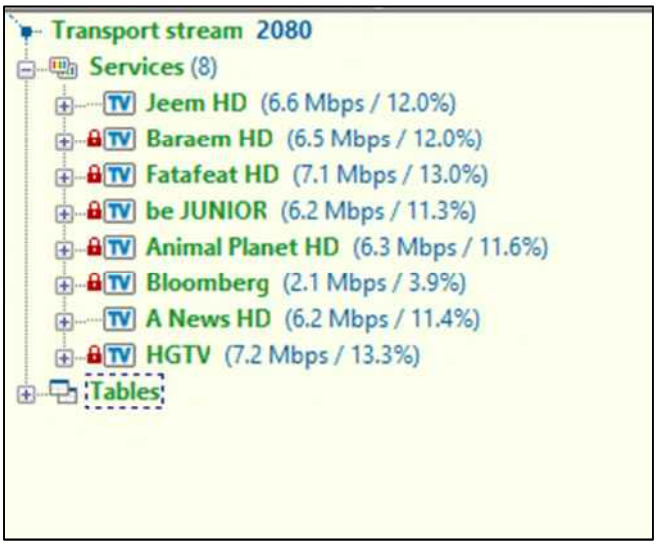


Carrier 8

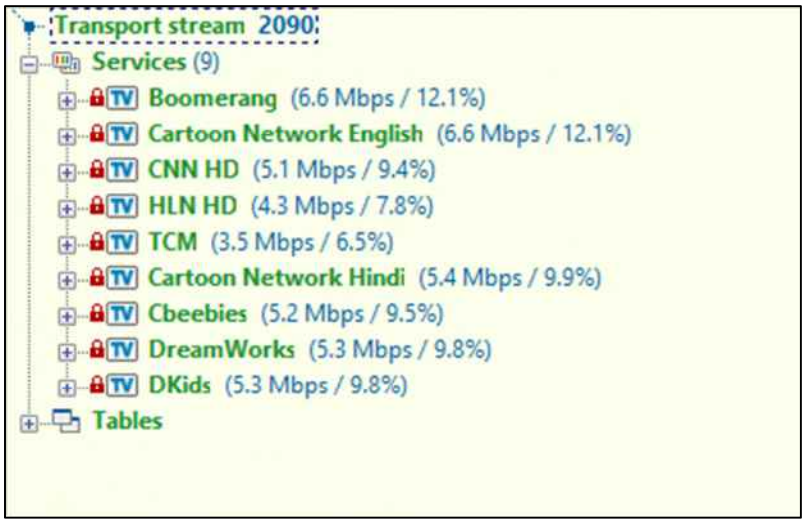


Carrier 9

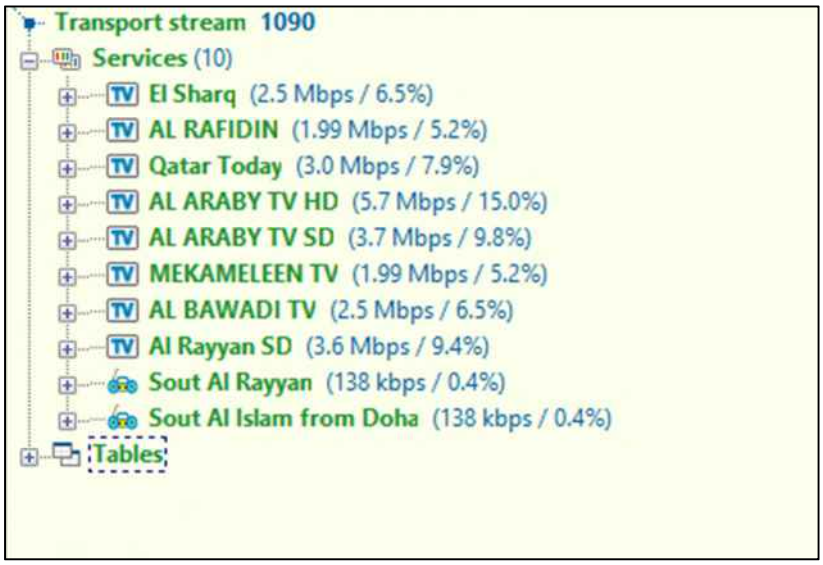
Carrier 10



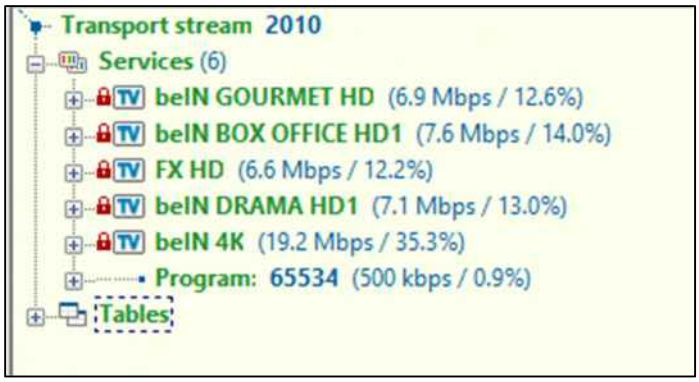
Carrier 11



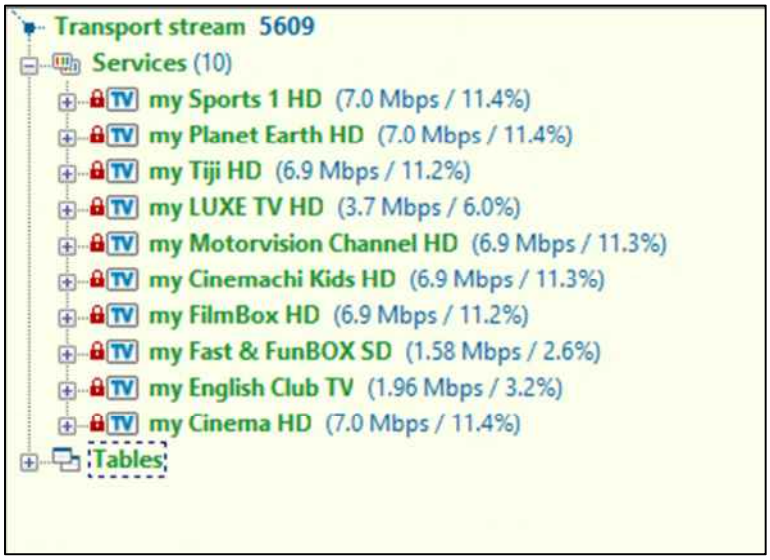
Carrier 12



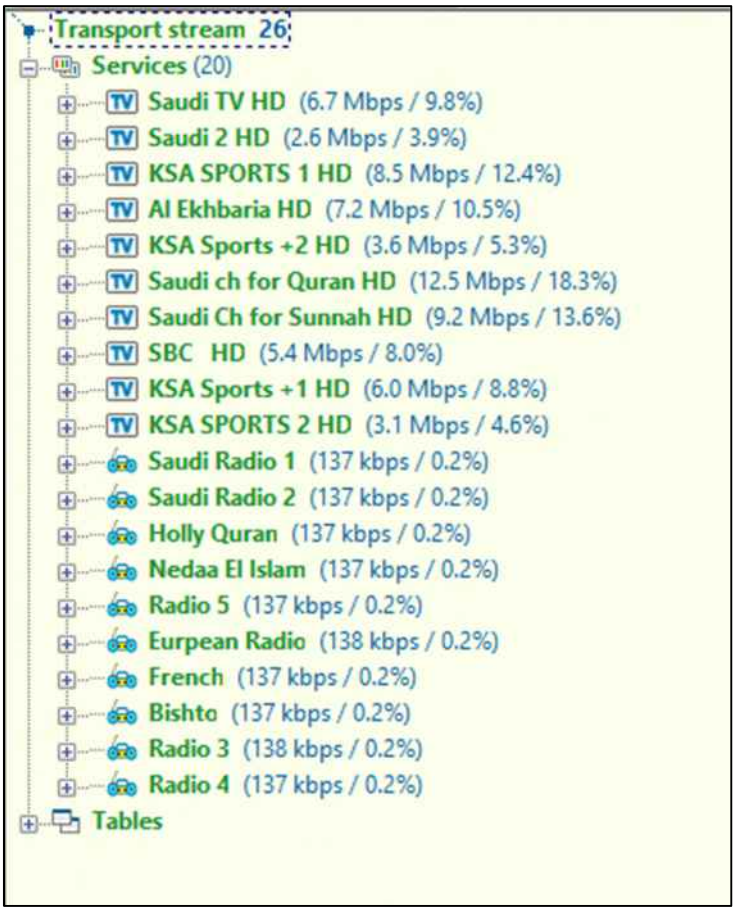
Carrier 13



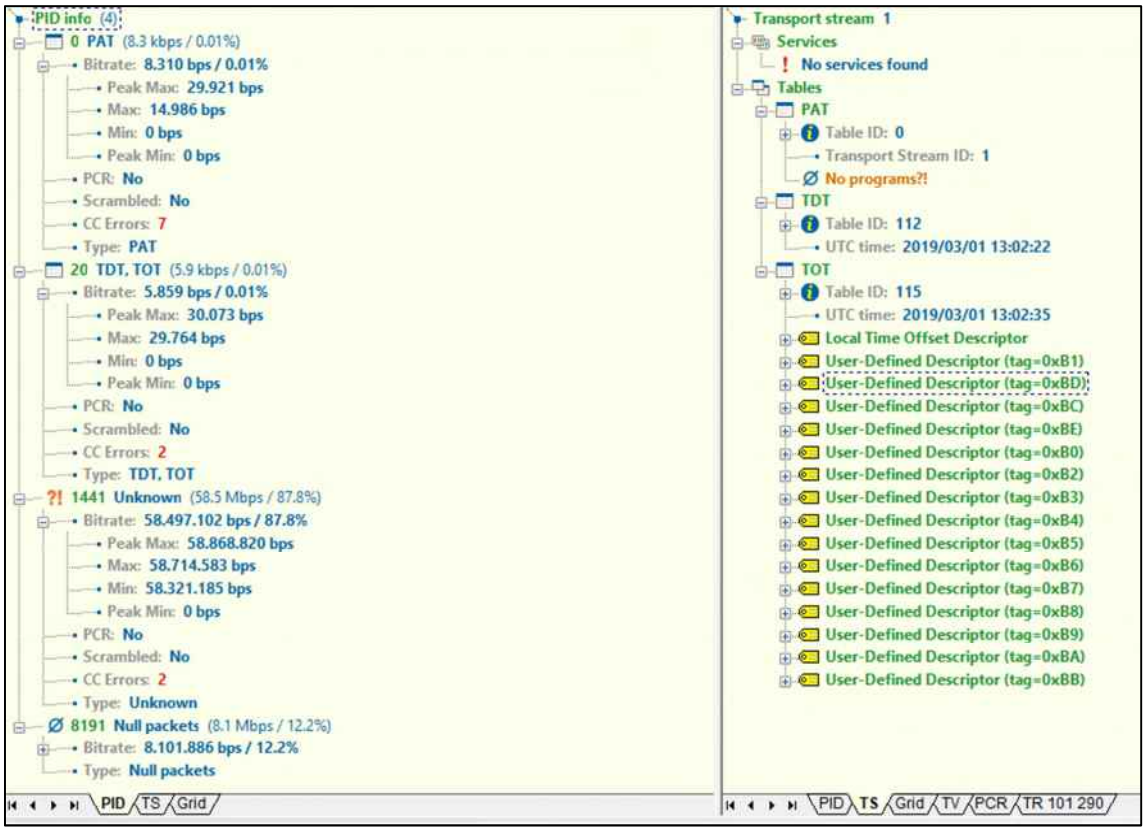
Carrier 14



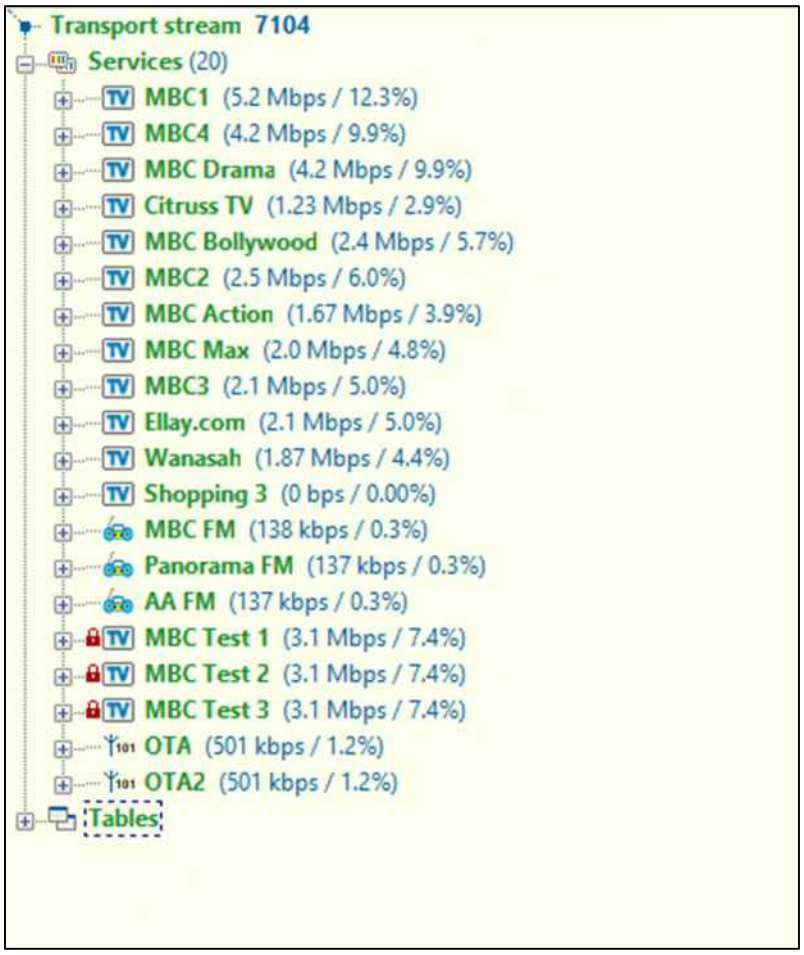
Carrier 15


Transport stream 26
Services (20)
Saudi TV HD (6.7 Mbps / 9.8%)
Saudi 2 HD (2.6 Mbps / 3.9%)
KSA SPORTS 1 HD (8.5 Mbps / 12.4%)
Al Ekhbaria HD (7.2 Mbps / 10.5%)
KSA Sports +2 HD (3.6 Mbps / 5.3%)
Saudi ch for Quran HD (12.5 Mbps / 18.3%)
Saudi Ch for Sunnah HD (9.2 Mbps / 13.6%)
SBC HD (5.4 Mbps / 8.0%)
KSA Sports +1 HD (6.0 Mbps / 8.8%)
KSA SPORTS 2 HD (3.1 Mbps / 4.6%)
Saudi Radio 1 (137 kbps / 0.2%)
Saudi Radio 2 (137 kbps / 0.2%)
Holly Quran (137 kbps / 0.2%)
Nedaa El Islam (137 kbps / 0.2%)
Radio 5 (137 kbps / 0.2%)
Eurpean Radio (138 kbps / 0.2%)
French (137 kbps / 0.2%)
Bishto (137 kbps / 0.2%)
Radio 3 (138 kbps / 0.2%)
Radio 4 (137 kbps / 0.2%)
Tables

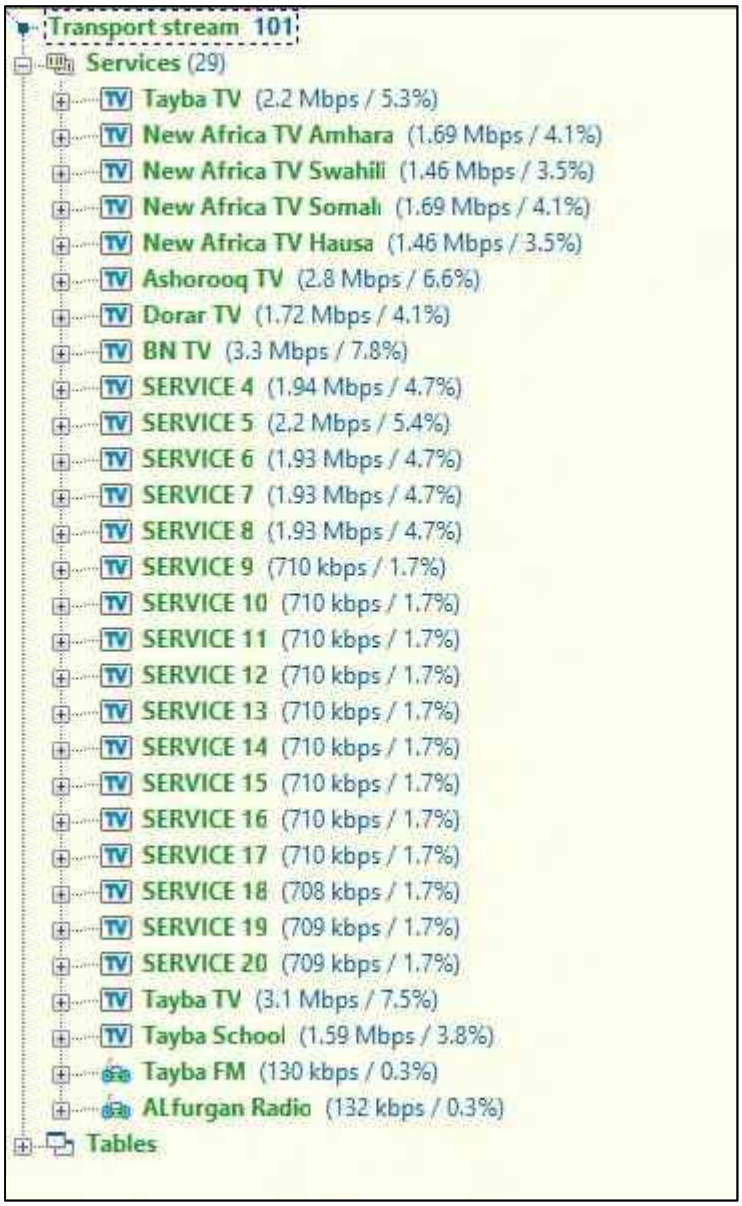
Carrier 16


PID info (4)
0 PAT (8.3 kbps / 0.01%)
Bitrate: 8.310 bps / 0.01%
Peak Max: 29.921 bps
Max: 14.986 bps
Min: 0 bps
Peak Min: 0 bps
PCR: No
Scrambled: No
CC Errors: 7
Type: PAT
20 TDT, TOT (5.9 kbps / 0.01%)
Bitrate: 5.859 bps / 0.01%
Peak Max: 30.073 bps
Max: 29.764 bps
Min: 0 bps
Peak Min: 0 bps
PCR: No
Scrambled: No
CC Errors: 2
Type: TDT, TOT
1441 Unknown (58.5 Mbps / 87.8%)
Bitrate: 58.497.102 bps / 87.8%
Peak Max: 58.868.820 bps
Max: 58.714.583 bps
Min: 58.321.185 bps
Peak Min: 0 bps
PCR: No
Scrambled: No
CC Errors: 2
Type: Unknown
8191 Null packets (8.1 Mbps / 12.2%)
Bitrate: 8.101.886 bps / 12.2%
Type: Null packets
PID TS Grid
Transport stream 1
Services
No services found
Tables
PAT
Table ID: 0
Transport Stream ID: 1
No programs?!
TDT
Table ID: 112
UTC time: 2019/03/01 13:02:22
TOT
Table ID: 115
UTC time: 2019/03/01 13:02:35
Local Time Offset Descriptor
User-Defined Descriptor (tag=0xB1)
User-Defined Descriptor (tag=0xBD)
User-Defined Descriptor (tag=0xBC)
User-Defined Descriptor (tag=0xBE)
User-Defined Descriptor (tag=0xB0)
User-Defined Descriptor (tag=0xB2)
User-Defined Descriptor (tag=0xB3)
User-Defined Descriptor (tag=0xB4)
User-Defined Descriptor (tag=0xB5)
User-Defined Descriptor (tag=0xB6)
User-Defined Descriptor (tag=0xB7)
User-Defined Descriptor (tag=0xB8)
User-Defined Descriptor (tag=0xB9)
User-Defined Descriptor (tag=0xBA)
User-Defined Descriptor (tag=0xBB)
PID TS Grid TV PCR TR 101 290

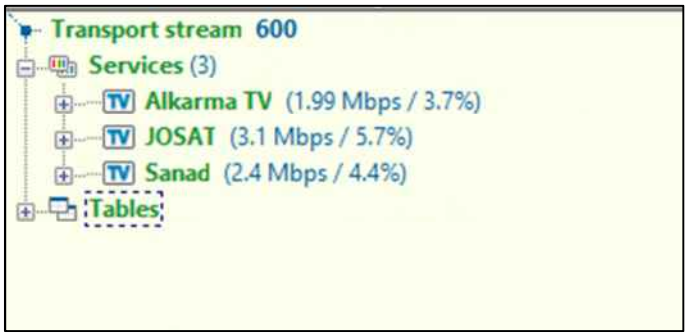
Carrier 17


Transport stream 7104
Services (20)
MBC1 (5.2 Mbps / 12.3%)
MBC4 (4.2 Mbps / 9.9%)
MBC Drama (4.2 Mbps / 9.9%)
Citruss TV (1.23 Mbps / 2.9%)
MBC Bollywood (2.4 Mbps / 5.7%)
MBC2 (2.5 Mbps / 6.0%)
MBC Action (1.67 Mbps / 3.9%)
MBC Max (2.0 Mbps / 4.8%)
MBC3 (2.1 Mbps / 5.0%)
Ellay.com (2.1 Mbps / 5.0%)
Wanasah (1.87 Mbps / 4.4%)
Shopping 3 (0 bps / 0.00%)
MBC FM (138 kbps / 0.3%)
Panorama FM (137 kbps / 0.3%)
AA FM (137 kbps / 0.3%)
MBC Test 1 (3.1 Mbps / 7.4%)
MBC Test 2 (3.1 Mbps / 7.4%)
MBC Test 3 (3.1 Mbps / 7.4%)
OTA (501 kbps / 1.2%)
OTA2 (501 kbps / 1.2%)
Tables

Carrier 18



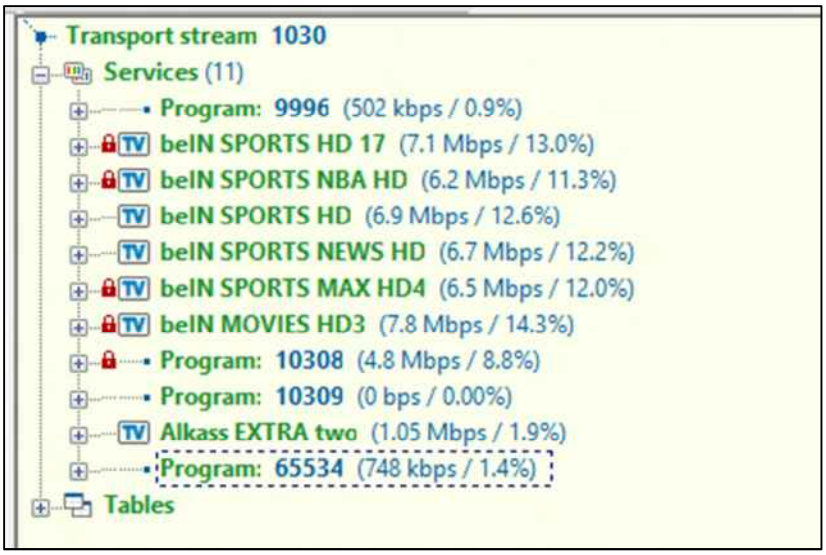
Carrier 19



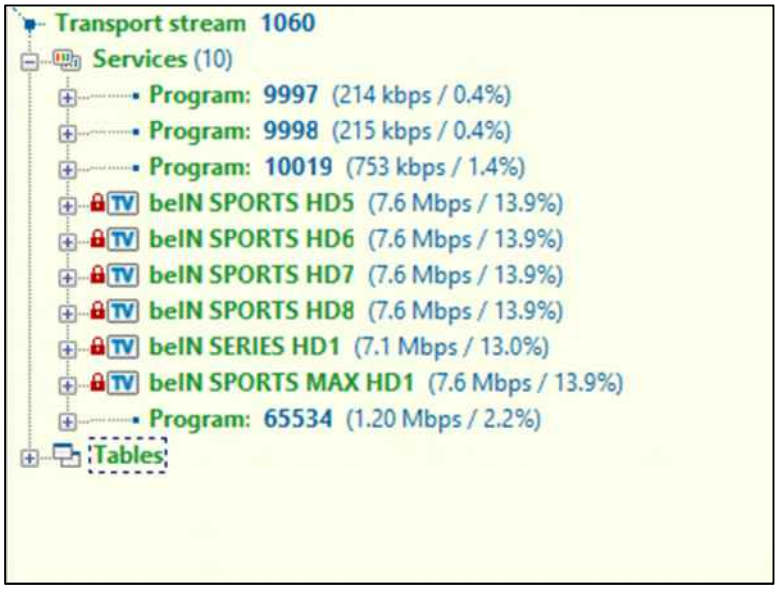
Carrier 20

Transport stream 1040
Services (8)
Program: 9999 (501 kbps / 0.9%)
beIN SPORTS HD1 (7.6 Mbps / 13.9%)
beIN SPORTS HD2 (7.6 Mbps / 13.9%)
beIN SPORTS HD3 (7.6 Mbps / 13.9%)
beIN SPORTS HD4 (7.6 Mbps / 13.9%)
beIN MOVIES HD1 (7.8 Mbps / 14.3%)
beIN SERIES HD2 (7.3 Mbps / 13.4%)
Program: 65534 (1.30 Mbps / 2.4%)
Tables

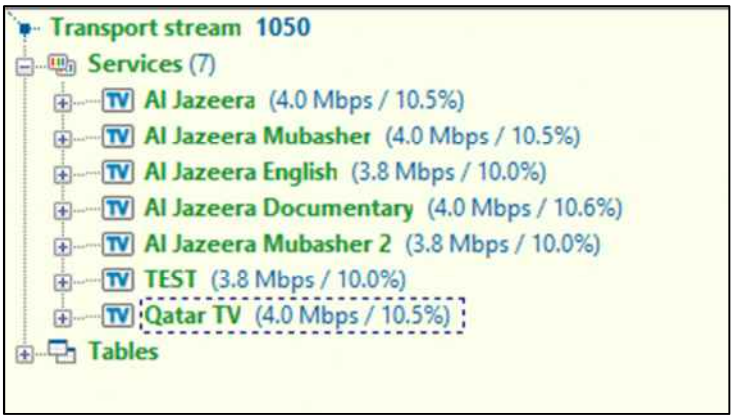
Carrier 21



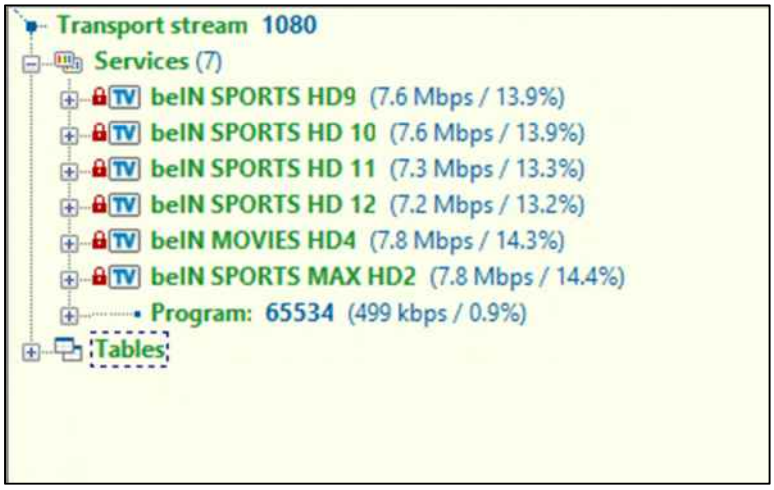
Carrier 22



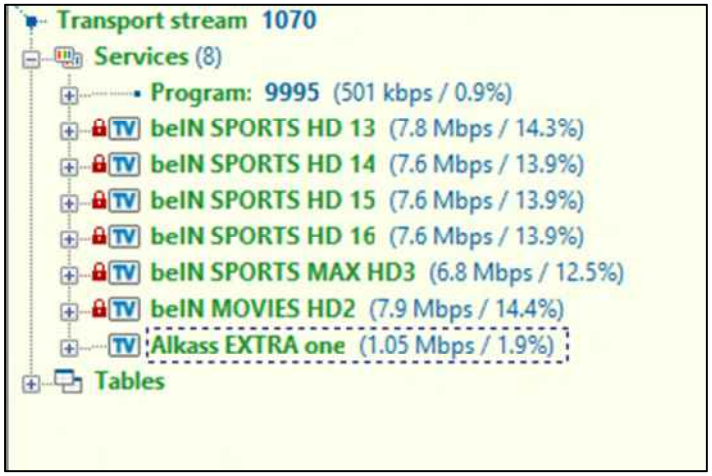
Carrier 23



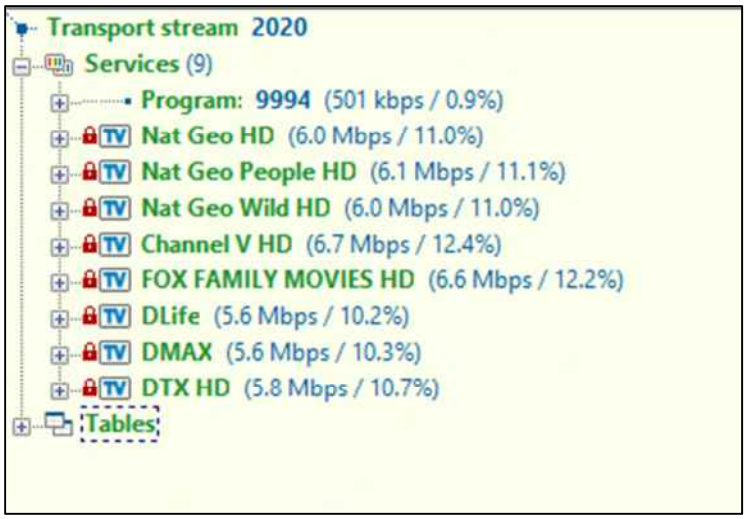
Carrier 24



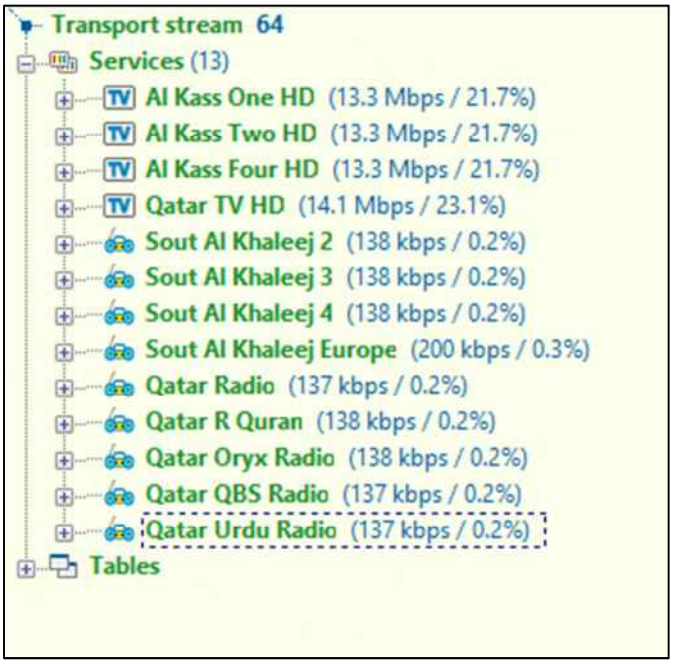
Carrier 25



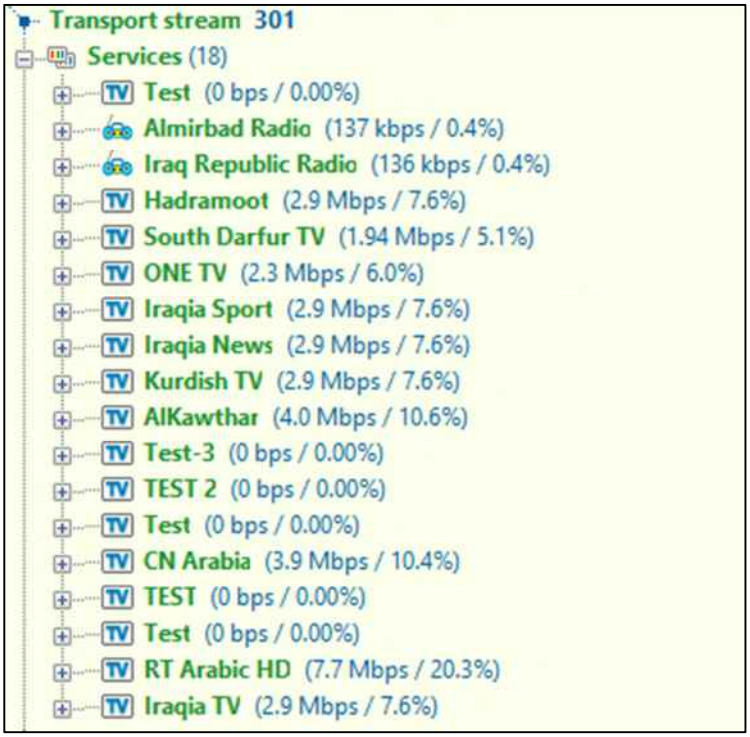
Carrier 26



Carrier 27

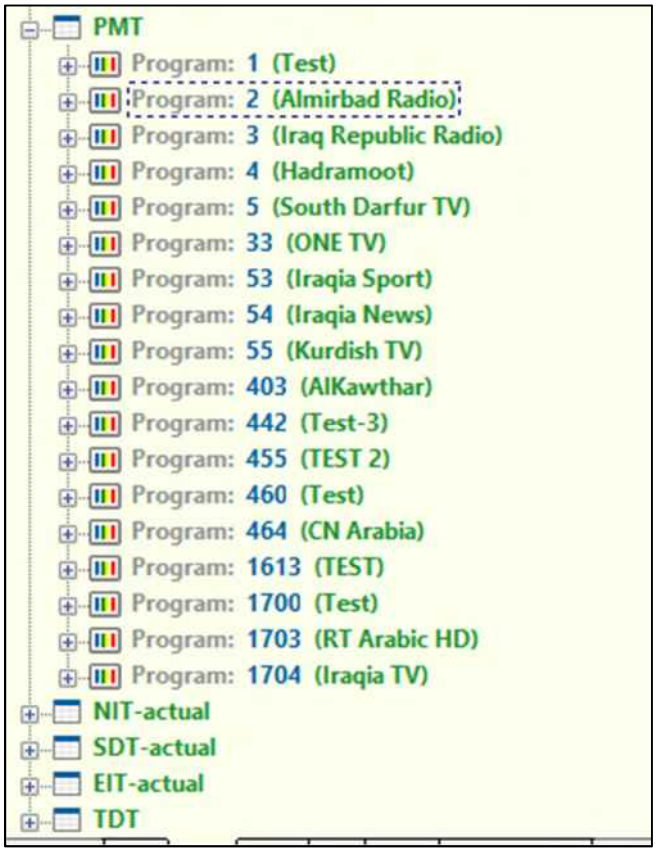


Carrier 28

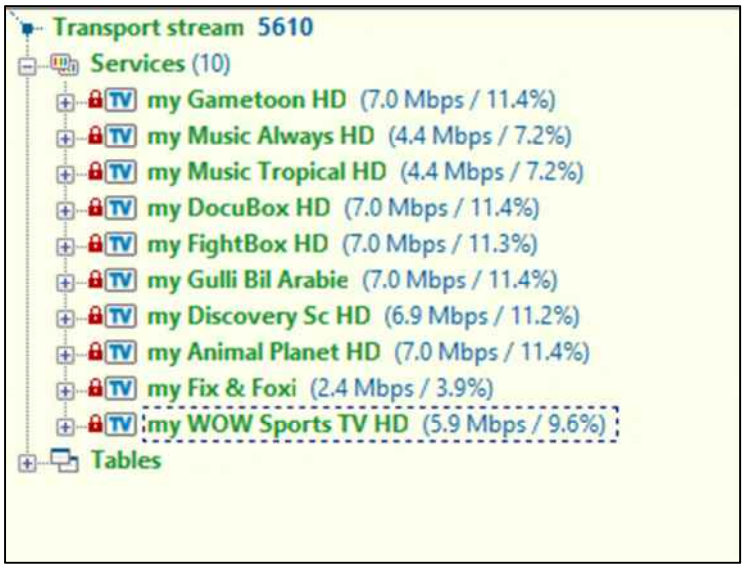


Carrier 29

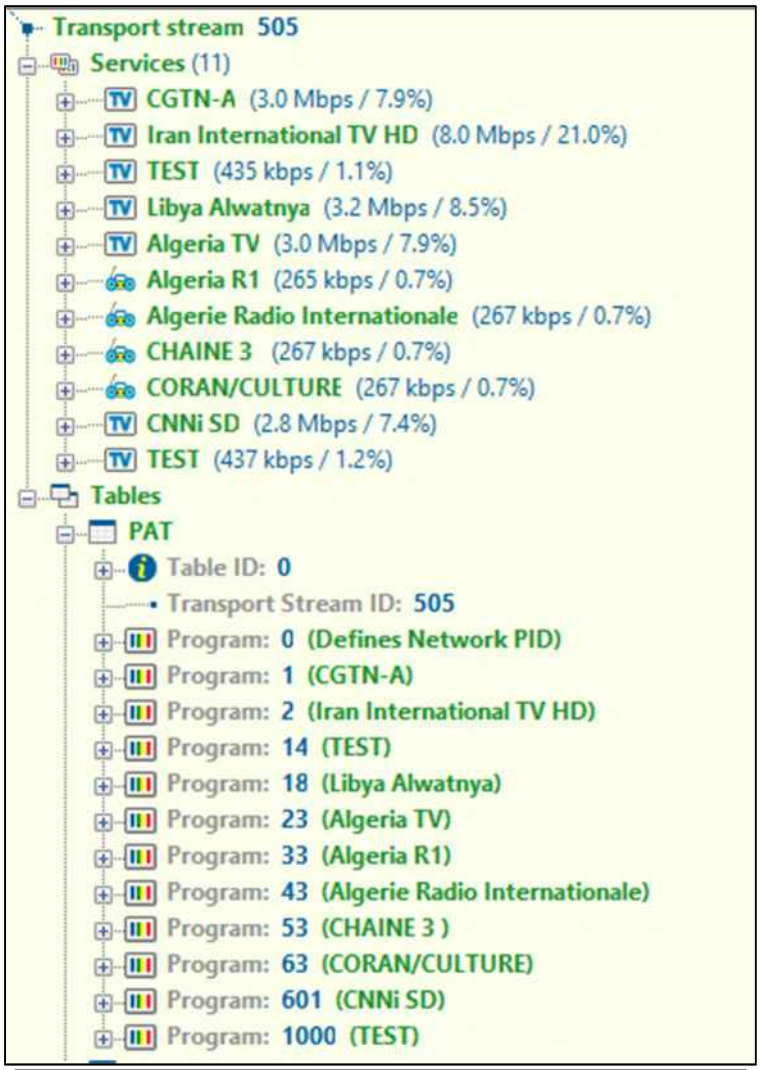
Tables
PAT
Table ID: 0
Transport Stream ID: 301
Program: 0 (Defines Network PID)
Program: 1 (Test)
Program: 2 (Almirbad Radio)
Program: 3 (Iraq Republic Radio)
Program: 4 (Hadramoot)
Program: 5 (South Darfur TV)
Program: 33 (ONE TV)
Program: 53 (Iraqia Sport)
Program: 54 (Iraqia News)
Program: 55 (Kurdish TV)
Program: 403 (AlKawthar)
Program: 442 (Test-3)
Program: 455 (TEST 2)
Program: 460 (Test)
Program: 464 (CN Arabia)
Program: 1613 (TEST)
Program: 1700 (Test)
Program: 1703 (RT Arabic HD)
Program: 1704 (Iraqia TV)


PMT
Program: 1 (Test)
Program: 2 (Almirbad Radio)
Program: 3 (Iraq Republic Radio)
Program: 4 (Hadramoot)
Program: 5 (South Darfur TV)
Program: 33 (ONE TV)
Program: 53 (Iraqia Sport)
Program: 54 (Iraqia News)
Program: 55 (Kurdish TV)
Program: 403 (AlKawthar)
Program: 442 (Test-3)
Program: 455 (TEST 2)
Program: 460 (Test)
Program: 464 (CN Arabia)
Program: 1613 (TEST)
Program: 1700 (Test)
Program: 1703 (RT Arabic HD)
Program: 1704 (Iraqia TV)
NIT-actual
SDT-actual
EIT-actual
TDT

Carrier 30

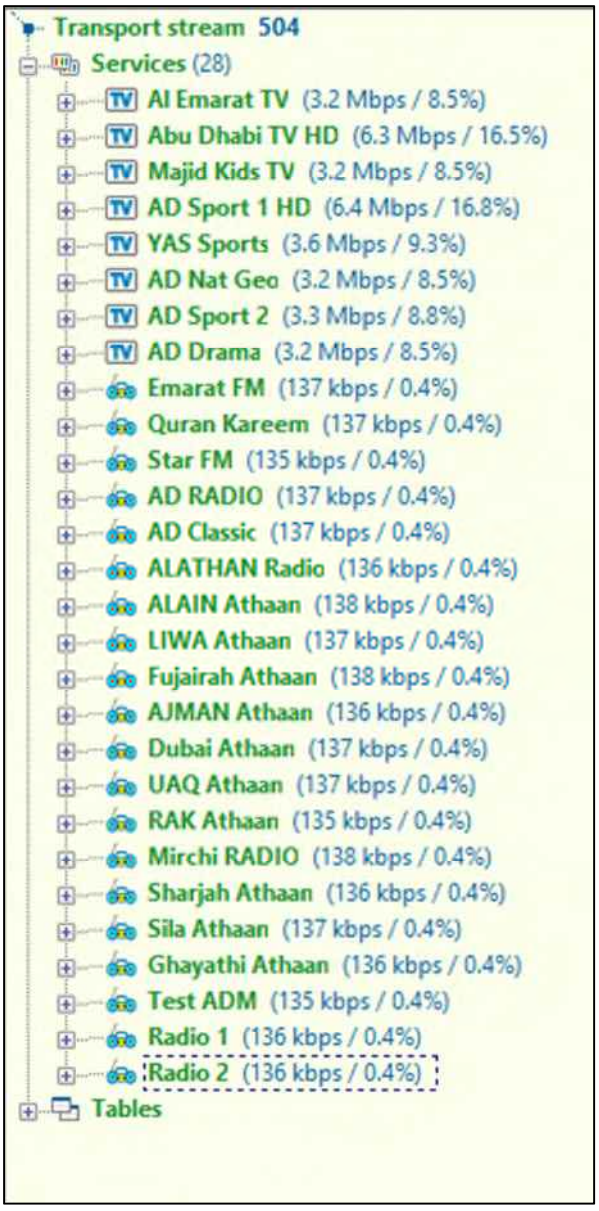

Transport stream 5610
Services (10)
my Gametoon HD (7.0 Mbps / 11.4%)
my Music Always HD (4.4 Mbps / 7.2%)
my Music Tropical HD (4.4 Mbps / 7.2%)
my DocuBox HD (7.0 Mbps / 11.4%)
my FightBox HD (7.0 Mbps / 11.3%)
my Gulli Bil Arabie (7.0 Mbps / 11.4%)
my Discovery Sc HD (6.9 Mbps / 11.2%)
my Animal Planet HD (7.0 Mbps / 11.4%)
my Fix & Foxi (2.4 Mbps / 3.9%)
my WOW Sports TV HD (5.9 Mbps / 9.6%)
Tables

Carrier 31

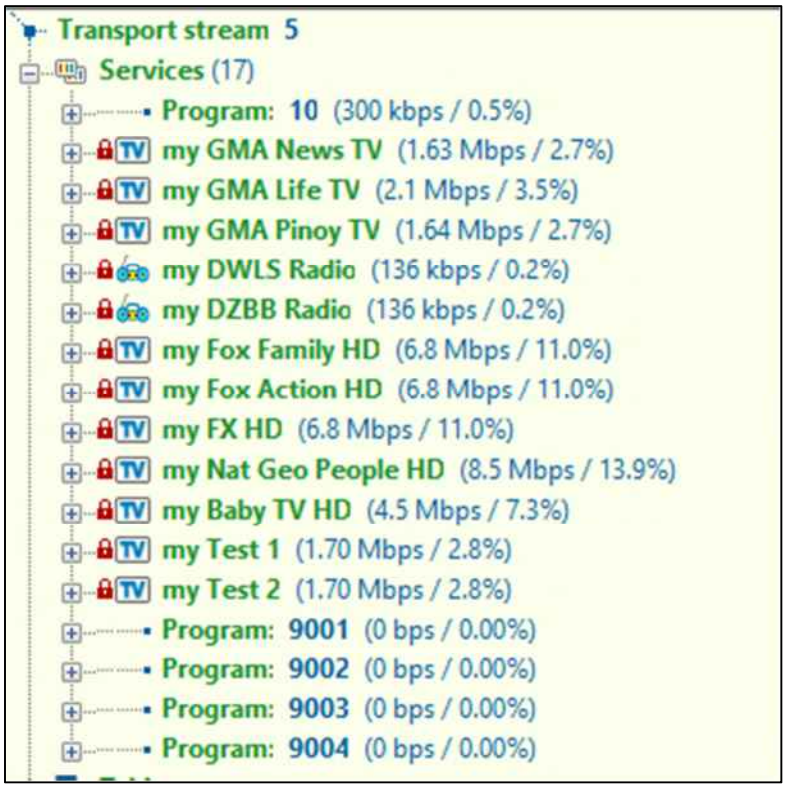

Transport stream 505
Services (11)
CGTN-A (3.0 Mbps / 7.9%)
Iran International TV HD (8.0 Mbps / 21.0%)
TEST (435 kbps / 1.1%)
Libya Alwatnya (3.2 Mbps / 8.5%)
Algeria TV (3.0 Mbps / 7.9%)
Algeria R1 (265 kbps / 0.7%)
Algerie Radio Internationale (267 kbps / 0.7%)
CHAINE 3 (267 kbps / 0.7%)
CORAN/CULTURE (267 kbps / 0.7%)
CNNi SD (2.8 Mbps / 7.4%)
TEST (437 kbps / 1.2%)
Tables
PAT
Table ID: 0
Transport Stream ID: 505
Program: 0 (Defines Network PID)
Program: 1 (CGTN-A)
Program: 2 (Iran International TV HD)
Program: 14 (TEST)
Program: 18 (Libya Alwatnya)
Program: 23 (Algeria TV)
Program: 33 (Algeria R1)
Program: 43 (Algerie Radio Internationale)
Program: 53 (CHAINE 3)
Program: 63 (CORAN/CULTURE)
Program: 601 (CNNi SD)
Program: 1000 (TEST)

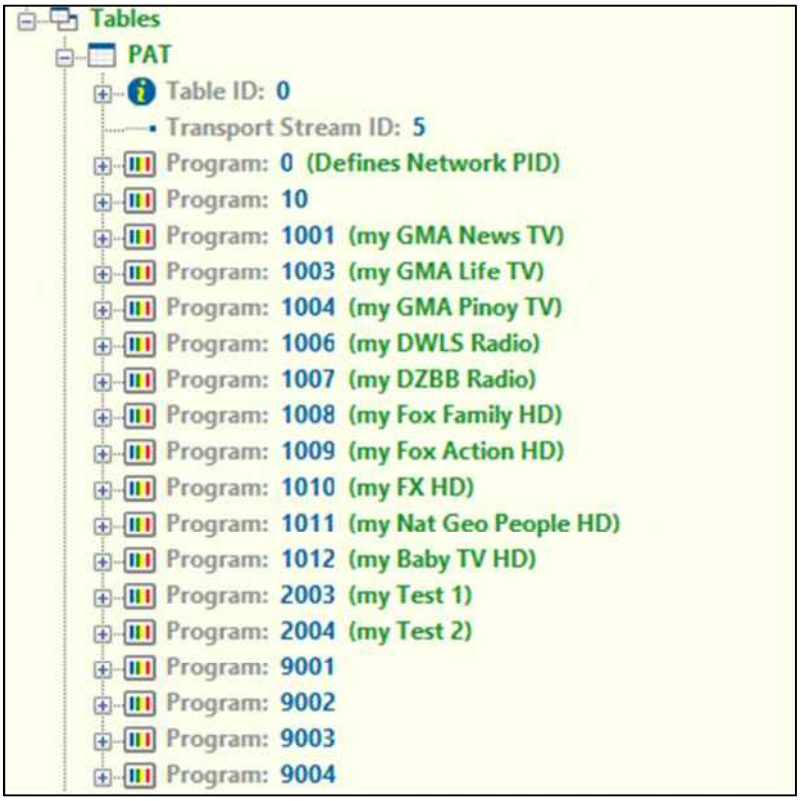
CAT
PMT
Program: 1 (CGTN-A)
Program: 2 (Iran International TV HD)
Program: 14 (TEST)
Program: 18 (Libya Alwatnya)
Program: 23 (Algeria TV)
Program: 33 (Algeria R1)
Program: 43 (Algerie Radio Internationale)
Program: 53 (CHAINE 3)
Program: 63 (CORAN/CULTURE)
Program: 601 (CNNi SD)
Program: 1000 (TEST)

Carrier 32


Transport stream 504
Services (28)
Al Emarat TV (3.2 Mbps / 8.5%)
Abu Dhabi TV HD (6.3 Mbps / 16.5%)
Majid Kids TV (3.2 Mbps / 8.5%)
AD Sport 1 HD (6.4 Mbps / 16.8%)
YAS Sports (3.6 Mbps / 9.3%)
AD Nat Geo (3.2 Mbps / 8.5%)
AD Sport 2 (3.3 Mbps / 8.8%)
AD Drama (3.2 Mbps / 8.5%)
Emarat FM (137 kbps / 0.4%)
Quran Kareem (137 kbps / 0.4%)
Star FM (135 kbps / 0.4%)
AD RADIO (137 kbps / 0.4%)
AD Classic (137 kbps / 0.4%)
ALATHAN Radio (136 kbps / 0.4%)
ALAIN Athaan (138 kbps / 0.4%)
LIWA Athaan (137 kbps / 0.4%)
Fujairah Athaan (138 kbps / 0.4%)
AJMAN Athaan (136 kbps / 0.4%)
Dubai Athaan (137 kbps / 0.4%)
UAQ Athaan (137 kbps / 0.4%)
RAK Athaan (135 kbps / 0.4%)
Mirchi RADIO (138 kbps / 0.4%)
Sharjah Athaan (136 kbps / 0.4%)
Sila Athaan (137 kbps / 0.4%)
Ghayathi Athaan (136 kbps / 0.4%)
Test ADM (135 kbps / 0.4%)
Radio 1 (136 kbps / 0.4%)
Radio 2 (136 kbps / 0.4%)
Tables

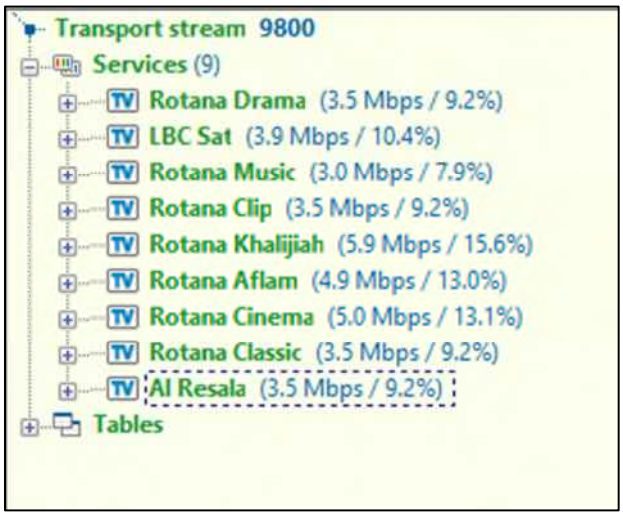
Carrier 33


Transport stream 5
Services (17)
Program: 10 (300 kbps / 0.5%)
my GMA News TV (1.63 Mbps / 2.7%)
my GMA Life TV (2.1 Mbps / 3.5%)
my GMA Pinoy TV (1.64 Mbps / 2.7%)
my DWLS Radio (136 kbps / 0.2%)
my DZBB Radio (136 kbps / 0.2%)
my Fox Family HD (6.8 Mbps / 11.0%)
my Fox Action HD (6.8 Mbps / 11.0%)
my FX HD (6.8 Mbps / 11.0%)
my Nat Geo People HD (8.5 Mbps / 13.9%)
my Baby TV HD (4.5 Mbps / 7.3%)
my Test 1 (1.70 Mbps / 2.8%)
my Test 2 (1.70 Mbps / 2.8%)
Program: 9001 (0 bps / 0.00%)
Program: 9002 (0 bps / 0.00%)
Program: 9003 (0 bps / 0.00%)
Program: 9004 (0 bps / 0.00%)


Tables
PAT
Table ID: 0
Transport Stream ID: 5
Program: 0 (Defines Network PID)
Program: 10
Program: 1001 (my GMA News TV)
Program: 1003 (my GMA Life TV)
Program: 1004 (my GMA Pinoy TV)
Program: 1006 (my DWLS Radio)
Program: 1007 (my DZBB Radio)
Program: 1008 (my Fox Family HD)
Program: 1009 (my Fox Action HD)
Program: 1010 (my FX HD)
Program: 1011 (my Nat Geo People HD)
Program: 1012 (my Baby TV HD)
Program: 2003 (my Test 1)
Program: 2004 (my Test 2)
Program: 9001
Program: 9002
Program: 9003
Program: 9004

CAT
PMT
Program: 10
Program: 1001 (my GMA News TV)
Program: 1003 (my GMA Life TV)
Program: 1004 (my GMA Pinoy TV)
Program: 1006 (my DWLS Radio)
Program: 1007 (my DZBB Radio)
Program: 1008 (my Fox Family HD)
Program: 1009 (my Fox Action HD)
Program: 1010 (my FX HD)
Program: 1011 (my Nat Geo People HD)
Program: 1012 (my Baby TV HD)
Program: 2003 (my Test 1)
Program: 2004 (my Test 2)
Program: 9001
Program: 9002
Program: 9003
Program: 9004
NIT-actual
BAT
SDT-actual
SDT-other
EIT-actual
TDT

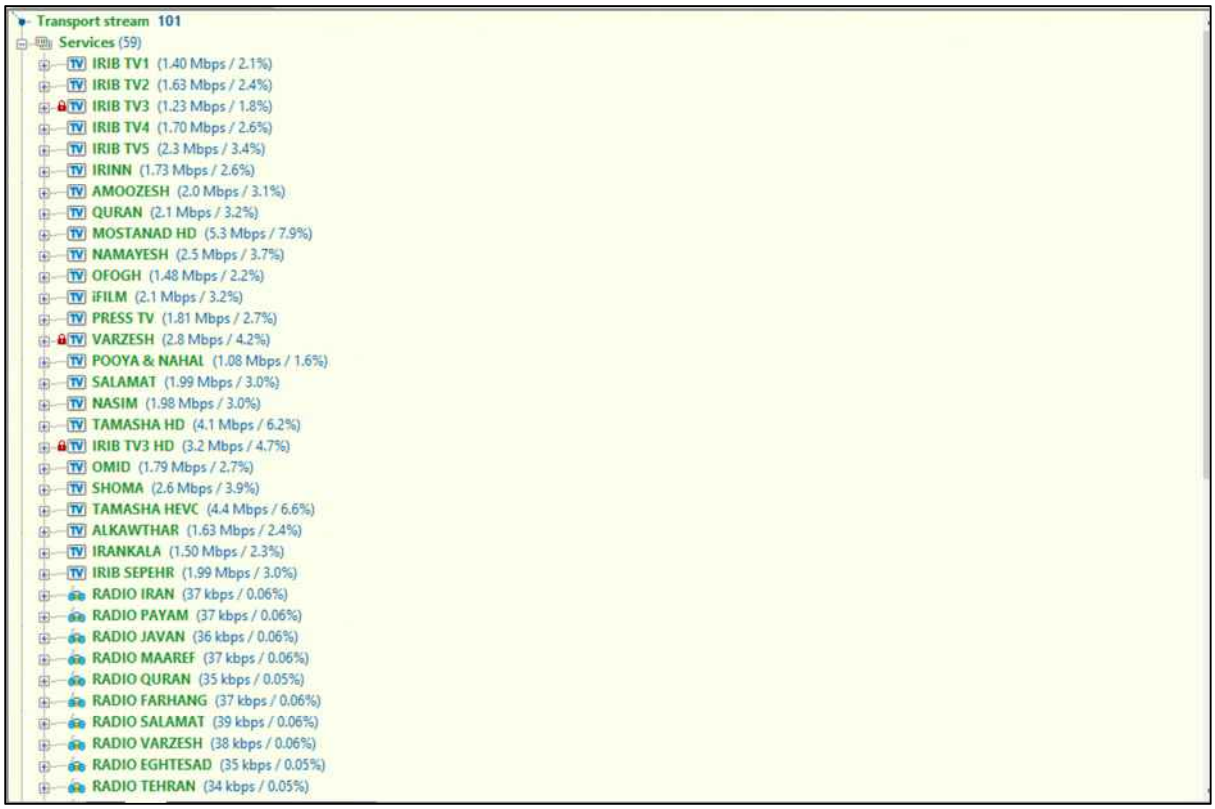
Carrier 34

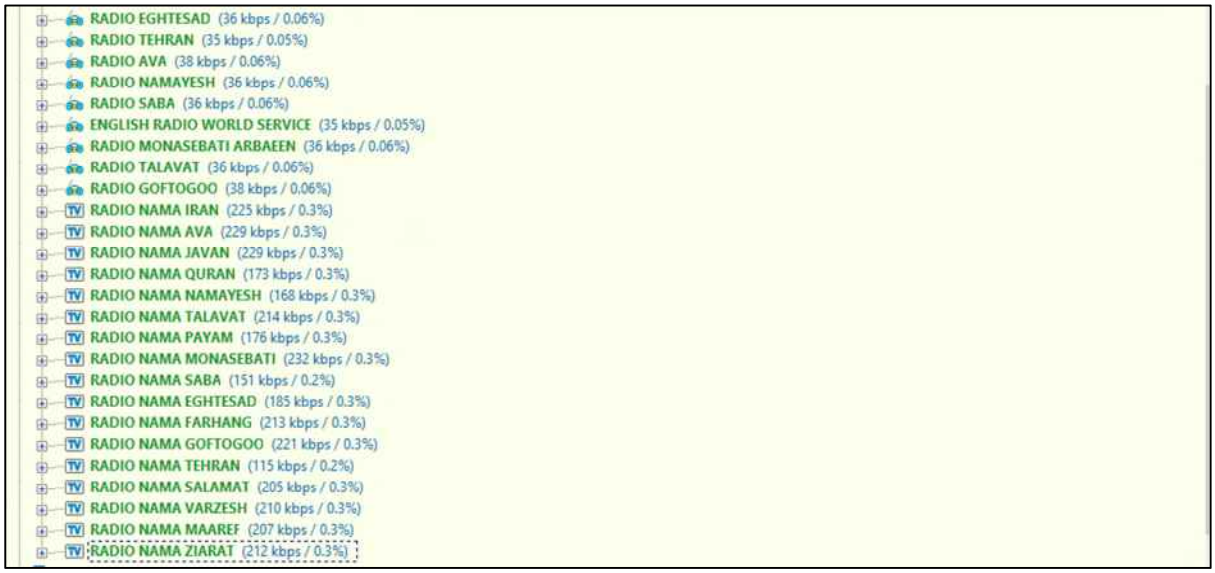

Transport stream 9800
Services (9)
Rotana Drama (3.5 Mbps / 9.2%)
LBC Sat (3.9 Mbps / 10.4%)
Rotana Music (3.0 Mbps / 7.9%)
Rotana Clip (3.5 Mbps / 9.2%)
Rotana Khalijiah (5.9 Mbps / 15.6%)
Rotana Aflam (4.9 Mbps / 13.0%)
Rotana Cinema (5.0 Mbps / 13.1%)
Rotana Classic (3.5 Mbps / 9.2%)
Al Resala (3.5 Mbps / 9.2%)
Tables

Carrier 35

Transport stream 503
Services (8)
SHARJAH TV (3.4 Mbps / 9.0%)
MBC IRAQ SD (3.8 Mbps / 10.1%)
TEST (2.7 Mbps / 7.1%)
SHARQIYA from Kalba (3.3 Mbps / 8.6%)
TEST1 (6.1 Mbps / 16.1%)
Sharjah Radio (132 kbps / 0.3%)
MBC IRAQ HD (5.8 Mbps / 15.3%)
TEST 2 (2.7 Mbps / 7.1%)
Tables
PAT
Table ID: 0
Transport Stream ID: 503
Program: 0 (Defines Network PID)
Program: 4 (TEST)
Program: 15 (TEST 2)
Program: 1 (SHARJAH TV)
Program: 11 (Sharjah Radio)
Program: 8 (TEST1)
Program: 6 (SHARQIYA from Kalba)
Program: 12 (MBC IRAQ HD)
Program: 3 (MBC IRAQ SD)
CAT
PMT
Program: 1 (SHARJAH TV)
Program: 3 (MBC IRAQ SD)
Program: 4 (TEST)
Program: 6 (SHARQIYA from Kalba)
Program: 8 (TEST1)
Program: 11 (Sharjah Radio)
Program: 12 (MBC IRAQ HD)
Program: 15 (TEST 2)
NIT-actual
SDT-actual
EIT-actual
TDT
TOT

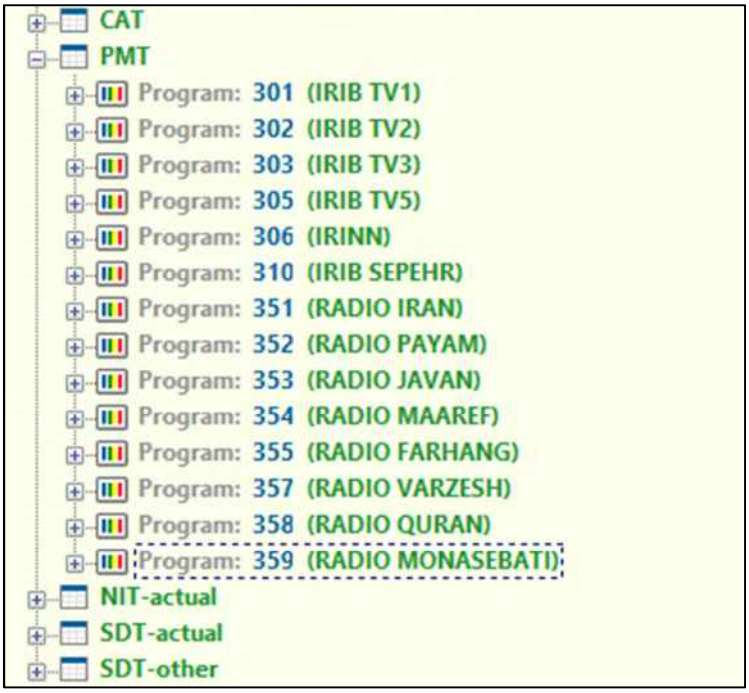
Carrier 36


Transport stream 101
Services (59)
IRIB TV1 (1.40 Mbps / 2.1%)
IRIB TV2 (1.63 Mbps / 2.4%)
IRIB TV3 (1.23 Mbps / 1.8%)
IRIB TV4 (1.70 Mbps / 2.6%)
IRIB TV5 (2.3 Mbps / 3.4%)
IRINN (1.73 Mbps / 2.6%)
AMOOZESH (2.0 Mbps / 3.1%)
QURAN (2.1 Mbps / 3.2%)
MOSTANAD HD (5.3 Mbps / 7.9%)
NAMAYESH (2.5 Mbps / 3.7%)
OFOGH (1.48 Mbps / 2.2%)
iFILM (2.1 Mbps / 3.2%)
PRESS TV (1.81 Mbps / 2.7%)
VARZESH (2.8 Mbps / 4.2%)
POOYA & NAHAL (1.08 Mbps / 1.6%)
SALAMAT (1.99 Mbps / 3.0%)
NASIM (1.98 Mbps / 3.0%)
TAMASHA HD (4.1 Mbps / 6.2%)
IRIB TV3 HD (3.2 Mbps / 4.7%)
OMID (1.79 Mbps / 2.7%)
SHOMA (2.6 Mbps / 3.9%)
TAMASHA HEVC (4.4 Mbps / 6.6%)
ALKAWTHAR (1.63 Mbps / 2.4%)
IRANKALA (1.50 Mbps / 2.3%)
IRIB SEPEHR (1.99 Mbps / 3.0%)
RADIO IRAN (37 kbps / 0.06%)
RADIO PAYAM (37 kbps / 0.06%)
RADIO JAVAN (36 kbps / 0.06%)
RADIO MAAREF (37 kbps / 0.06%)
RADIO QURAN (35 kbps / 0.05%)
RADIO FARHANG (37 kbps / 0.06%)
RADIO SALAMAT (39 kbps / 0.06%)
RADIO VARZESH (38 kbps / 0.06%)
RADIO EGHTESAD (35 kbps / 0.05%)
RADIO TEHRAN (34 kbps / 0.05%)

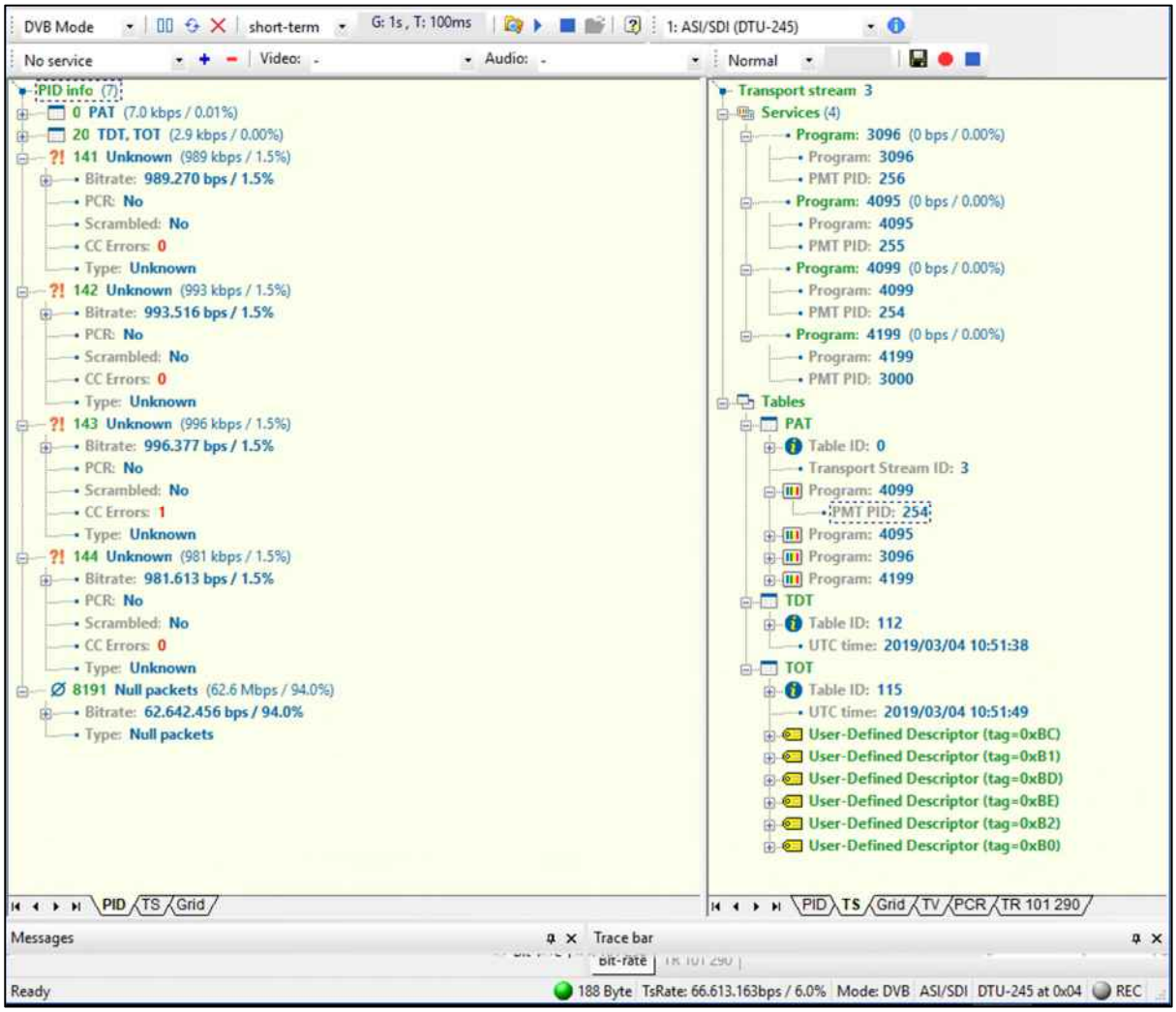

RADIO EGHTESAD (36 kbps / 0.06%)
RADIO TEHRAN (35 kbps / 0.05%)
RADIO AVA (38 kbps / 0.06%)
RADIO NAMAYESH (36 kbps / 0.06%)
RADIO SABA (36 kbps / 0.06%)
ENGLISH RADIO WORLD SERVICE (35 kbps / 0.05%)
RADIO MONASEBATI ARBAEEN (36 kbps / 0.06%)
RADIO TALAVAT (36 kbps / 0.06%)
RADIO GOFTOGOO (38 kbps / 0.06%)
RADIO NAMA IRAN (225 kbps / 0.3%)
RADIO NAMA AVA (229 kbps / 0.3%)
RADIO NAMA JAVAN (229 kbps / 0.3%)
RADIO NAMA QURAN (173 kbps / 0.3%)
RADIO NAMA NAMAYESH (168 kbps / 0.3%)
RADIO NAMA TALAVAT (214 kbps / 0.3%)
RADIO NAMA PAYAM (176 kbps / 0.3%)
RADIO NAMA MONASEBATI (232 kbps / 0.3%)
RADIO NAMA SABA (151 kbps / 0.2%)
RADIO NAMA EGHTESAD (185 kbps / 0.3%)
RADIO NAMA FARHANG (213 kbps / 0.3%)
RADIO NAMA GOFTOGOO (221 kbps / 0.3%)
RADIO NAMA TEHRAN (115 kbps / 0.2%)
RADIO NAMA SALAMAT (205 kbps / 0.3%)
RADIO NAMA VARZESH (210 kbps / 0.3%)
RADIO NAMA MAAREF (207 kbps / 0.3%)
RADIO NAMA ZIARAT (212 kbps / 0.3%)

Carrier 37

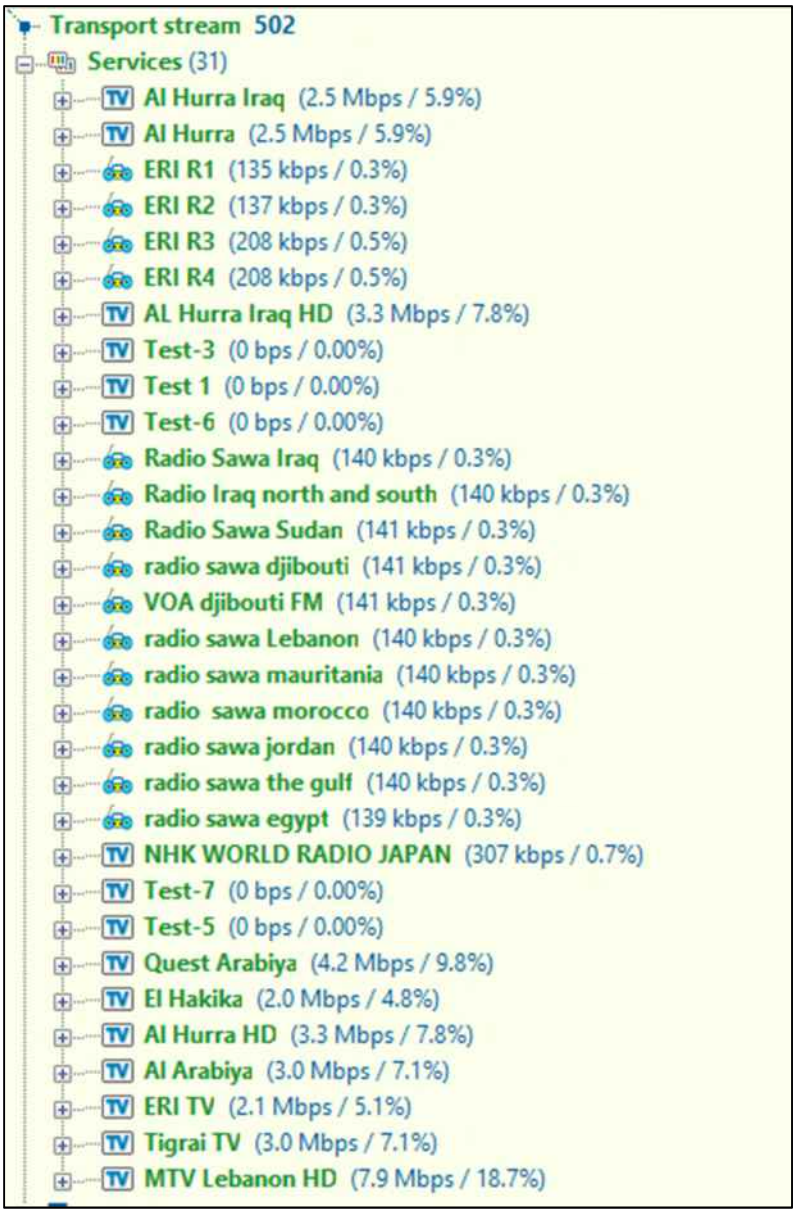
Transport stream 300
Services (14)
IRIB TV1 (3.3 Mbps / 8.7%)
IRIB TV2 (3.4 Mbps / 9.0%)
IRIB TV3 (0 bps / 0.00%)
IRIB TV5 (3.1 Mbps / 8.2%)
IRINN (2.9 Mbps / 7.6%)
IRIB SEPEHR (4.2 Mbps / 11.0%)
RADIO IRAN (203 kbps / 0.5%)
RADIO PAYAM (203 kbps / 0.5%)
RADIO JAVAN (202 kbps / 0.5%)
RADIO MAAREF (0 bps / 0.00%)
RADIO FARHANG (203 kbps / 0.5%)
RADIO VARZESH (202 kbps / 0.5%)
RADIO QURAN (202 kbps / 0.5%)
RADIO MONASEBATI (203 kbps / 0.5%)
Tables
PAT
Table ID: 0
Transport Stream ID: 300
Program: 0 (Defines Network PID)
Program: 301 (IRIB TV1)
Program: 302 (IRIB TV2)
Program: 303 (IRIB TV3)
Program: 305 (IRIB TV5)
Program: 306 (IRINN)
Program: 310 (IRIB SEPEHR)
Program: 351 (RADIO IRAN)
Program: 352 (RADIO PAYAM)
Program: 353 (RADIO JAVAN)
Program: 354 (RADIO MAAREF)
Program: 355 (RADIO FARHANG)
Program: 357 (RADIO VARZESH)
Program: 358 (RADIO QURAN)
Program: 359 (RADIO MONASEBATI)


CAT
PMT
Program: 301 (IRIB TV1)
Program: 302 (IRIB TV2)
Program: 303 (IRIB TV3)
Program: 305 (IRIB TV5)
Program: 306 (IRINN)
Program: 310 (IRIB SEPEHR)
Program: 351 (RADIO IRAN)
Program: 352 (RADIO PAYAM)
Program: 353 (RADIO JAVAN)
Program: 354 (RADIO MAAREF)
Program: 355 (RADIO FARHANG)
Program: 357 (RADIO VARZESH)
Program: 358 (RADIO QURAN)
Program: 359 (RADIO MONASEBATI)
NIT-actual
SDT-actual
SDT-other

Carrier 38


DVB Mode
short-term
G: 1s , T: 100ms
1: ASI/SDI (DTU-245)
No service
Video:
Audio:
Normal
PID info (7)
0 PAT (7.0 kbps / 0.01%)
20 TDT, TOT (2.9 kbps / 0.00%)
141 Unknown (989 kbps / 1.5%)
Bitrate: 989.270 bps / 1.5%
PCR: No
Scrambled: No
CC Errors: 0
Type: Unknown
142 Unknown (993 kbps / 1.5%)
Bitrate: 993.516 bps / 1.5%
PCR: No
Scrambled: No
CC Errors: 0
Type: Unknown
143 Unknown (996 kbps / 1.5%)
Bitrate: 996.377 bps / 1.5%
PCR: No
Scrambled: No
CC Errors: 1
Type: Unknown
144 Unknown (981 kbps / 1.5%)
Bitrate: 981.613 bps / 1.5%
PCR: No
Scrambled: No
CC Errors: 0
Type: Unknown
8191 Null packets (62.6 Mbps / 94.0%)
Bitrate: 62.642.456 bps / 94.0%
Type: Null packets
PID TS Grid
Transport stream 3
Services (4)
Program: 3096 (0 bps / 0.00%)
Program: 3096
PMT PID: 256
Program: 4095 (0 bps / 0.00%)
Program: 4095
PMT PID: 255
Program: 4099 (0 bps / 0.00%)
Program: 4099
PMT PID: 254
Program: 4199 (0 bps / 0.00%)
Program: 4199
PMT PID: 3000
Tables
PAT
Table ID: 0
Transport Stream ID: 3
Program: 4099
PMT PID: 254
Program: 4095
Program: 3096
Program: 4199
TDT
Table ID: 112
UTC time: 2019/03/04 10:51:38
TOT
Table ID: 115
UTC time: 2019/03/04 10:51:49
User-Defined Descriptor (tag=0xBC)
User-Defined Descriptor (tag=0xB1)
User-Defined Descriptor (tag=0xBD)
User-Defined Descriptor (tag=0xBE)
User-Defined Descriptor (tag=0xB2)
User-Defined Descriptor (tag=0xB0)
PID TS Grid TV PCR TR 101 290
Messages
Trace bar
Bit-rate
Ready
188 Byte
TsRate: 66.613.163bps / 6.0%
Mode: DVB
ASI/SDI
DTU-245 at 0x04
REC

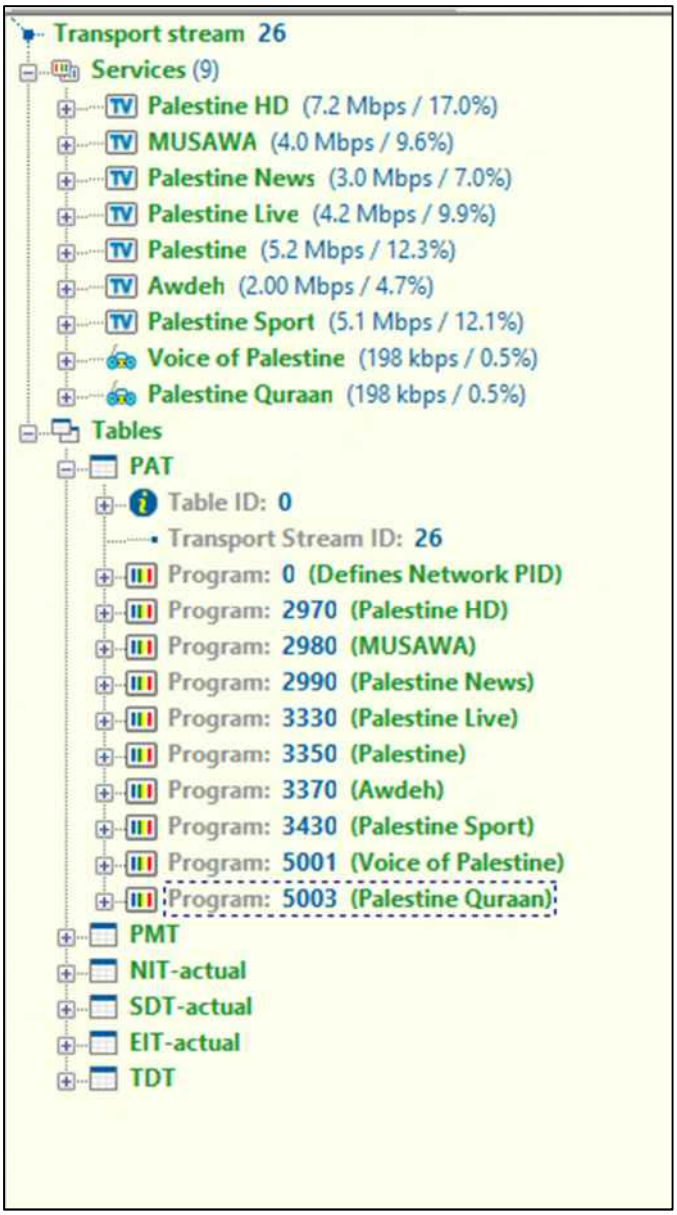
Carrier 39


Transport stream 502
Services (31)
Al Hurra Iraq (2.5 Mbps / 5.9%)
Al Hurra (2.5 Mbps / 5.9%)
ERI R1 (135 kbps / 0.3%)
ERI R2 (137 kbps / 0.3%)
ERI R3 (208 kbps / 0.5%)
ERI R4 (208 kbps / 0.5%)
AL Hurra Iraq HD (3.3 Mbps / 7.8%)
Test-3 (0 bps / 0.00%)
Test 1 (0 bps / 0.00%)
Test-6 (0 bps / 0.00%)
Radio Sawa Iraq (140 kbps / 0.3%)
Radio Iraq north and south (140 kbps / 0.3%)
Radio Sawa Sudan (141 kbps / 0.3%)
radio sawa djibouti (141 kbps / 0.3%)
VOA djibouti FM (141 kbps / 0.3%)
radio sawa Lebanon (140 kbps / 0.3%)
radio sawa mauritania (140 kbps / 0.3%)
radio sawa morocco (140 kbps / 0.3%)
radio sawa jordan (140 kbps / 0.3%)
radio sawa the gulf (140 kbps / 0.3%)
radio sawa egypt (139 kbps / 0.3%)
NHK WORLD RADIO JAPAN (307 kbps / 0.7%)
Test-7 (0 bps / 0.00%)
Test-5 (0 bps / 0.00%)
Quest Arabiya (4.2 Mbps / 9.8%)
El Hakika (2.0 Mbps / 4.8%)
Al Hurra HD (3.3 Mbps / 7.8%)
Al Arabiya (3.0 Mbps / 7.1%)
ERI TV (2.1 Mbps / 5.1%)
Tigrai TV (3.0 Mbps / 7.1%)
MTV Lebanon HD (7.9 Mbps / 18.7%)

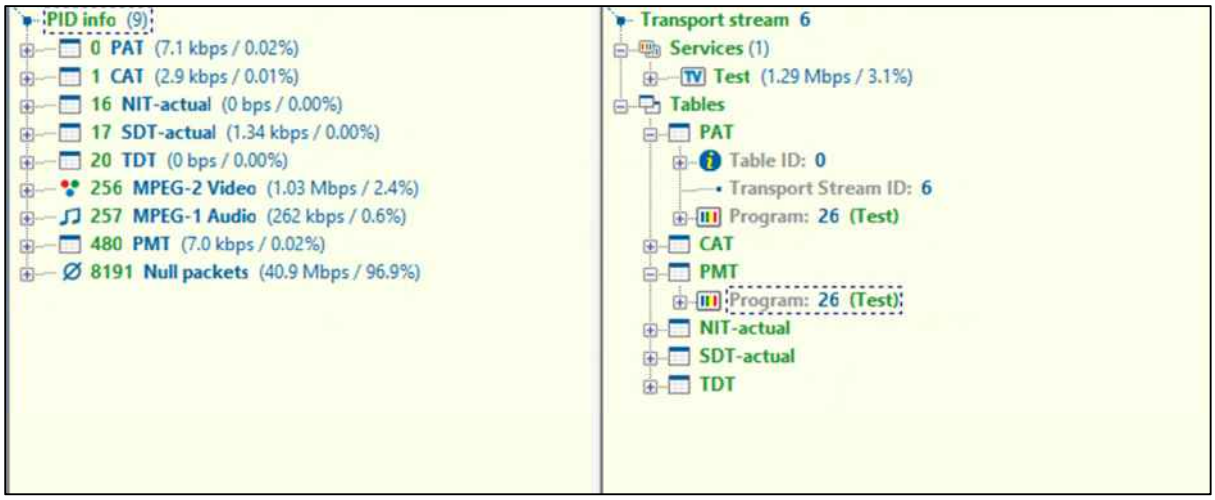
Tables
PAT
Table ID: 0
Transport Stream ID: 502
Program: 0 (Defines Network PID)
Program: 25 (Al Hurra Iraq)
Program: 28 (Al Hurra)
Program: 410 (ERI R1)
Program: 411 (ERI R2)
Program: 412 (ERI R3)
Program: 413 (ERI R4)
Program: 500 (AL Hurra Iraq HD)
Program: 503 (Test-3)
Program: 504 (Test 1)
Program: 510 (Test-6)
Program: 532 (Radio Sawa Iraq)
Program: 533 (Radio Iraq north and south)
Program: 534 (Radio Sawa Sudan)
Program: 535 (radio sawa djibouti)
Program: 536 (VOA djibouti FM)
Program: 537 (radio sawa Lebanon)
Program: 538 (radio sawa mauritania)
Program: 539 (radio sawa morocco)
Program: 540 (radio sawa jordan)
Program: 541 (radio sawa the gulf)
Program: 542 (radio sawa egypt)
Program: 546 (NHK WORLD RADIO JAPAN)
Program: 560 (Test-7)
Program: 561 (Test-5)
Program: 585 (Quest Arabiya)
Program: 590 (El Hakika)
Program: 591 (Al Hurra HD)
Program: 592 (Al Arabiya)
Program: 593 (ERI TV)
Program: 594 (Tigrai TV)
Program: 595 (MTV Lebanon HD)
CAT

PMT
Program: 25 (Al Hurra Iraq)
Program: 28 (Al Hurra)
Program: 410 (ERI R1)
Program: 411 (ERI R2)
Program: 412 (ERI R3)
Program: 413 (ERI R4)
Program: 500 (AL Hurra Iraq HD)
Program: 503 (Test-3)
Program: 504 (Test 1)
Program: 510 (Test-6)
Program: 532 (Radio Sawa Iraq)
Program: 533 (Radio Iraq north and south)
Program: 534 (Radio Sawa Sudan)
Program: 535 (radio sawa djibouti)
Program: 536 (VOA djibouti FM)
Program: 537 (radio sawa Lebanon)
Program: 538 (radio sawa mauritania)
Program: 539 (radio sawa morocco)
Program: 540 (radio sawa jordan)
Program: 541 (radio sawa the gulf)
Program: 542 (radio sawa egypt)
Program: 546 (NHK WORLD RADIO JAPAN)
Program: 560 (Test-7)
Program: 561 (Test-5)
Program: 585 (Quest Arabiya)
Program: 590 (El Hakika)
Program: 591 (Al Hurra HD)
Program: 592 (Al Arabiya)
Program: 593 (ERI TV)
Program: 594 (Tigrai TV)
Program: 595 (MTV Lebanon HD)
NIT-actual
SDT-actual
SDT-other
EIT-actual
TDT
TOT

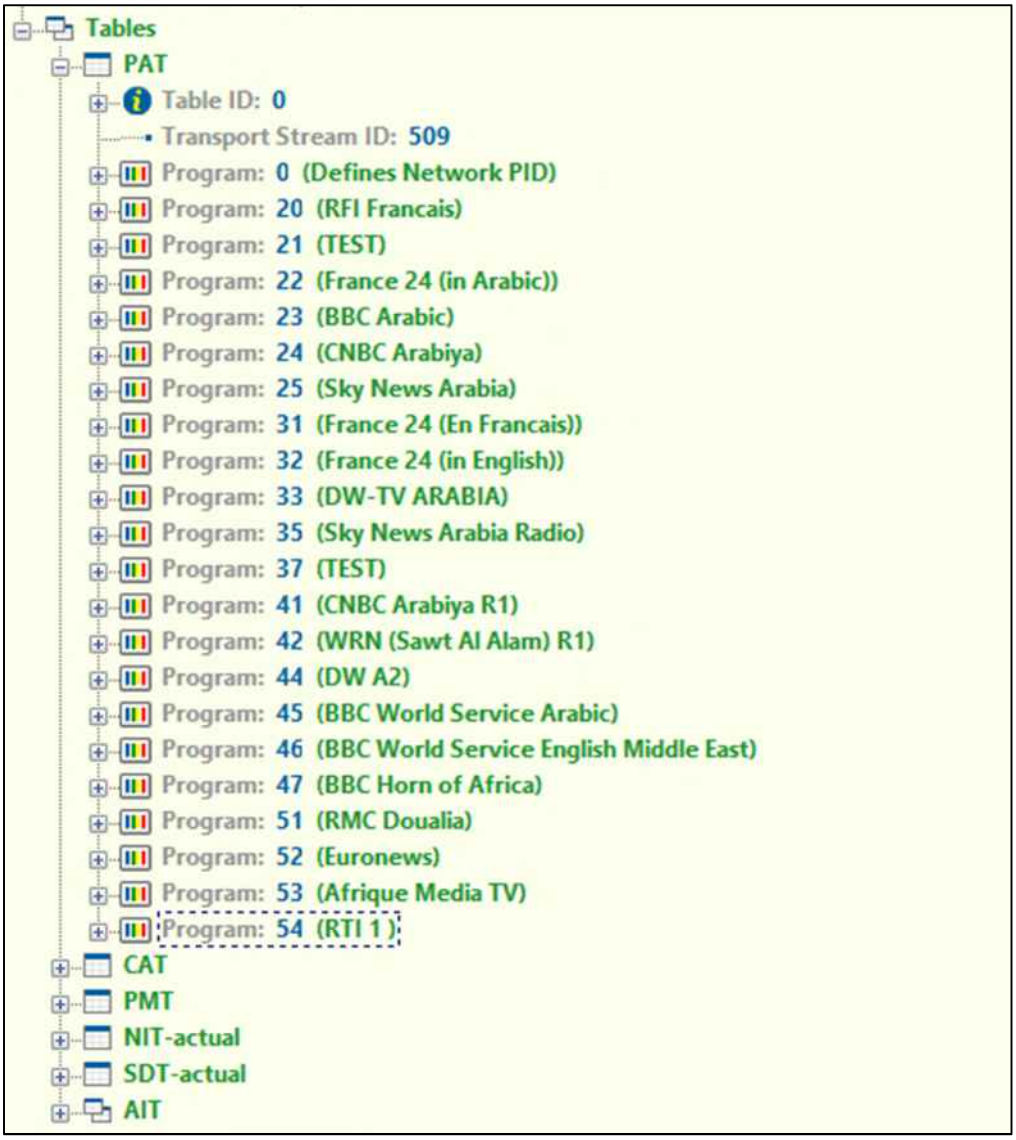
Carrier 40


Transport stream 26
Services (9)
Palestine HD (7.2 Mbps / 17.0%)
MUSAWA (4.0 Mbps / 9.6%)
Palestine News (3.0 Mbps / 7.0%)
Palestine Live (4.2 Mbps / 9.9%)
Palestine (5.2 Mbps / 12.3%)
Awdeh (2.00 Mbps / 4.7%)
Palestine Sport (5.1 Mbps / 12.1%)
Voice of Palestine (198 kbps / 0.5%)
Palestine Quraan (198 kbps / 0.5%)
Tables
PAT
Table ID: 0
Transport Stream ID: 26
Program: 0 (Defines Network PID)
Program: 2970 (Palestine HD)
Program: 2980 (MUSAWA)
Program: 2990 (Palestine News)
Program: 3330 (Palestine Live)
Program: 3350 (Palestine)
Program: 3370 (Awdeh)
Program: 3430 (Palestine Sport)
Program: 5001 (Voice of Palestine)
Program: 5003 (Palestine Quraan)
PMT
NIT-actual
SDT-actual
EIT-actual
TDT

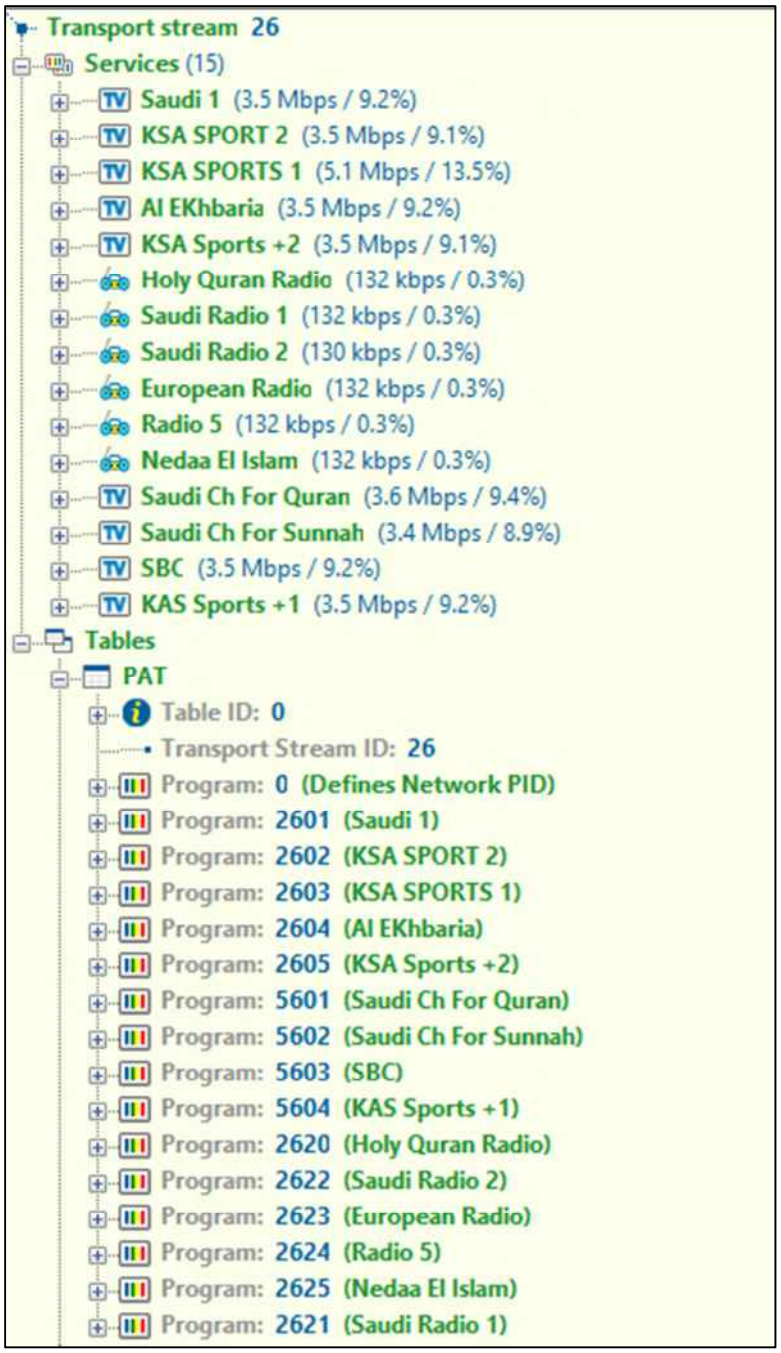
Carrier 41

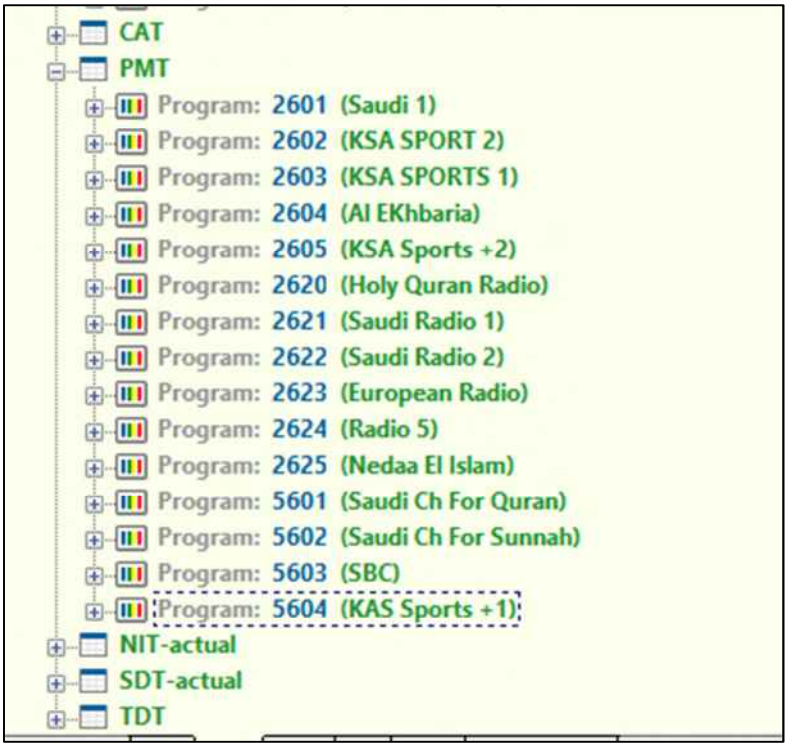


Carrier 42

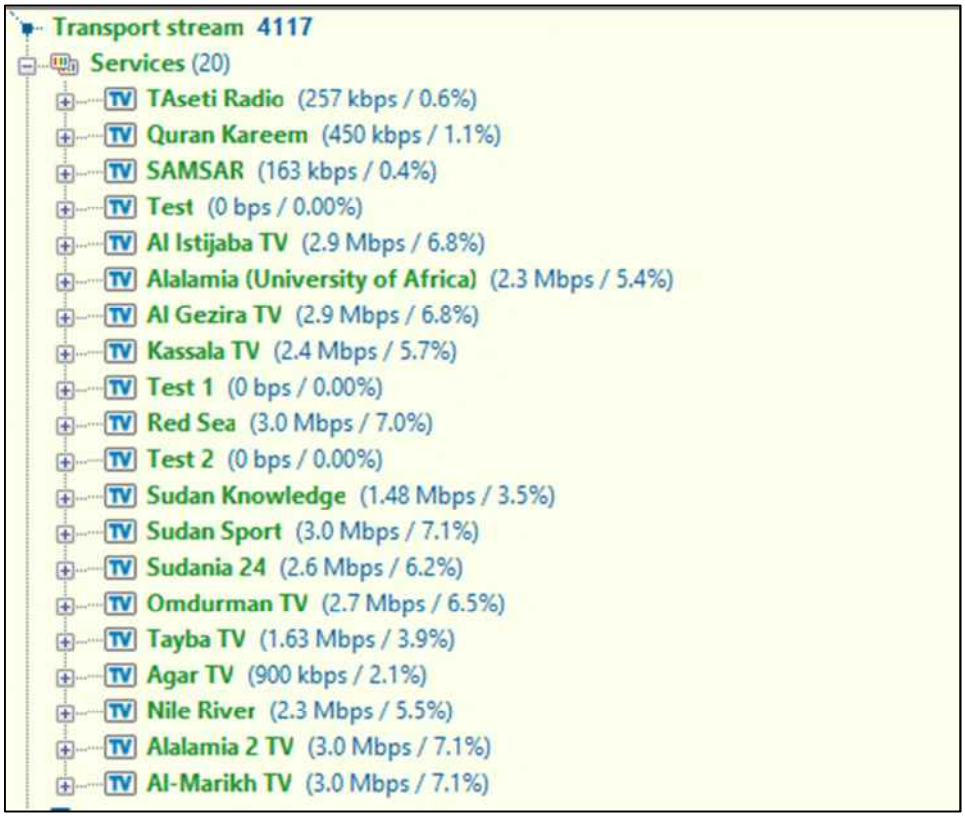

Tables
PAT
Table ID: 0
Transport Stream ID: 509
Program: 0 (Defines Network PID)
Program: 20 (RFI Francais)
Program: 21 (TEST)
Program: 22 (France 24 (in Arabic))
Program: 23 (BBC Arabic)
Program: 24 (CNBC Arabiya)
Program: 25 (Sky News Arabia)
Program: 31 (France 24 (En Francais))
Program: 32 (France 24 (in English))
Program: 33 (DW-TV ARABIA)
Program: 35 (Sky News Arabia Radio)
Program: 37 (TEST)
Program: 41 (CNBC Arabiya R1)
Program: 42 (WRN (Sawt Al Alam) R1)
Program: 44 (DW A2)
Program: 45 (BBC World Service Arabic)
Program: 46 (BBC World Service English Middle East)
Program: 47 (BBC Horn of Africa)
Program: 51 (RMC Doualia)
Program: 52 (Euronews)
Program: 53 (Afrique Media TV)
Program: 54 (RTI 1)
CAT
PMT
NIT-actual
SDT-actual
AIT

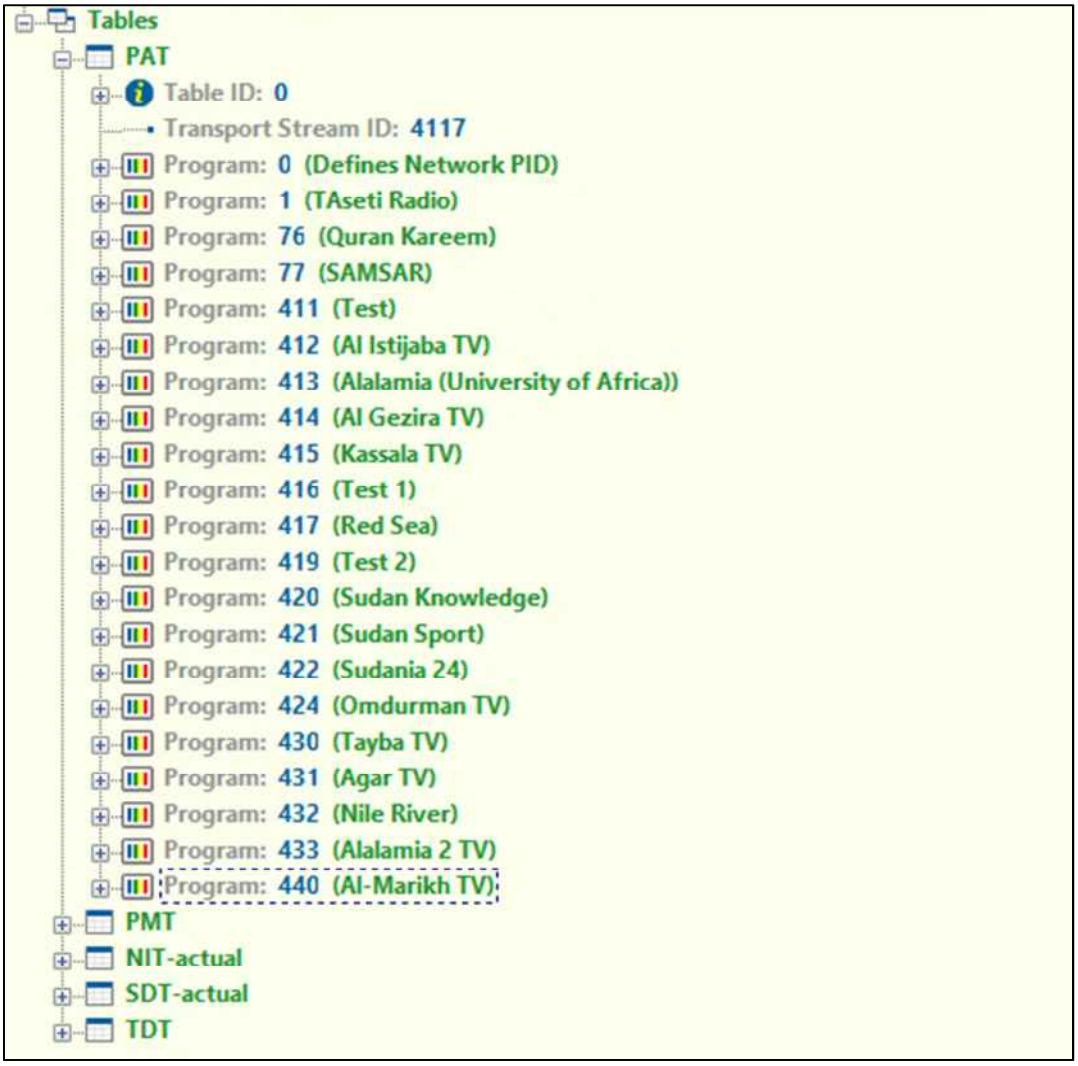
Carrier 43


Transport stream 26
Services (15)
Saudi 1 (3.5 Mbps / 9.2%)
KSA SPORT 2 (3.5 Mbps / 9.1%)
KSA SPORTS 1 (5.1 Mbps / 13.5%)
Al EKhbaria (3.5 Mbps / 9.2%)
KSA Sports +2 (3.5 Mbps / 9.1%)
Holy Quran Radio (132 kbps / 0.3%)
Saudi Radio 1 (132 kbps / 0.3%)
Saudi Radio 2 (130 kbps / 0.3%)
European Radio (132 kbps / 0.3%)
Radio 5 (132 kbps / 0.3%)
Nedaa El Islam (132 kbps / 0.3%)
Saudi Ch For Quran (3.6 Mbps / 9.4%)
Saudi Ch For Sunnah (3.4 Mbps / 8.9%)
SBC (3.5 Mbps / 9.2%)
KAS Sports +1 (3.5 Mbps / 9.2%)
Tables
PAT
Table ID: 0
Transport Stream ID: 26
Program: 0 (Defines Network PID)
Program: 2601 (Saudi 1)
Program: 2602 (KSA SPORT 2)
Program: 2603 (KSA SPORTS 1)
Program: 2604 (Al EKhbaria)
Program: 2605 (KSA Sports +2)
Program: 5601 (Saudi Ch For Quran)
Program: 5602 (Saudi Ch For Sunnah)
Program: 5603 (SBC)
Program: 5604 (KAS Sports +1)
Program: 2620 (Holy Quran Radio)
Program: 2622 (Saudi Radio 2)
Program: 2623 (European Radio)
Program: 2624 (Radio 5)
Program: 2625 (Nedaa El Islam)
Program: 2621 (Saudi Radio 1)

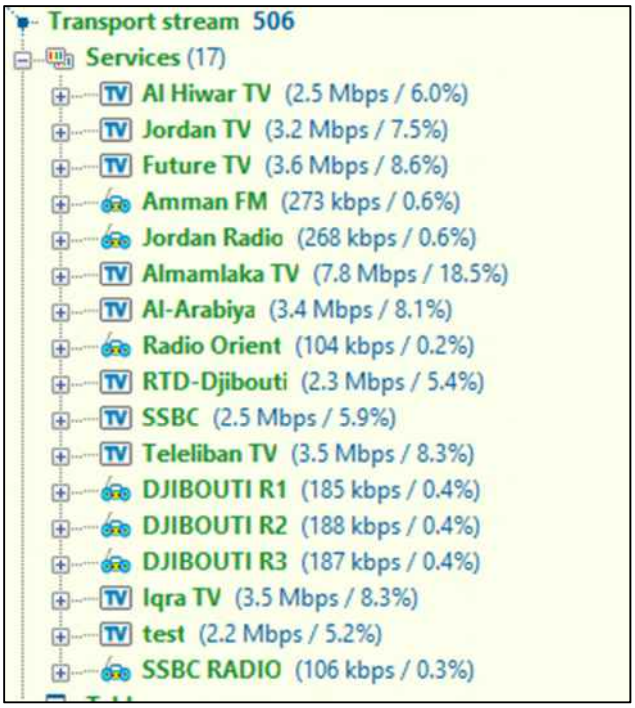

CAT
PMT
Program: 2601 (Saudi 1)
Program: 2602 (KSA SPORT 2)
Program: 2603 (KSA SPORTS 1)
Program: 2604 (Al EKhbaria)
Program: 2605 (KSA Sports +2)
Program: 2620 (Holy Quran Radio)
Program: 2621 (Saudi Radio 1)
Program: 2622 (Saudi Radio 2)
Program: 2623 (European Radio)
Program: 2624 (Radio 5)
Program: 2625 (Nedaa El Islam)
Program: 5601 (Saudi Ch For Quran)
Program: 5602 (Saudi Ch For Sunnah)
Program: 5603 (SBC)
Program: 5604 (KAS Sports +1)
NIT-actual
SDT-actual
TDT

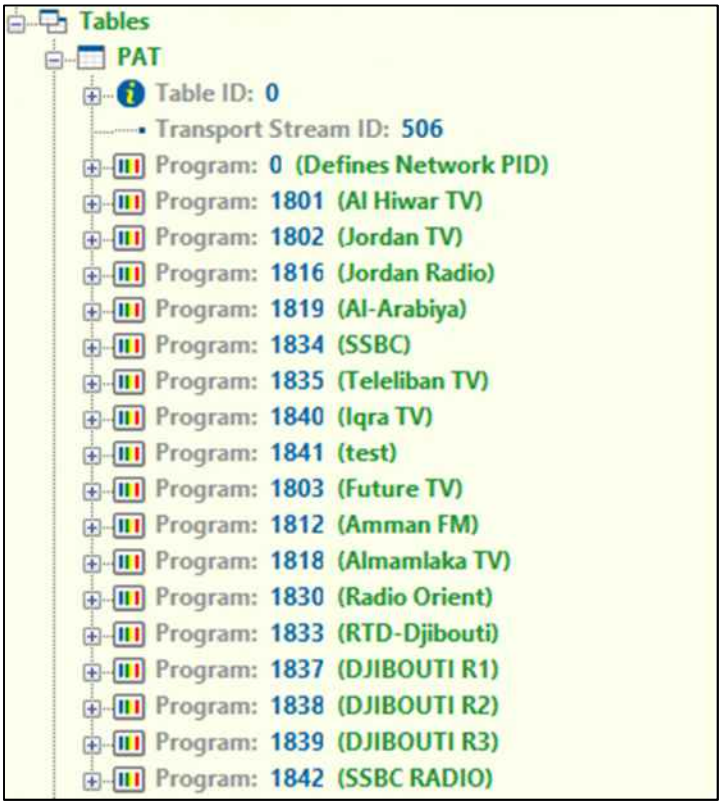
Carrier 44


Transport stream 4117
Services (20)
TAseti Radio (257 kbps / 0.6%)
Quran Kareem (450 kbps / 1.1%)
SAMSAR (163 kbps / 0.4%)
Test (0 bps / 0.00%)
Al Istijaba TV (2.9 Mbps / 6.8%)
Alalamia (University of Africa) (2.3 Mbps / 5.4%)
Al Gezira TV (2.9 Mbps / 6.8%)
Kassala TV (2.4 Mbps / 5.7%)
Test 1 (0 bps / 0.00%)
Red Sea (3.0 Mbps / 7.0%)
Test 2 (0 bps / 0.00%)
Sudan Knowledge (1.48 Mbps / 3.5%)
Sudan Sport (3.0 Mbps / 7.1%)
Sudania 24 (2.6 Mbps / 6.2%)
Omdurman TV (2.7 Mbps / 6.5%)
Tayba TV (1.63 Mbps / 3.9%)
Agar TV (900 kbps / 2.1%)
Nile River (2.3 Mbps / 5.5%)
Alalamia 2 TV (3.0 Mbps / 7.1%)
Al-Marikh TV (3.0 Mbps / 7.1%)


Tables
PAT
Table ID: 0
Transport Stream ID: 4117
Program: 0 (Defines Network PID)
Program: 1 (TAseti Radio)
Program: 76 (Quran Kareem)
Program: 77 (SAMSAR)
Program: 411 (Test)
Program: 412 (Al Istijaba TV)
Program: 413 (Alalamia (University of Africa))
Program: 414 (Al Gezira TV)
Program: 415 (Kassala TV)
Program: 416 (Test 1)
Program: 417 (Red Sea)
Program: 419 (Test 2)
Program: 420 (Sudan Knowledge)
Program: 421 (Sudan Sport)
Program: 422 (Sudania 24)
Program: 424 (Omdurman TV)
Program: 430 (Tayba TV)
Program: 431 (Agar TV)
Program: 432 (Nile River)
Program: 433 (Alalamia 2 TV)
Program: 440 (Al-Marikh TV)
PMT
NIT-actual
SDT-actual
TDT

Carrier 45


Transport stream 506
Services (17)
Al Hiwar TV (2.5 Mbps / 6.0%)
Jordan TV (3.2 Mbps / 7.5%)
Future TV (3.6 Mbps / 8.6%)
Amman FM (273 kbps / 0.6%)
Jordan Radio (268 kbps / 0.6%)
Almamlaka TV (7.8 Mbps / 18.5%)
Al-Arabiya (3.4 Mbps / 8.1%)
Radio Orient (104 kbps / 0.2%)
RTD-Djibouti (2.3 Mbps / 5.4%)
SSBC (2.5 Mbps / 5.9%)
Teleliban TV (3.5 Mbps / 8.3%)
DJIBOUTI R1 (185 kbps / 0.4%)
DJIBOUTI R2 (188 kbps / 0.4%)
DJIBOUTI R3 (187 kbps / 0.4%)
Iqra TV (3.5 Mbps / 8.3%)
test (2.2 Mbps / 5.2%)
SSBC RADIO (106 kbps / 0.3%)

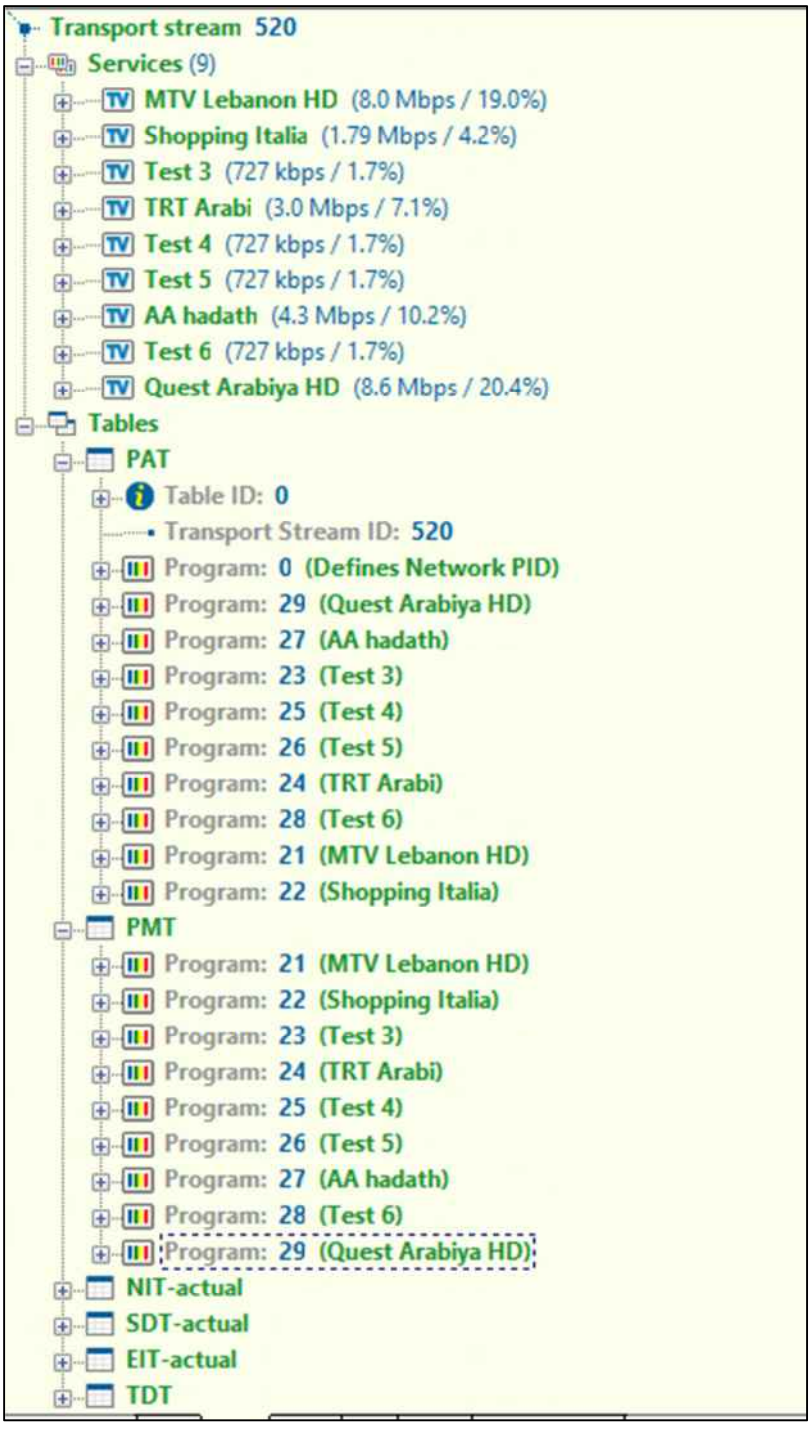

Tables
PAT
Table ID: 0
Transport Stream ID: 506
Program: 0 (Defines Network PID)
Program: 1801 (Al Hiwar TV)
Program: 1802 (Jordan TV)
Program: 1816 (Jordan Radio)
Program: 1819 (Al-Arabiya)
Program: 1834 (SSBC)
Program: 1835 (Teleliban TV)
Program: 1840 (Iqra TV)
Program: 1841 (test)
Program: 1803 (Future TV)
Program: 1812 (Amman FM)
Program: 1818 (Almamlaka TV)
Program: 1830 (Radio Orient)
Program: 1833 (RTD-Djibouti)
Program: 1837 (DJIBOUTI R1)
Program: 1838 (DJIBOUTI R2)
Program: 1839 (DJIBOUTI R3)
Program: 1842 (SSBC RADIO)

CAT
PMT
Program: 1801 (Al Hiwar TV)
Program: 1802 (Jordan TV)
Program: 1803 (Future TV)
Program: 1812 (Amman FM)
Program: 1816 (Jordan Radio)
Program: 1818 (Almamlaka TV)
Program: 1819 (Al-Arabiya)
Program: 1830 (Radio Orient)
Program: 1833 (RTD-Djibouti)
Program: 1834 (SSBC)
Program: 1835 (Teleliban TV)
Program: 1837 (DJIBOUTI R1)
Program: 1838 (DJIBOUTI R2)
Program: 1839 (DJIBOUTI R3)
Program: 1840 (Iqra TV)
Program: 1841 (test)
Program: 1842 (SSBC RADIO)
NIT-actual
SDT-actual
EIT-actual
TDT
TOT

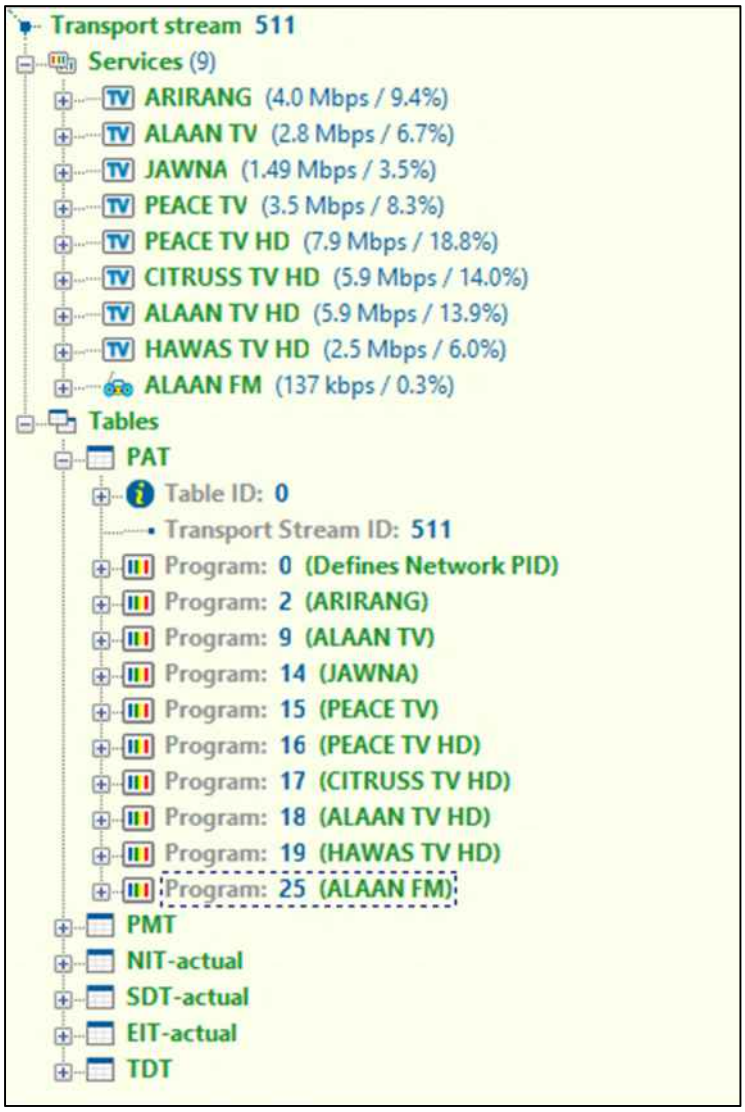
Carrier 46

Transport stream 510
Services (14)
TV5 Monde Maghreb Orient HD (5.7 Mbps / 9.3%)
TV5 Monde Style HD (6.1 Mbps / 9.9%)
France 24 HD (en Francais) (5.9 Mbps / 9.7%)
France 24 HD (in English) (5.9 Mbps / 9.7%)
France 24 HD (in Arabic) (5.9 Mbps / 9.7%)
Medi1 TV Arabic (4.6 Mbps / 7.5%)
BBC World News HD (9.0 Mbps / 14.7%)
TRT World HD (6.0 Mbps / 9.8%)
TRT Arabi HD (5.9 Mbps / 9.6%)
TEST- Coming soon (438 kbps / 0.7%)
MCD - Monte Carlo Doualiya (144 kbps / 0.2%)
RFI - Radio France Internationale (141 kbps / 0.2%)
Medi1 Radio Maghreb (141 kbps / 0.2%)
Medi1 Radio Afrique (140 kbps / 0.2%)
Tables
PAT
Table ID: 0
Transport Stream ID: 510
Program: 0 (Defines Network PID)
Program: 301 (TV5 Monde Maghreb Orient HD)
Program: 302 (TV5 Monde Style HD)
Program: 303 (France 24 HD (en Francais))
Program: 304 (France 24 HD (in English))
Program: 305 (France 24 HD (in Arabic))
Program: 306 (Medi1 TV Arabic)
Program: 307 (BBC World News HD)
Program: 308 (TRT World HD)
Program: 309 (TRT Arabi HD)
Program: 310 (TEST- Coming soon)
Program: 321 (MCD - Monte Carlo Doualiya)
Program: 322 (RFI - Radio France Internationale)
Program: 323 (Medi1 Radio Maghreb)
Program: 324 (Medi1 Radio Afrique)

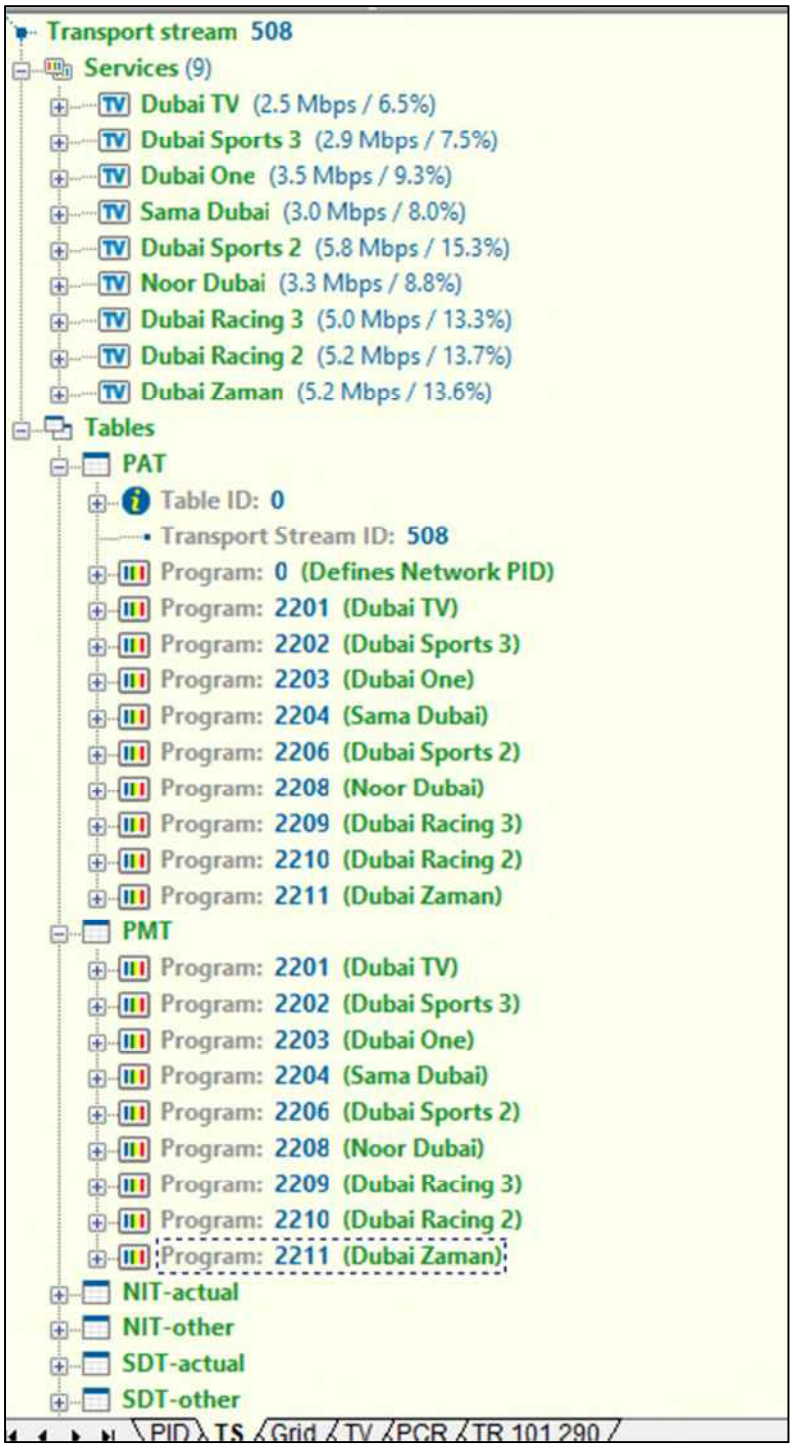
Carrier 47


Transport stream 520
Services (9)
MTV Lebanon HD (8.0 Mbps / 19.0%)
Shopping Italia (1.79 Mbps / 4.2%)
Test 3 (727 kbps / 1.7%)
TRT Arabi (3.0 Mbps / 7.1%)
Test 4 (727 kbps / 1.7%)
Test 5 (727 kbps / 1.7%)
AA hadath (4.3 Mbps / 10.2%)
Test 6 (727 kbps / 1.7%)
Quest Arabiya HD (8.6 Mbps / 20.4%)
Tables
PAT
Table ID: 0
Transport Stream ID: 520
Program: 0 (Defines Network PID)
Program: 29 (Quest Arabiya HD)
Program: 27 (AA hadath)
Program: 23 (Test 3)
Program: 25 (Test 4)
Program: 26 (Test 5)
Program: 24 (TRT Arabi)
Program: 28 (Test 6)
Program: 21 (MTV Lebanon HD)
Program: 22 (Shopping Italia)
PMT
Program: 21 (MTV Lebanon HD)
Program: 22 (Shopping Italia)
Program: 23 (Test 3)
Program: 24 (TRT Arabi)
Program: 25 (Test 4)
Program: 26 (Test 5)
Program: 27 (AA hadath)
Program: 28 (Test 6)
Program: 29 (Quest Arabiya HD)
NIT-actual
SDT-actual
EIT-actual
TDT

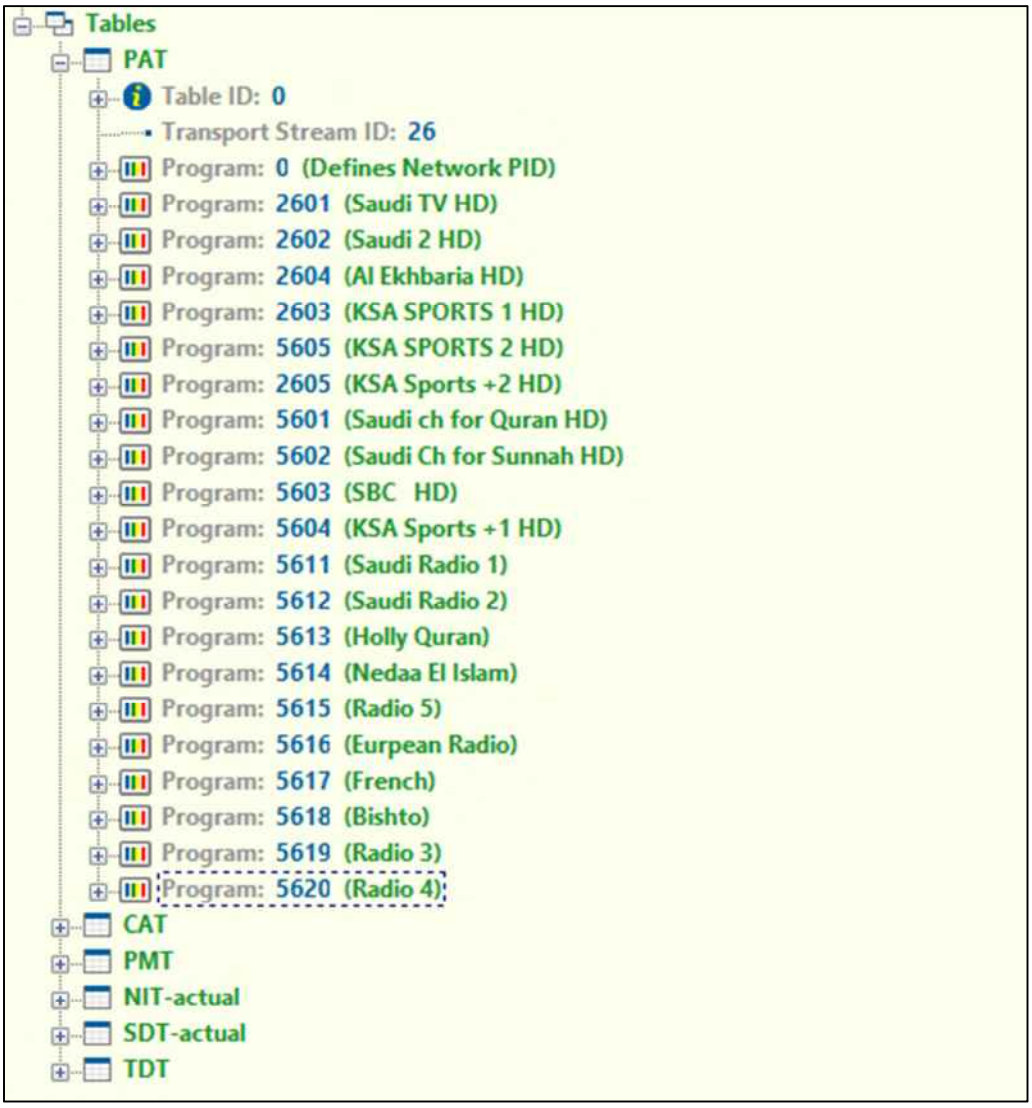
Carrier 48


Transport stream 511
Services (9)
ARIRANG (4.0 Mbps / 9.4%)
ALAAN TV (2.8 Mbps / 6.7%)
JAWNA (1.49 Mbps / 3.5%)
PEACE TV (3.5 Mbps / 8.3%)
PEACE TV HD (7.9 Mbps / 18.8%)
CITRUSS TV HD (5.9 Mbps / 14.0%)
ALAAN TV HD (5.9 Mbps / 13.9%)
HAWAS TV HD (2.5 Mbps / 6.0%)
ALAAN FM (137 kbps / 0.3%)
Tables
PAT
Table ID: 0
Transport Stream ID: 511
Program: 0 (Defines Network PID)
Program: 2 (ARIRANG)
Program: 9 (ALAAN TV)
Program: 14 (JAWNA)
Program: 15 (PEACE TV)
Program: 16 (PEACE TV HD)
Program: 17 (CITRUSS TV HD)
Program: 18 (ALAAN TV HD)
Program: 19 (HAWAS TV HD)
Program: 25 (ALAAN FM)
PMT
NIT-actual
SDT-actual
EIT-actual
TDT

Carrier 49

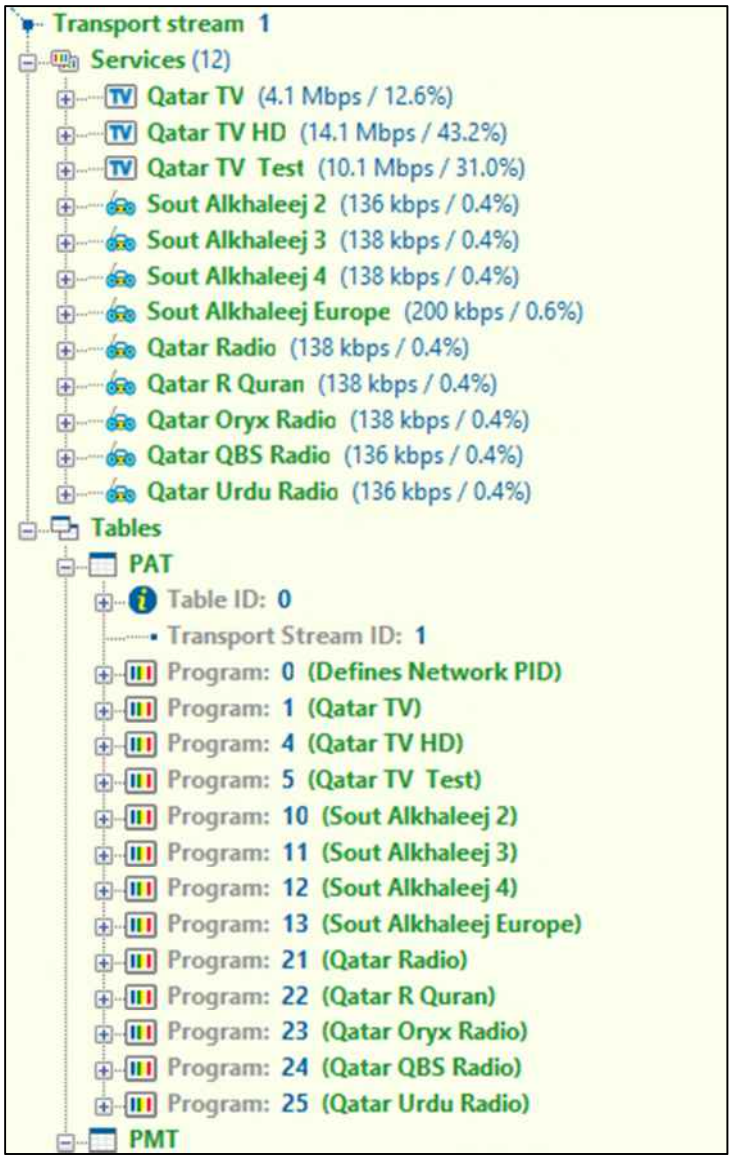

Transport stream 508
Services (9)
Dubai TV (2.5 Mbps / 6.5%)
Dubai Sports 3 (2.9 Mbps / 7.5%)
Dubai One (3.5 Mbps / 9.3%)
Sama Dubai (3.0 Mbps / 8.0%)
Dubai Sports 2 (5.8 Mbps / 15.3%)
Noor Dubai (3.3 Mbps / 8.8%)
Dubai Racing 3 (5.0 Mbps / 13.3%)
Dubai Racing 2 (5.2 Mbps / 13.7%)
Dubai Zaman (5.2 Mbps / 13.6%)
Tables
PAT
Table ID: 0
Transport Stream ID: 508
Program: 0 (Defines Network PID)
Program: 2201 (Dubai TV)
Program: 2202 (Dubai Sports 3)
Program: 2203 (Dubai One)
Program: 2204 (Sama Dubai)
Program: 2206 (Dubai Sports 2)
Program: 2208 (Noor Dubai)
Program: 2209 (Dubai Racing 3)
Program: 2210 (Dubai Racing 2)
Program: 2211 (Dubai Zaman)
PMT
Program: 2201 (Dubai TV)
Program: 2202 (Dubai Sports 3)
Program: 2203 (Dubai One)
Program: 2204 (Sama Dubai)
Program: 2206 (Dubai Sports 2)
Program: 2208 (Noor Dubai)
Program: 2209 (Dubai Racing 3)
Program: 2210 (Dubai Racing 2)
Program: 2211 (Dubai Zaman)
NIT-actual
NIT-other
SDT-actual
SDT-other
PID TS Grid TV PCR TR 101 290

Carrier 50


Tables
PAT
Table ID: 0
Transport Stream ID: 26
Program: 0 (Defines Network PID)
Program: 2601 (Saudi TV HD)
Program: 2602 (Saudi 2 HD)
Program: 2604 (Al Ekhbaria HD)
Program: 2603 (KSA SPORTS 1 HD)
Program: 5605 (KSA SPORTS 2 HD)
Program: 2605 (KSA Sports +2 HD)
Program: 5601 (Saudi ch for Quran HD)
Program: 5602 (Saudi Ch for Sunnah HD)
Program: 5603 (SBC HD)
Program: 5604 (KSA Sports +1 HD)
Program: 5611 (Saudi Radio 1)
Program: 5612 (Saudi Radio 2)
Program: 5613 (Holly Quran)
Program: 5614 (Nedaa El Islam)
Program: 5615 (Radio 5)
Program: 5616 (Eurpean Radio)
Program: 5617 (French)
Program: 5618 (Bishto)
Program: 5619 (Radio 3)
Program: 5620 (Radio 4)
CAT
PMT
NIT-actual
SDT-actual
TDT

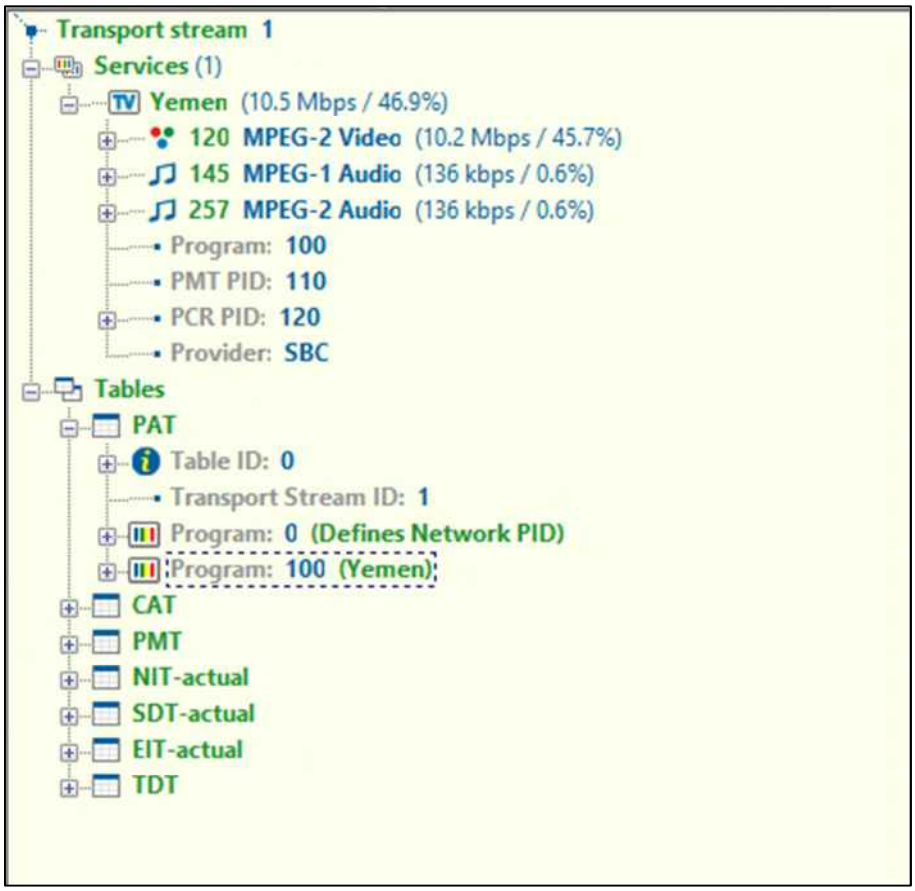
Transport stream 26
Services (20)
Saudi TV HD (6.7 Mbps / 9.9%)
Saudi 2 HD (2.6 Mbps / 3.9%)
KSA SPORTS 1 HD (10.0 Mbps / 14.7%)
Al Ekhbaria HD (6.4 Mbps / 9.4%)
KSA Sports +2 HD (6.5 Mbps / 9.5%)
Saudi ch for Quran HD (4.8 Mbps / 7.1%)
Saudi Ch for Sunnah HD (6.9 Mbps / 10.2%)
SBC HD (8.6 Mbps / 12.7%)
KSA Sports +1 HD (9.0 Mbps / 13.2%)
KSA SPORTS 2 HD (3.1 Mbps / 4.6%)
Saudi Radio 1 (138 kbps / 0.2%)
Saudi Radio 2 (137 kbps / 0.2%)
Holly Quran (137 kbps / 0.2%)
Nedaa El Islam (138 kbps / 0.2%)
Radio 5 (138 kbps / 0.2%)
Eurpean Radio (138 kbps / 0.2%)
French (137 kbps / 0.2%)
Bishto (138 kbps / 0.2%)
Radio 3 (137 kbps / 0.2%)
Radio 4 (138 kbps / 0.2%)

Carrier 51

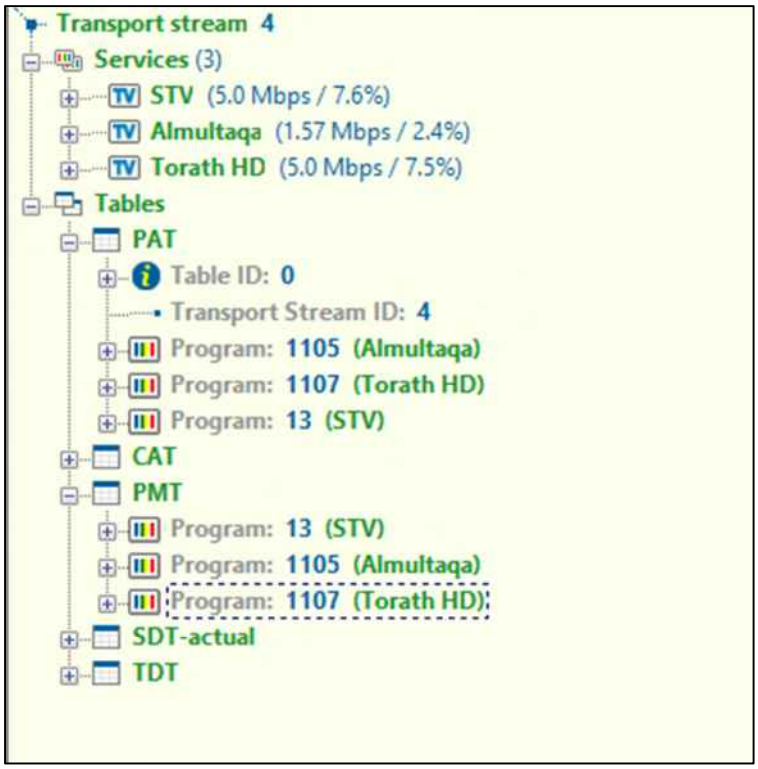

Transport stream 1
Services (12)
Qatar TV (4.1 Mbps / 12.6%)
Qatar TV HD (14.1 Mbps / 43.2%)
Qatar TV Test (10.1 Mbps / 31.0%)
Sout Alkhaleej 2 (136 kbps / 0.4%)
Sout Alkhaleej 3 (138 kbps / 0.4%)
Sout Alkhaleej 4 (138 kbps / 0.4%)
Sout Alkhaleej Europe (200 kbps / 0.6%)
Qatar Radio (138 kbps / 0.4%)
Qatar R Quran (138 kbps / 0.4%)
Qatar Oryx Radio (138 kbps / 0.4%)
Qatar QBS Radio (136 kbps / 0.4%)
Qatar Urdu Radio (136 kbps / 0.4%)
Tables
PAT
Table ID: 0
Transport Stream ID: 1
Program: 0 (Defines Network PID)
Program: 1 (Qatar TV)
Program: 4 (Qatar TV HD)
Program: 5 (Qatar TV Test)
Program: 10 (Sout Alkhaleej 2)
Program: 11 (Sout Alkhaleej 3)
Program: 12 (Sout Alkhaleej 4)
Program: 13 (Sout Alkhaleej Europe)
Program: 21 (Qatar Radio)
Program: 22 (Qatar R Quran)
Program: 23 (Qatar Oryx Radio)
Program: 24 (Qatar QBS Radio)
Program: 25 (Qatar Urdu Radio)
PMT

PMT
Program: 1 (Qatar TV)
Program: 4 (Qatar TV HD)
Program: 5 (Qatar TV Test)
Program: 10 (Sout Alkhaleej 2)
Program: 11 (Sout Alkhaleej 3)
Program: 12 (Sout Alkhaleej 4)
Program: 13 (Sout Alkhaleej Europe)
Program: 21 (Qatar Radio)
Program: 22 (Qatar R Quran)
Program: 23 (Qatar Oryx Radio)
Program: 24 (Qatar QBS Radio)
Program: 25 (Qatar Urdu Radio)
SDT-actual
SDT-other
EIT-actual
TDT

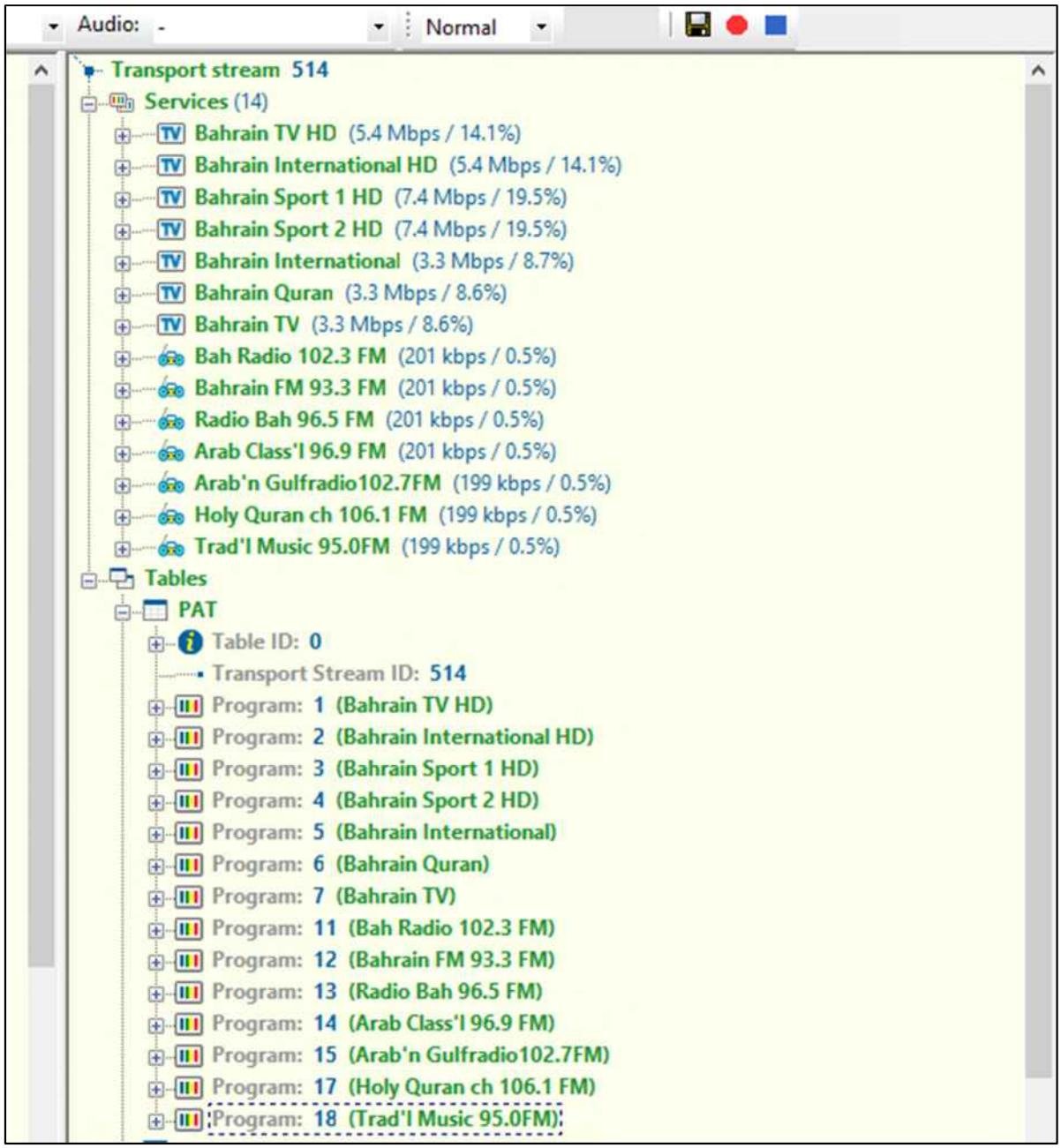
Carrier 52


Transport stream 1
Services (1)
Yemen (10.5 Mbps / 46.9%)
120 MPEG-2 Video (10.2 Mbps / 45.7%)
145 MPEG-1 Audio (136 kbps / 0.6%)
257 MPEG-2 Audio (136 kbps / 0.6%)
Program: 100
PMT PID: 110
PCR PID: 120
Provider: SBC
Tables
PAT
Table ID: 0
Transport Stream ID: 1
Program: 0 (Defines Network PID)
Program: 100 (Yemen)
CAT
PMT
NIT-actual
SDT-actual
EIT-actual
TDT

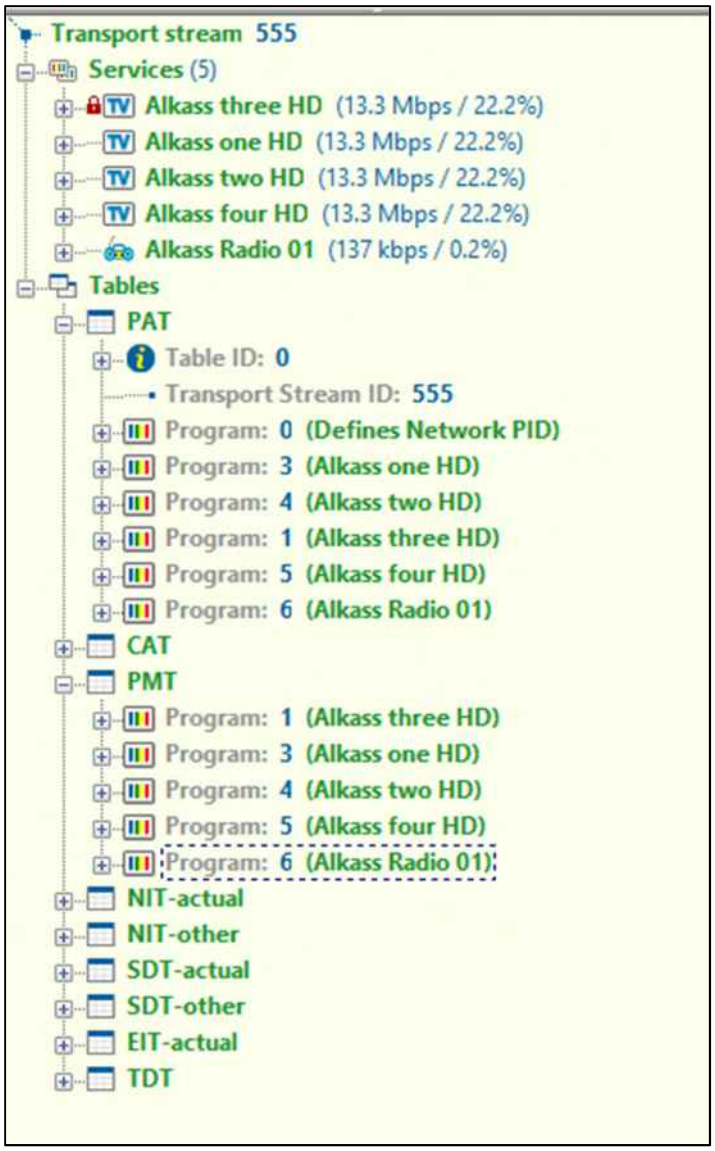
Carrier 53


Transport stream 4
Services (3)
STV (5.0 Mbps / 7.6%)
Almultaqa (1.57 Mbps / 2.4%)
Torath HD (5.0 Mbps / 7.5%)
Tables
PAT
Table ID: 0
Transport Stream ID: 4
Program: 1105 (Almultaqa)
Program: 1107 (Torath HD)
Program: 13 (STV)
CAT
PMT
Program: 13 (STV)
Program: 1105 (Almultaqa)
Program: 1107 (Torath HD)
SDT-actual
TDT

Carrier 54


Audio: -
Normal
Transport stream 514
Services (14)
Bahrain TV HD (5.4 Mbps / 14.1%)
Bahrain International HD (5.4 Mbps / 14.1%)
Bahrain Sport 1 HD (7.4 Mbps / 19.5%)
Bahrain Sport 2 HD (7.4 Mbps / 19.5%)
Bahrain International (3.3 Mbps / 8.7%)
Bahrain Quran (3.3 Mbps / 8.6%)
Bahrain TV (3.3 Mbps / 8.6%)
Bah Radio 102.3 FM (201 kbps / 0.5%)
Bahrain FM 93.3 FM (201 kbps / 0.5%)
Radio Bah 96.5 FM (201 kbps / 0.5%)
Arab Class'l 96.9 FM (201 kbps / 0.5%)
Arab'n Gulfradio102.7FM (199 kbps / 0.5%)
Holy Quran ch 106.1 FM (199 kbps / 0.5%)
Trad'l Music 95.0FM (199 kbps / 0.5%)
Tables
PAT
Table ID: 0
Transport Stream ID: 514
Program: 1 (Bahrain TV HD)
Program: 2 (Bahrain International HD)
Program: 3 (Bahrain Sport 1 HD)
Program: 4 (Bahrain Sport 2 HD)
Program: 5 (Bahrain International)
Program: 6 (Bahrain Quran)
Program: 7 (Bahrain TV)
Program: 11 (Bah Radio 102.3 FM)
Program: 12 (Bahrain FM 93.3 FM)
Program: 13 (Radio Bah 96.5 FM)
Program: 14 (Arab Class'l 96.9 FM)
Program: 15 (Arab'n Gulfradio102.7FM)
Program: 17 (Holy Quran ch 106.1 FM)
Program: 18 (Trad'l Music 95.0FM)

Carrier 55

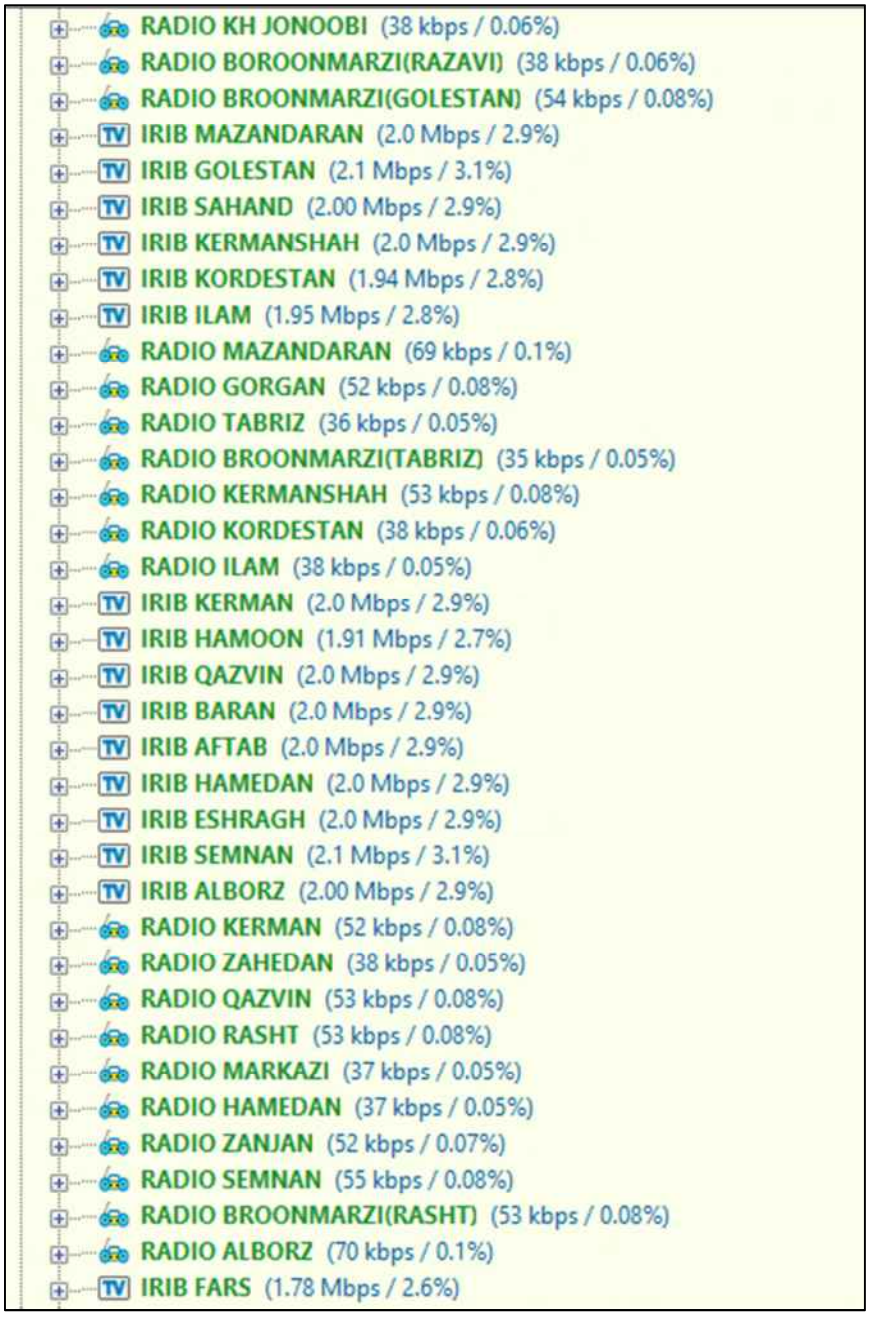

Transport stream 555
Services (5)
Alkass three HD (13.3 Mbps / 22.2%)
Alkass one HD (13.3 Mbps / 22.2%)
Alkass two HD (13.3 Mbps / 22.2%)
Alkass four HD (13.3 Mbps / 22.2%)
Alkass Radio 01 (137 kbps / 0.2%)
Tables
PAT
Table ID: 0
Transport Stream ID: 555
Program: 0 (Defines Network PID)
Program: 3 (Alkass one HD)
Program: 4 (Alkass two HD)
Program: 1 (Alkass three HD)
Program: 5 (Alkass four HD)
Program: 6 (Alkass Radio 01)
CAT
PMT
Program: 1 (Alkass three HD)
Program: 3 (Alkass one HD)
Program: 4 (Alkass two HD)
Program: 5 (Alkass four HD)
Program: 6 (Alkass Radio 01)
NIT-actual
NIT-other
SDT-actual
SDT-other
EIT-actual
TDT

Carrier 56

Transport stream 101
Services (13)
RADIO NAMA KHALIJEFARS (119 kbps / 0.2%)
Radio Nama Ardebil (199 kbps / 0.3%)
RADIO NAMA QOM (190 kbps / 0.3%)
IRIB TV3 (3.1 Mbps / 4.7%)
IRIB TAMASHA HD (12.2 Mbps / 18.7%)
IRIB TV3 HD (16.1 Mbps / 24.7%)
IRIB SABALAN (2.0 Mbps / 3.1%)
RADIO ARDEBIL (62 kbps / 0.1%)
RADIO BROONMARZI(ARAN) (36 kbps / 0.06%)
IRIB KHALIJE FARS (2.0 Mbps / 3.1%)
IRIB NOOR (1.98 Mbps / 3.0%)
RADIO QOM (53 kbps / 0.08%)
RADIO-Bandarabas (50 kbps / 0.08%)
Tables
PAT
Table ID: 0
Transport Stream ID: 101
Program: 257 (RADIO NAMA KHALIJEFARS)
Program: 272 (Radio Nama Ardebil)
Program: 279 (RADIO NAMA QOM)
Program: 403 (IRIB TV3)
Program: 422 (IRIB TAMASHA HD)
Program: 425 (IRIB TV3 HD)
Program: 607 (IRIB SABALAN)
Program: 658 (RADIO ARDEBIL)
Program: 659 (RADIO BROONMARZI(ARAN))
Program: 702 (IRIB KHALIJE FARS)
Program: 706 (IRIB NOOR)
Program: 756 (RADIO QOM)
Program: 7022 (RADIO-Bandarabas)

Carrier 57

Transport stream 500
Services (86)
TEST (3.1 Mbps / 4.5%)
RADIO NAMA YAZD (235 kbps / 0.3%)
RADIO NAMA KH JONOOBI (207 kbps / 0.3%)
RADIO NAMA KH RAVAZI (180 kbps / 0.3%)
RADIO NAMA KH SHOMALI (209 kbps / 0.3%)
RADIO NAMA MARKAZI (160 kbps / 0.2%)
RADIO NAMA KERMAN (182 kbps / 0.3%)
RADIO NAMA ILAM (69 kbps / 0.1%)
RADIO NAMA KERMANSHAH (224 kbps / 0.3%)
RADIO NAMA KORDESTAN (207 kbps / 0.3%)
RADIO NAMA HAMEDAN (206 kbps / 0.3%)
RADIO NAMA FARS (211 kbps / 0.3%)
RADIO NAMA YASUJ (235 kbps / 0.3%)
RADIO NAMA JAHANBIN (210 kbps / 0.3%)
RADIO NAMA ALBORZ (177 kbps / 0.3%)
RADIO NAMA KHOOZESTAN (201 kbps / 0.3%)
RADIO NAMA ZANJAN (145 kbps / 0.2%)
RADIO NAMA AZARBAYJAN (194 kbps / 0.3%)
RADIO NAMA TABRIZ (133 kbps / 0.2%)
RADIO NAMA GUILAN (124 kbps / 0.2%)
RADIO NAMA GOLESTAN (231 kbps / 0.3%)
RADIO NAMA MAZANDARAN (243 kbps / 0.4%)
RADIO NAMA SEMNAN (230 kbps / 0.3%)
RADIO NAMA QAZVIN (221 kbps / 0.3%)
RADIO NAMA BUSHEHR (214 kbps / 0.3%)
RADIO NAMA ESFAHAN (157 kbps / 0.2%)
RADIO NAMA LORESTAN (174 kbps / 0.3%)
RADIO NAMA ZAHEDAN (190 kbps / 0.3%)
IRIB KHORASAN RAZAVI (2.00 Mbps / 2.9%)
IRIB KHORASAN SHOMALI (2.2 Mbps / 3.1%)
IRIB KHORASAN JONOOBI (1.69 Mbps / 2.4%)
RADIO KH RAZAVI (35 kbps / 0.05%)
RADIO KH SHOMALI (35 kbps / 0.05%)
RADIO KH JONOOBI (35 kbps / 0.05%)

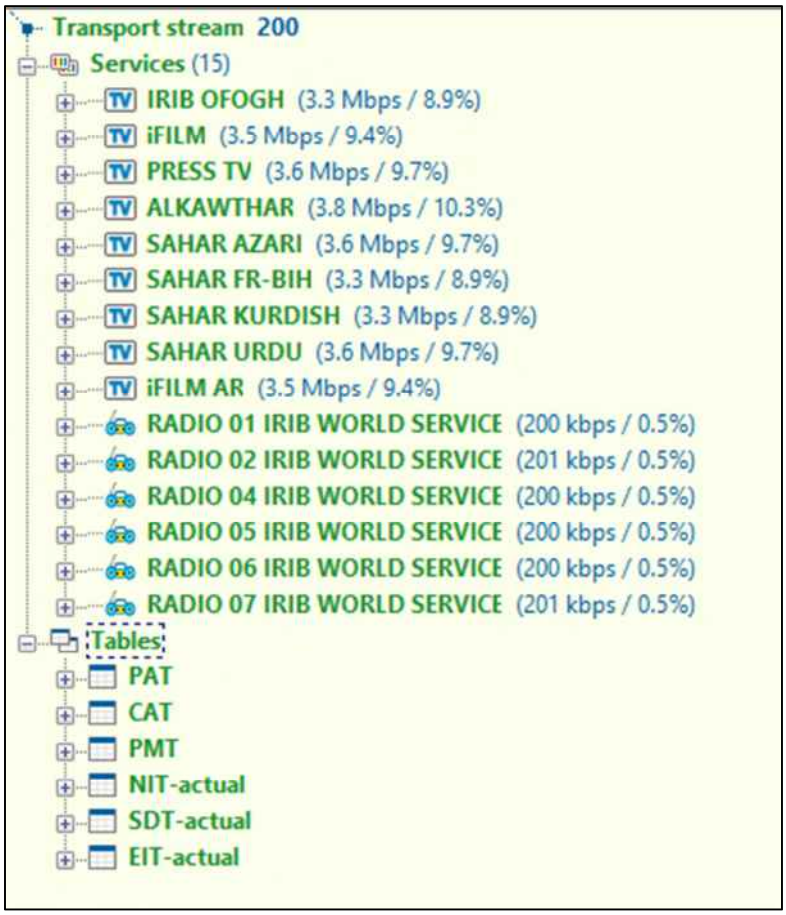

RADIO KH JONOOBI (38 kbps / 0.06%)
RADIO BOROONMARZI(RAZAVI) (38 kbps / 0.06%)
RADIO BROONMARZI(GOLESTAN) (54 kbps / 0.08%)
IRIB MAZANDARAN (2.0 Mbps / 2.9%)
IRIB GOLESTAN (2.1 Mbps / 3.1%)
IRIB SAHAND (2.00 Mbps / 2.9%)
IRIB KERMANSHAH (2.0 Mbps / 2.9%)
IRIB KORDESTAN (1.94 Mbps / 2.8%)
IRIB ILAM (1.95 Mbps / 2.8%)
RADIO MAZANDARAN (69 kbps / 0.1%)
RADIO GORGAN (52 kbps / 0.08%)
RADIO TABRIZ (36 kbps / 0.05%)
RADIO BROONMARZI(TABRIZ) (35 kbps / 0.05%)
RADIO KERMANSHAH (53 kbps / 0.08%)
RADIO KORDESTAN (38 kbps / 0.06%)
RADIO ILAM (38 kbps / 0.05%)
IRIB KERMAN (2.0 Mbps / 2.9%)
IRIB HAMOON (1.91 Mbps / 2.7%)
IRIB QAZVIN (2.0 Mbps / 2.9%)
IRIB BARAN (2.0 Mbps / 2.9%)
IRIB AFTAB (2.0 Mbps / 2.9%)
IRIB HAMEDAN (2.0 Mbps / 2.9%)
IRIB ESHRAGH (2.0 Mbps / 2.9%)
IRIB SEMNAN (2.1 Mbps / 3.1%)
IRIB ALBORZ (2.00 Mbps / 2.9%)
RADIO KERMAN (52 kbps / 0.08%)
RADIO ZAHEDAN (38 kbps / 0.05%)
RADIO QAZVIN (53 kbps / 0.08%)
RADIO RASHT (53 kbps / 0.08%)
RADIO MARKAZI (37 kbps / 0.05%)
RADIO HAMEDAN (37 kbps / 0.05%)
RADIO ZANJAN (52 kbps / 0.07%)
RADIO SEMNAN (55 kbps / 0.08%)
RADIO BROONMARZI(RASHT) (53 kbps / 0.08%)
RADIO ALBORZ (70 kbps / 0.1%)
IRIB FARS (1.78 Mbps / 2.6%)

RADIO FARS (74 kbps / 0.1%)
RADIO BUSHEHR (36 kbps / 0.05%)
RADIO YASUJ (55 kbps / 0.08%)
RADIO AZARBAYJAN (37 kbps / 0.05%)
RADIO KHOOZESTAN (52 kbps / 0.07%)
RADIO LORESTAN (36 kbps / 0.05%)
RADIO SHAHREKORD (34 kbps / 0.05%)
RADIO YAZD (53 kbps / 0.08%)
RADIO ESFAHAN (34 kbps / 0.05%)
Tables
PAT
Table ID: 0
Transport Stream ID: 500
Program: 0 (Defines Network PID)
Program: 808 (IRIB YAZD)
Program: 503 (IRIB KHORASAN JONOOBI)
Program: 501 (IRIB KHORASAN RAZAVI)
Program: 502 (IRIB KHORASAN SHOMALI)
Program: 707 (IRIB AFTAB)
Program: 701 (IRIB KERMAN)
Program: 610 (IRIB ILAM)
Program: 608 (IRIB KERMANSHAH)
Program: 609 (IRIB KORDESTAN)
Program: 708 (IRIB HAMEDAN)
Program: 801 (IRIB FARS)
Program: 803 (IRIB DENA)
Program: 807 (IRIB JAHANBIN)
Program: 711 (IRIB ALBORZ)
Program: 805 (IRIB KHOOZESTAN)
Program: 709 (IRIB ESHRAGH)
Program: 804 (IRIB AZARBAYJAN)
Program: 606 (IRIB SAHAND)
Program: 705 (IRIB BARAN)
Program: 605 (IRIB GOLESTAN)
Program: 604 (IRIB MAZANDARAN)
Program: 710 (IRIB SEMNAN)

Program: 710 (IRIB SEMNAN)
Program: 704 (IRIB QAZVIN)
Program: 802 (IRIB BUSHEHR)
Program: 809 (IRIB ESFAHAN)
Program: 806 (IRIB AFLAK)
Program: 703 (IRIB HAMOON)
Program: 858 (RADIO YAZD)
Program: 553 (RADIO KH JONOOBI)
Program: 551 (RADIO KH RAZAVI)
Program: 552 (RADIO KH SHOMALI)
Program: 757 (RADIO MARKAZI)
Program: 751 (RADIO KERMAN)
Program: 662 (RADIO ILAM)
Program: 660 (RADIO KERMANSHAH)
Program: 661 (RADIO KORDESTAN)
Program: 758 (RADIO HAMEDAN)
Program: 851 (RADIO FARS)
Program: 853 (RADIO YASUJ)
Program: 857 (RADIO SHAHREKORD)
Program: 762 (RADIO ALBORZ)
Program: 855 (RADIO KHOOZESTAN)
Program: 759 (RADIO ZANJAN)
Program: 854 (RADIO AZARBAYJAN)
Program: 657 (RADIO TABRIZ)
Program: 755 (RADIO RASHT)
Program: 656 (RADIO GORGAN)
Program: 655 (RADIO MAZANDARAN)
Program: 760 (RADIO SEMNAN)
Program: 754 (RADIO QAZVIN)
Program: 852 (RADIO BUSHEHR)
Program: 859 (RADIO ESFAHAN)
Program: 856 (RADIO LORESTAN)
Program: 753 (RADIO ZAHEDAN)
Program: 554 (RADIO BOROONMARZI(RAZAVI))
Program: 659 (RADIO BROONMARZI(TABRIZ))
Program: 761 (RADIO BROONMARZI(RASHT))

Program: 761 (RADIO BROONMARZI(RASHT))
Program: 563 (RADIO BROONMARZI(GOLESTAN))
Program: 252 (RADIO NAMA KH JONOOBI)
Program: 253 (RADIO NAMA KH RAVAZI)
Program: 254 (RADIO NAMA KH SHOMALI)
Program: 255 (RADIO NAMA MARKAZI)
Program: 256 (RADIO NAMA KERMAN)
Program: 262 (RADIO NAMA HAMEDAN)
Program: 264 (RADIO NAMA YASUJ)
Program: 268 (RADIO NAMA KHOOZESTAN)
Program: 270 (RADIO NAMA AZARBAYJAN)
Program: 273 (RADIO NAMA GUILAN)
Program: 271 (RADIO NAMA TABRIZ)
Program: 274 (RADIO NAMA GOLESTAN)
Program: 277 (RADIO NAMA QAZVIN)
Program: 278 (RADIO NAMA BUSHEHR)
Program: 280 (RADIO NAMA ESFAHAN)
Program: 269 (RADIO NAMA ZANJAN)
Program: 275 (RADIO NAMA MAZANDARAN)
Program: 276 (RADIO NAMA SEMNAN)
Program: 261 (RADIO NAMA KORDESTAN)
Program: 251 (RADIO NAMA YAZD)
Program: 258 (RADIO NAMA ILAM)
Program: 263 (RADIO NAMA FARS)
Program: 267 (RADIO NAMA ALBORZ)
Program: 260 (RADIO NAMA KERMANSHAH)
Program: 282 (RADIO NAMA ZAHEDAN)
Program: 266 (RADIO NAMA JAHANBIN)
Program: 281 (RADIO NAMA LORESTAN)
Program: 103 (TEST)

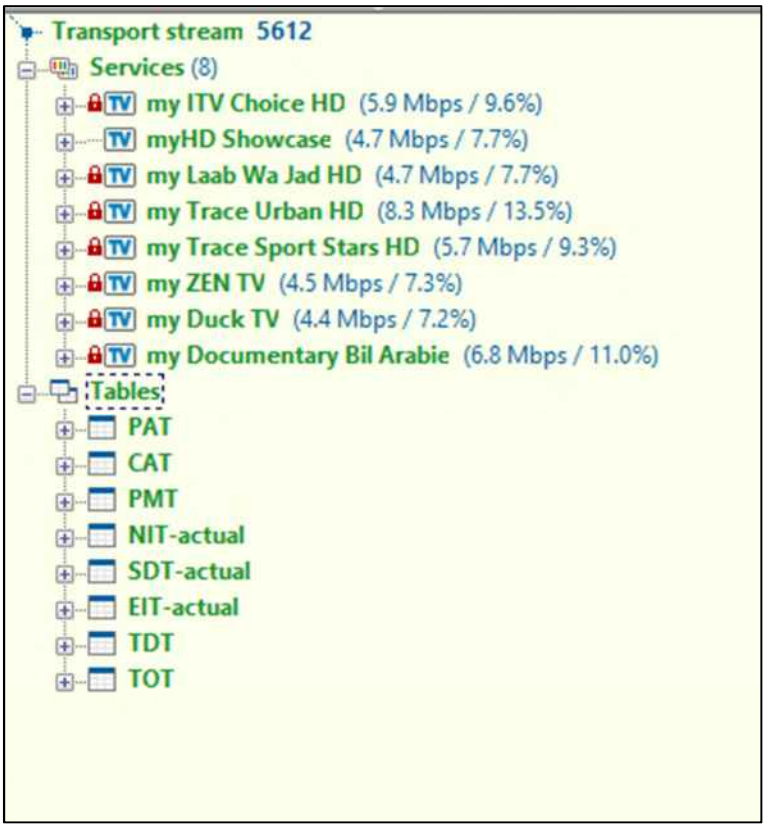
Carrier 58


Transport stream 200
Services (15)
IRIB OFOGH (3.3 Mbps / 8.9%)
iFILM (3.5 Mbps / 9.4%)
PRESS TV (3.6 Mbps / 9.7%)
ALKAWTHAR (3.8 Mbps / 10.3%)
SAHAR AZARI (3.6 Mbps / 9.7%)
SAHAR FR-BIH (3.3 Mbps / 8.9%)
SAHAR KURDISH (3.3 Mbps / 8.9%)
SAHAR URDU (3.6 Mbps / 9.7%)
iFILM AR (3.5 Mbps / 9.4%)
RADIO 01 IRIB WORLD SERVICE (200 kbps / 0.5%)
RADIO 02 IRIB WORLD SERVICE (201 kbps / 0.5%)
RADIO 04 IRIB WORLD SERVICE (200 kbps / 0.5%)
RADIO 05 IRIB WORLD SERVICE (200 kbps / 0.5%)
RADIO 06 IRIB WORLD SERVICE (200 kbps / 0.5%)
RADIO 07 IRIB WORLD SERVICE (201 kbps / 0.5%)
Tables
PAT
CAT
PMT
NIT-actual
SDT-actual
EIT-actual

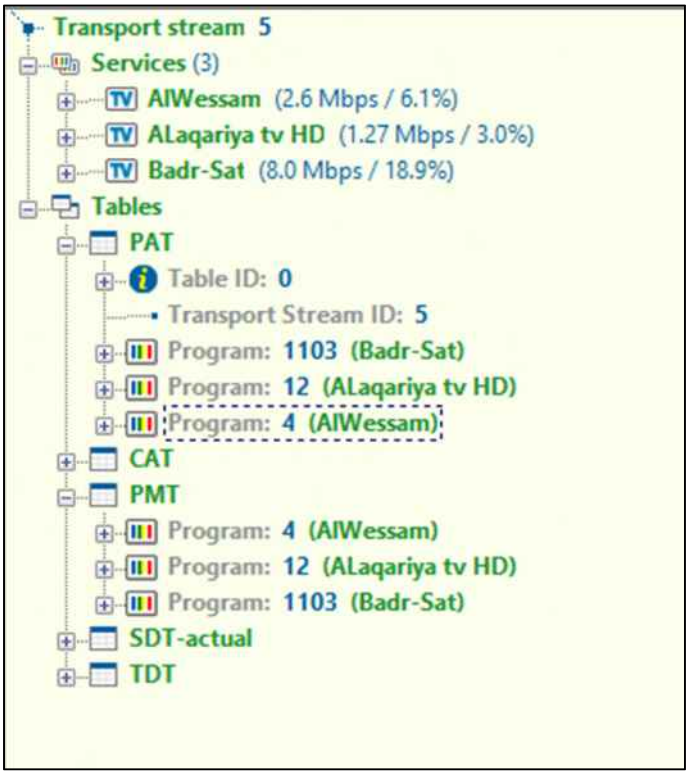
Carrier 59

PID info (9)
0 PAT (8.6 kbps / 0.01%)
1 CAT (2.7 kbps / 0.00%)
16 NIT-actual (0 bps / 0.00%)
17 SDT-actual (1.33 kbps / 0.00%)
20 TDT (0 bps / 0.00%)
256 MPEG-2 Video (1.03 Mbps / 1.5%)
257 MPEG-1 Audio (262 kbps / 0.4%)
480 PMT (8.4 kbps / 0.01%)
8191 Null packets (65.3 Mbps / 98.0%)
Transport stream 6
Services (1)
Test (1.29 Mbps / 1.9%)
256 MPEG-2 Video (1.03 Mbps / 1.5%)
257 MPEG-1 Audio (262 kbps / 0.4%)
Program: 26
PMT PID: 480
PCR PID: 256
Tables
PAT
Table ID: 0
Transport Stream ID: 6
Program: 26 (Test)
CAT
Table ID: 1
No CA systems?!
PMT
Program: 26 (Test)
Table ID: 2
PCR PID: 256
No program-info descriptors
PID: 257
PID: 256
NIT-actual
Network ID: 0
SDT-actual
Transport-Stream ID: 6 (onw=65286)
TDT
Table ID: 112
UTC time: 2019/03/04 11:19:09

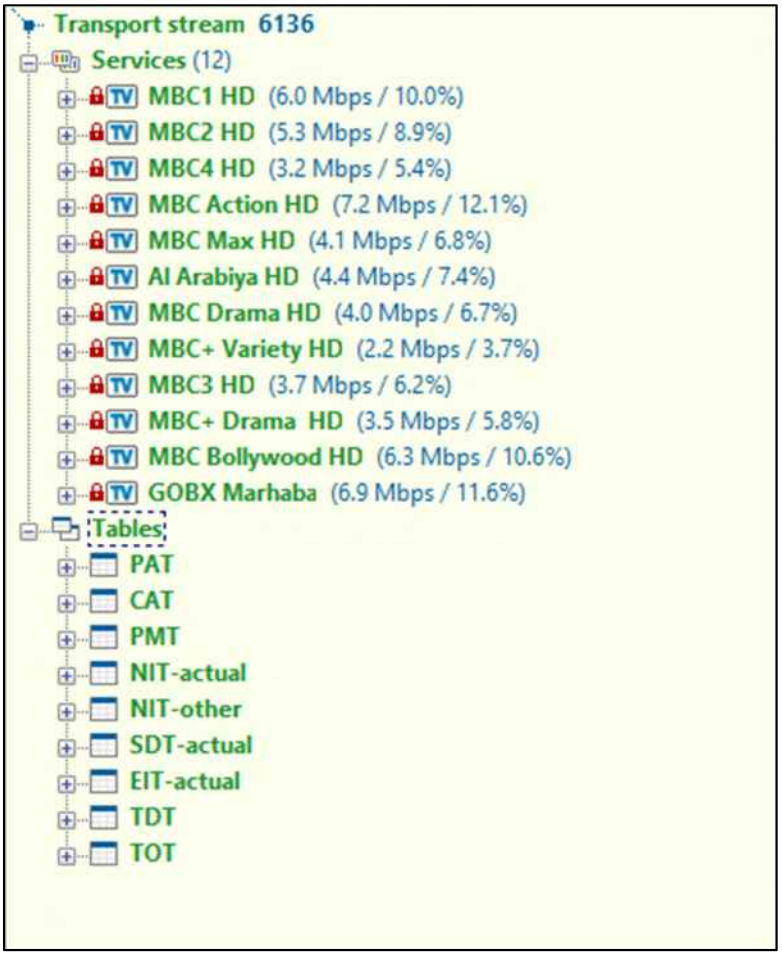
Carrier 60



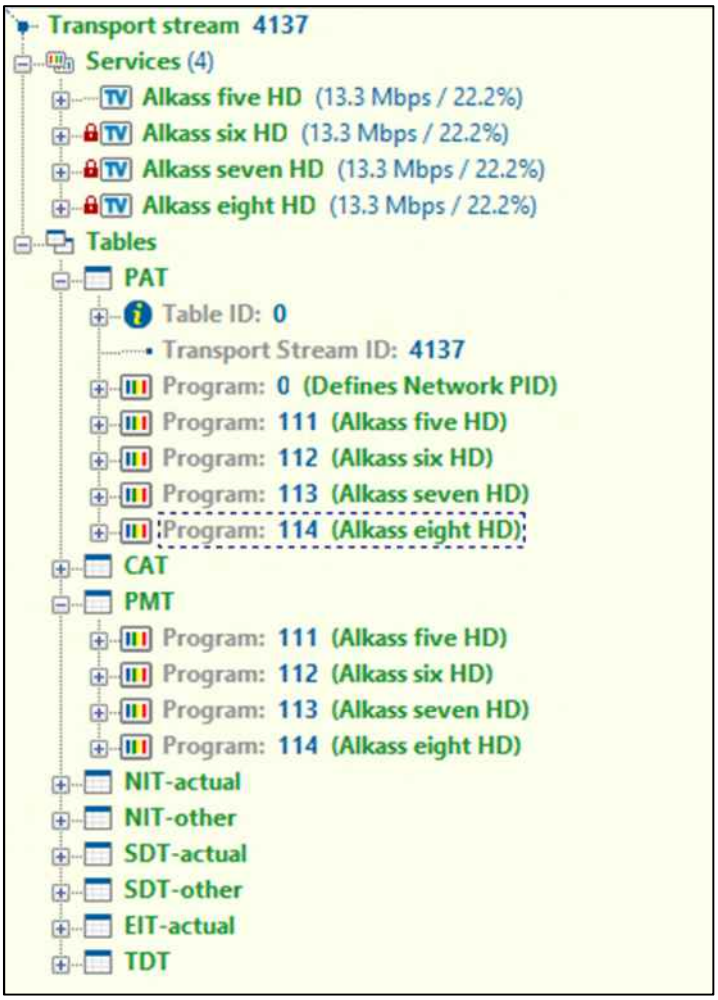
Carrier 61



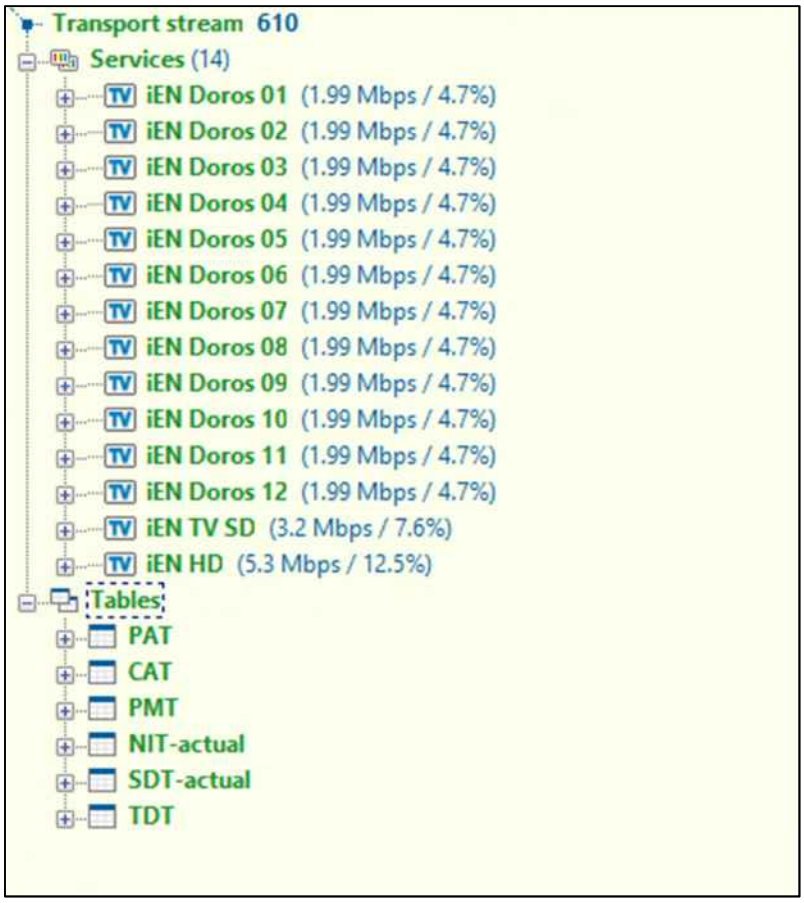
Carrier 62


Transport stream 6136
Services (12)
MBC1 HD (6.0 Mbps / 10.0%)
MBC2 HD (5.3 Mbps / 8.9%)
MBC4 HD (3.2 Mbps / 5.4%)
MBC Action HD (7.2 Mbps / 12.1%)
MBC Max HD (4.1 Mbps / 6.8%)
Al Arabiya HD (4.4 Mbps / 7.4%)
MBC Drama HD (4.0 Mbps / 6.7%)
MBC+ Variety HD (2.2 Mbps / 3.7%)
MBC3 HD (3.7 Mbps / 6.2%)
MBC+ Drama HD (3.5 Mbps / 5.8%)
MBC Bollywood HD (6.3 Mbps / 10.6%)
GOBX Marhaba (6.9 Mbps / 11.6%)
Tables
PAT
CAT
PMT
NIT-actual
NIT-other
SDT-actual
EIT-actual
TDT
TOT

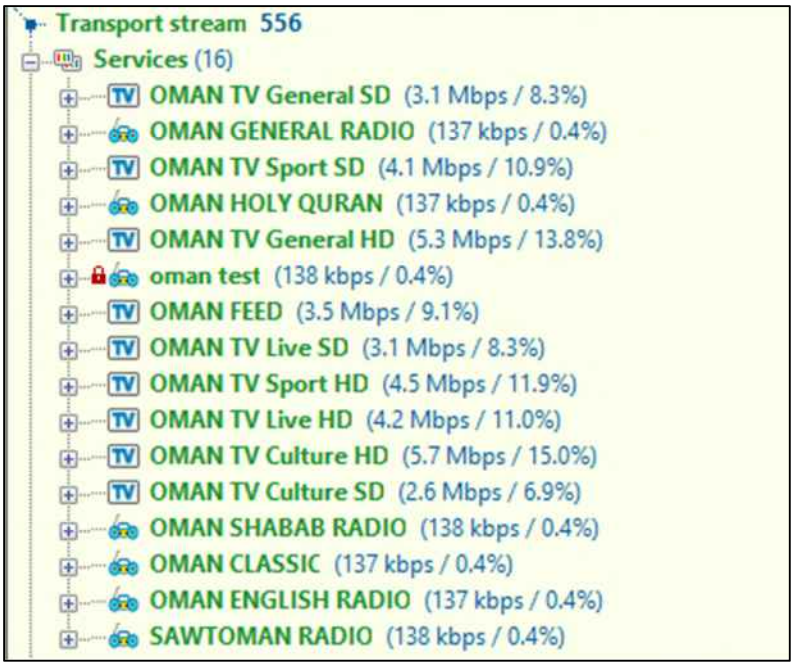
Carrier 63


Transport stream 4137
Services (4)
Alkass five HD (13.3 Mbps / 22.2%)
Alkass six HD (13.3 Mbps / 22.2%)
Alkass seven HD (13.3 Mbps / 22.2%)
Alkass eight HD (13.3 Mbps / 22.2%)
Tables
PAT
Table ID: 0
Transport Stream ID: 4137
Program: 0 (Defines Network PID)
Program: 111 (Alkass five HD)
Program: 112 (Alkass six HD)
Program: 113 (Alkass seven HD)
Program: 114 (Alkass eight HD)
CAT
PMT
Program: 111 (Alkass five HD)
Program: 112 (Alkass six HD)
Program: 113 (Alkass seven HD)
Program: 114 (Alkass eight HD)
NIT-actual
NIT-other
SDT-actual
SDT-other
EIT-actual
TDT

Carrier 64

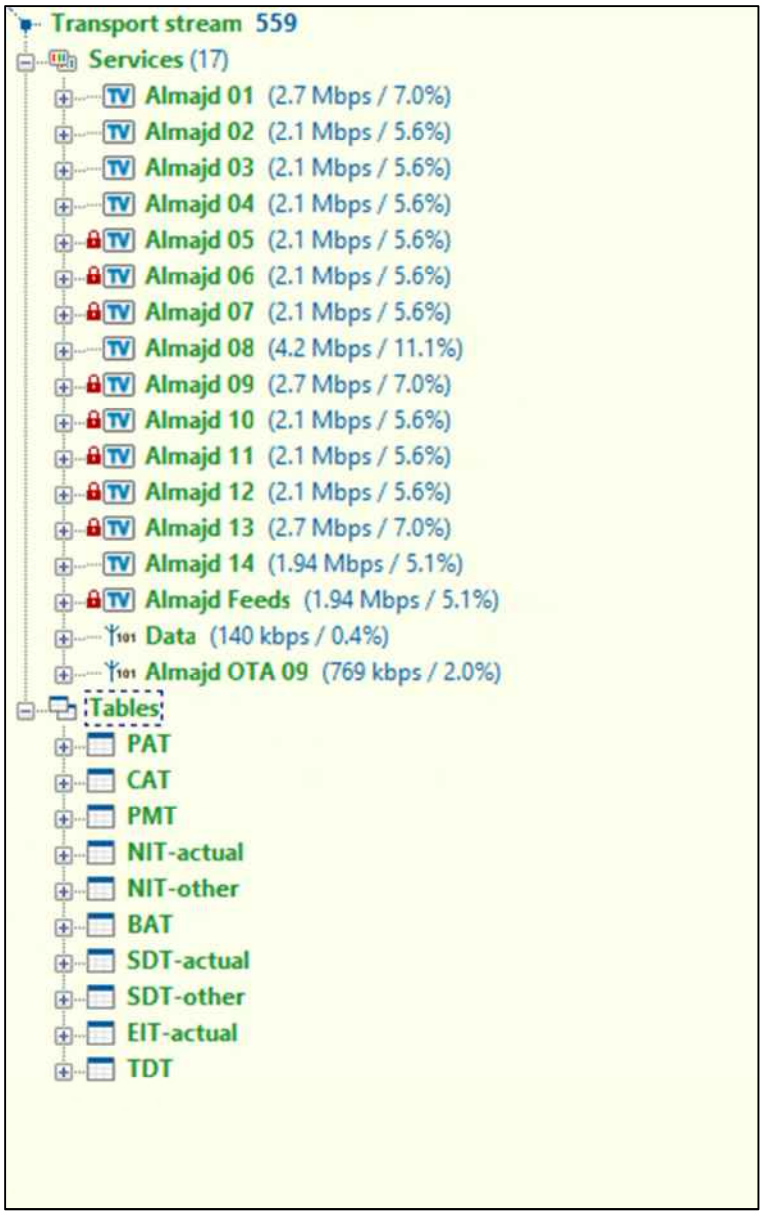

Transport stream 610
Services (14)
iEN Doros 01 (1.99 Mbps / 4.7%)
iEN Doros 02 (1.99 Mbps / 4.7%)
iEN Doros 03 (1.99 Mbps / 4.7%)
iEN Doros 04 (1.99 Mbps / 4.7%)
iEN Doros 05 (1.99 Mbps / 4.7%)
iEN Doros 06 (1.99 Mbps / 4.7%)
iEN Doros 07 (1.99 Mbps / 4.7%)
iEN Doros 08 (1.99 Mbps / 4.7%)
iEN Doros 09 (1.99 Mbps / 4.7%)
iEN Doros 10 (1.99 Mbps / 4.7%)
iEN Doros 11 (1.99 Mbps / 4.7%)
iEN Doros 12 (1.99 Mbps / 4.7%)
iEN TV SD (3.2 Mbps / 7.6%)
iEN HD (5.3 Mbps / 12.5%)
Tables
PAT
CAT
PMT
NIT-actual
SDT-actual
TDT

Carrier 65

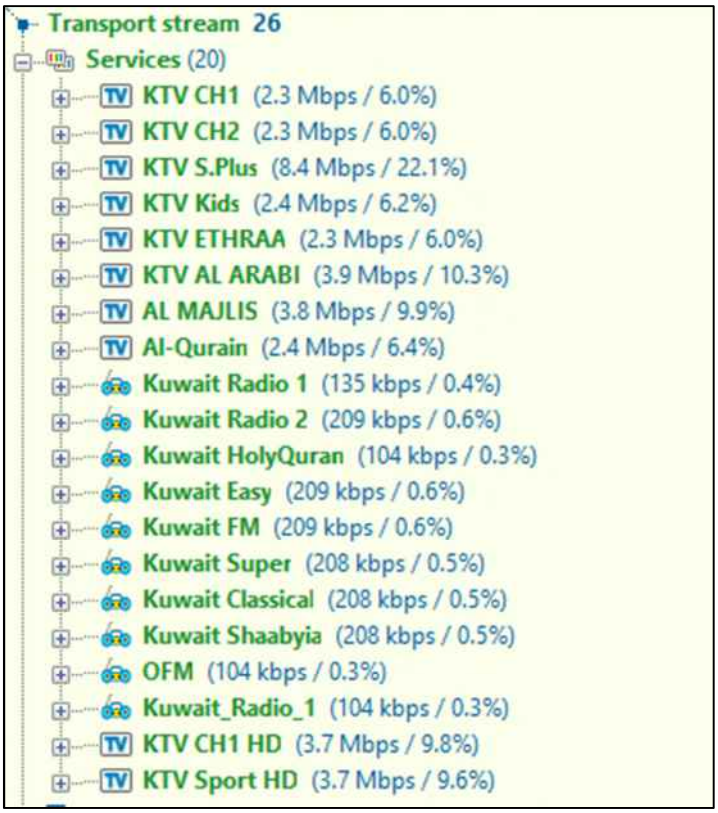

Transport stream 556
Services (16)
OMAN TV General SD (3.1 Mbps / 8.3%)
OMAN GENERAL RADIO (137 kbps / 0.4%)
OMAN TV Sport SD (4.1 Mbps / 10.9%)
OMAN HOLY QURAN (137 kbps / 0.4%)
OMAN TV General HD (5.3 Mbps / 13.8%)
oman test (138 kbps / 0.4%)
OMAN FEED (3.5 Mbps / 9.1%)
OMAN TV Live SD (3.1 Mbps / 8.3%)
OMAN TV Sport HD (4.5 Mbps / 11.9%)
OMAN TV Live HD (4.2 Mbps / 11.0%)
OMAN TV Culture HD (5.7 Mbps / 15.0%)
OMAN TV Culture SD (2.6 Mbps / 6.9%)
OMAN SHABAB RADIO (138 kbps / 0.4%)
OMAN CLASSIC (137 kbps / 0.4%)
OMAN ENGLISH RADIO (137 kbps / 0.4%)
SAWTOMAN RADIO (138 kbps / 0.4%)

PAT
Table ID: 0
Transport Stream ID: 556
Program: 0 (Defines Network PID)
Program: 10 (OMAN TV General SD)
Program: 20 (OMAN TV Sport SD)
Program: 50 (OMAN TV Live SD)
Program: 11 (OMAN GENERAL RADIO)
Program: 111 (OMAN SHABAB RADIO)
Program: 1111 (OMAN ENGLISH RADIO)
Program: 22 (OMAN HOLY QURAN)
Program: 222 (OMAN CLASSIC)
Program: 30 (OMAN TV General HD)
Program: 70 (OMAN TV Sport HD)
Program: 80 (OMAN TV Live HD)
Program: 40 (OMAN FEED)
Program: 2222 (SAWTOMAN RADIO)
Program: 90 (OMAN TV Culture HD)
Program: 100 (OMAN TV Culture SD)
Program: 33 (oman test)
PMT
Program: 10 (OMAN TV General SD)
Program: 11 (OMAN GENERAL RADIO)
Program: 20 (OMAN TV Sport SD)
Program: 22 (OMAN HOLY QURAN)
Program: 30 (OMAN TV General HD)
Program: 33 (oman test)
Program: 40 (OMAN FEED)
Program: 50 (OMAN TV Live SD)
Program: 70 (OMAN TV Sport HD)
Program: 80 (OMAN TV Live HD)
Program: 90 (OMAN TV Culture HD)
Program: 100 (OMAN TV Culture SD)
Program: 111 (OMAN SHABAB RADIO)
Program: 222 (OMAN CLASSIC)
Program: 1111 (OMAN ENGLISH RADIO)
Program: 2222 (SAWTOMAN RADIO)

Carrier 66


Transport stream 559
Services (17)
Almajd 01 (2.7 Mbps / 7.0%)
Almajd 02 (2.1 Mbps / 5.6%)
Almajd 03 (2.1 Mbps / 5.6%)
Almajd 04 (2.1 Mbps / 5.6%)
Almajd 05 (2.1 Mbps / 5.6%)
Almajd 06 (2.1 Mbps / 5.6%)
Almajd 07 (2.1 Mbps / 5.6%)
Almajd 08 (4.2 Mbps / 11.1%)
Almajd 09 (2.7 Mbps / 7.0%)
Almajd 10 (2.1 Mbps / 5.6%)
Almajd 11 (2.1 Mbps / 5.6%)
Almajd 12 (2.1 Mbps / 5.6%)
Almajd 13 (2.7 Mbps / 7.0%)
Almajd 14 (1.94 Mbps / 5.1%)
Almajd Feeds (1.94 Mbps / 5.1%)
Data (140 kbps / 0.4%)
Almajd OTA 09 (769 kbps / 2.0%)
Tables
PAT
CAT
PMT
NIT-actual
NIT-other
BAT
SDT-actual
SDT-other
EIT-actual
TDT

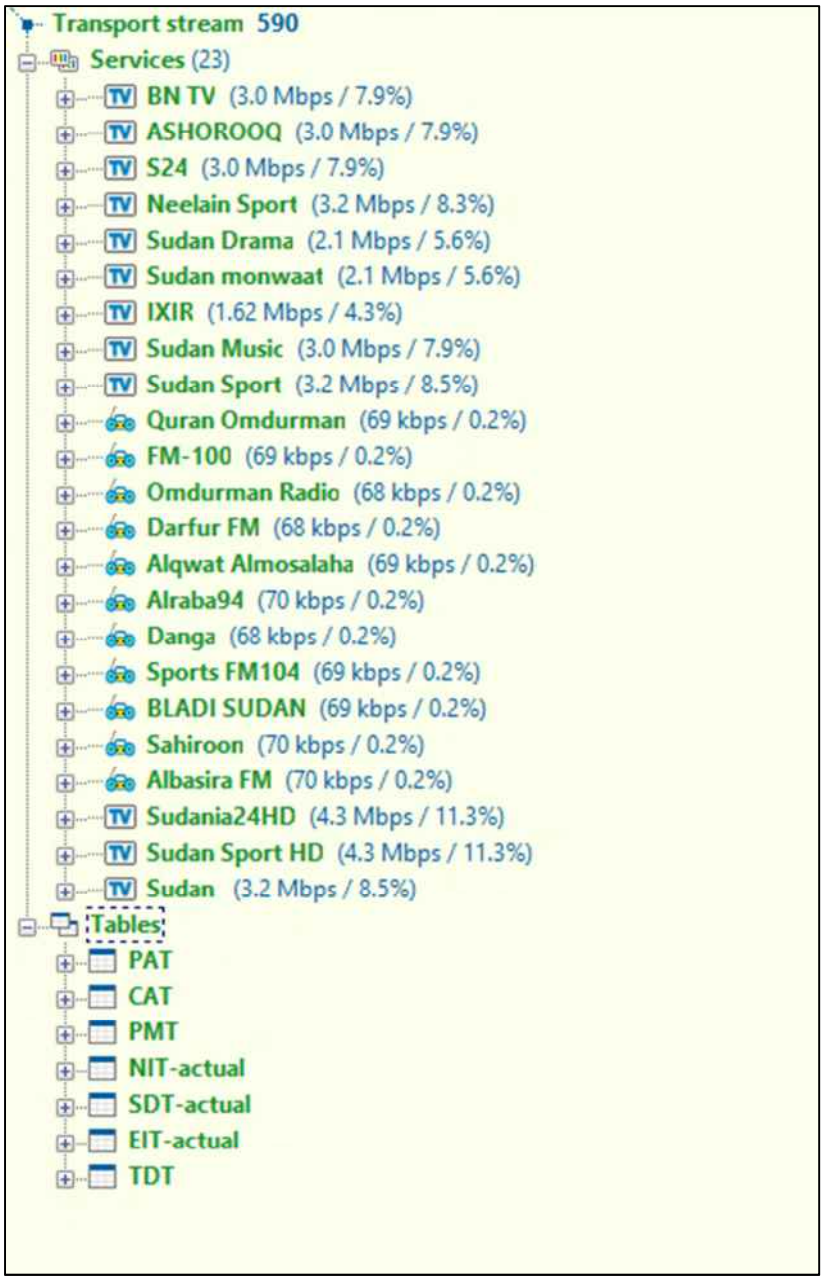
Carrier 67


Transport stream 26
Services (20)
KTV CH1 (2.3 Mbps / 6.0%)
KTV CH2 (2.3 Mbps / 6.0%)
KTV S.Plus (8.4 Mbps / 22.1%)
KTV Kids (2.4 Mbps / 6.2%)
KTV ETHRAA (2.3 Mbps / 6.0%)
KTV AL ARABI (3.9 Mbps / 10.3%)
AL MAJLIS (3.8 Mbps / 9.9%)
Al-Qurain (2.4 Mbps / 6.4%)
Kuwait Radio 1 (135 kbps / 0.4%)
Kuwait Radio 2 (209 kbps / 0.6%)
Kuwait HolyQuran (104 kbps / 0.3%)
Kuwait Easy (209 kbps / 0.6%)
Kuwait FM (209 kbps / 0.6%)
Kuwait Super (208 kbps / 0.5%)
Kuwait Classical (208 kbps / 0.5%)
Kuwait Shaabyia (208 kbps / 0.5%)
OFM (104 kbps / 0.3%)
Kuwait_Radio_1 (104 kbps / 0.3%)
KTV CH1 HD (3.7 Mbps / 9.8%)
KTV Sport HD (3.7 Mbps / 9.6%)

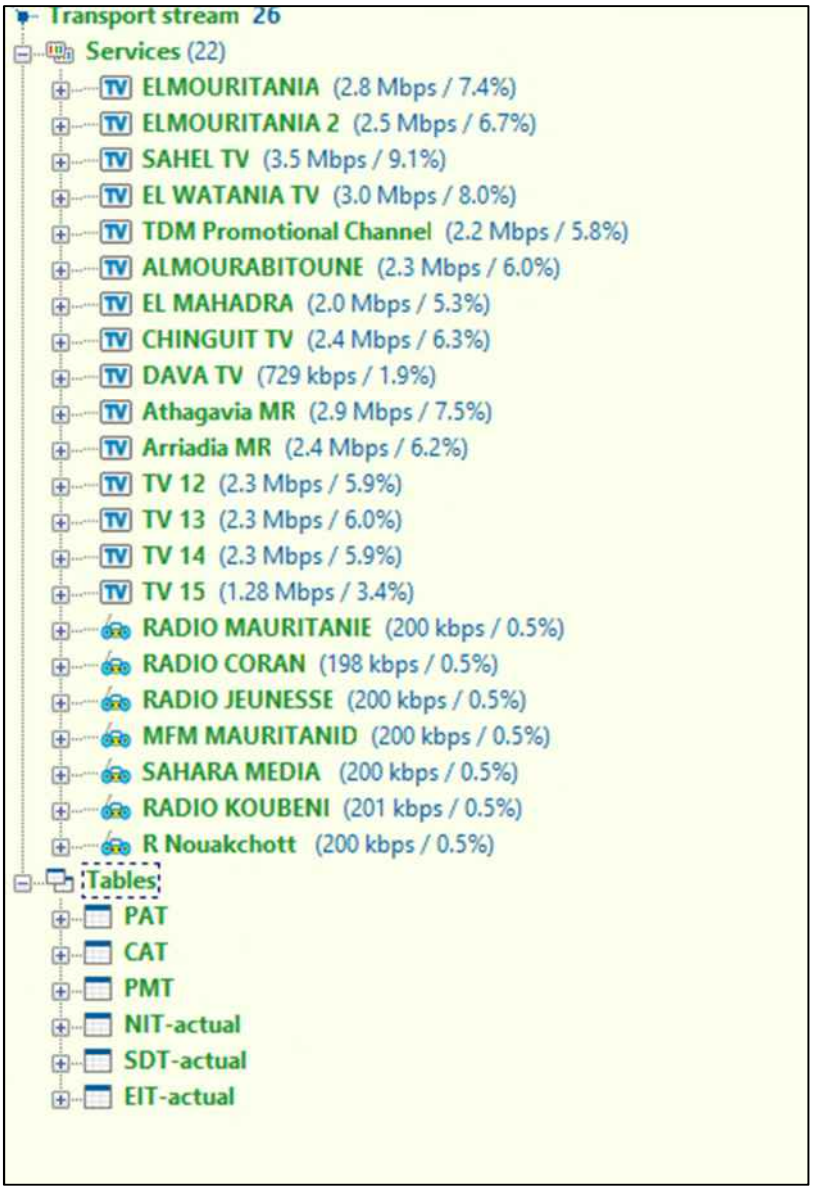
Tables
PAT
Table ID: 0
Transport Stream ID: 26
Program: 1 (KTV CH1)
Program: 2 (KTV CH2)
Program: 3 (KTV S.Plus)
Program: 4 (KTV Kids)
Program: 5 (KTV ETHRAA)
Program: 6 (KTV AL ARABI)
Program: 9 (AL MAJLIS)
Program: 10 (Al-Qurain)
Program: 11 (Kuwait Radio 1)
Program: 12 (Kuwait Radio 2)
Program: 13 (Kuwait HolyQuran)
Program: 14 (Kuwait Easy)
Program: 15 (Kuwait FM)
Program: 16 (Kuwait Super)
Program: 17 (Kuwait Classical)
Program: 18 (Kuwait Shaabyia)
Program: 19 (OFM)
Program: 20 (Kuwait_Radio_1)
Program: 100 (KTV CH1 HD)
Program: 110 (KTV Sport HD)

CAT
PMT
Program: 1 (KTV CH1)
Program: 2 (KTV CH2)
Program: 3 (KTV S.Plus)
Program: 4 (KTV Kids)
Program: 5 (KTV ETHRAA)
Program: 6 (KTV AL ARABI)
Program: 9 (AL MAJLIS)
Program: 10 (Al-Qurain)
Program: 11 (Kuwait Radio 1)
Program: 12 (Kuwait Radio 2)
Program: 13 (Kuwait HolyQuran)
Program: 14 (Kuwait Easy)
Program: 15 (Kuwait FM)
Program: 16 (Kuwait Super)
Program: 17 (Kuwait Classical)
Program: 18 (Kuwait Shaabyia)
Program: 19 (OFM)
Program: 20 (Kuwait_Radio_1)
Program: 100 (KTV CH1 HD)
Program: 110 (KTV Sport HD)
NIT-actual
SDT-actual
EIT-actual
TDT

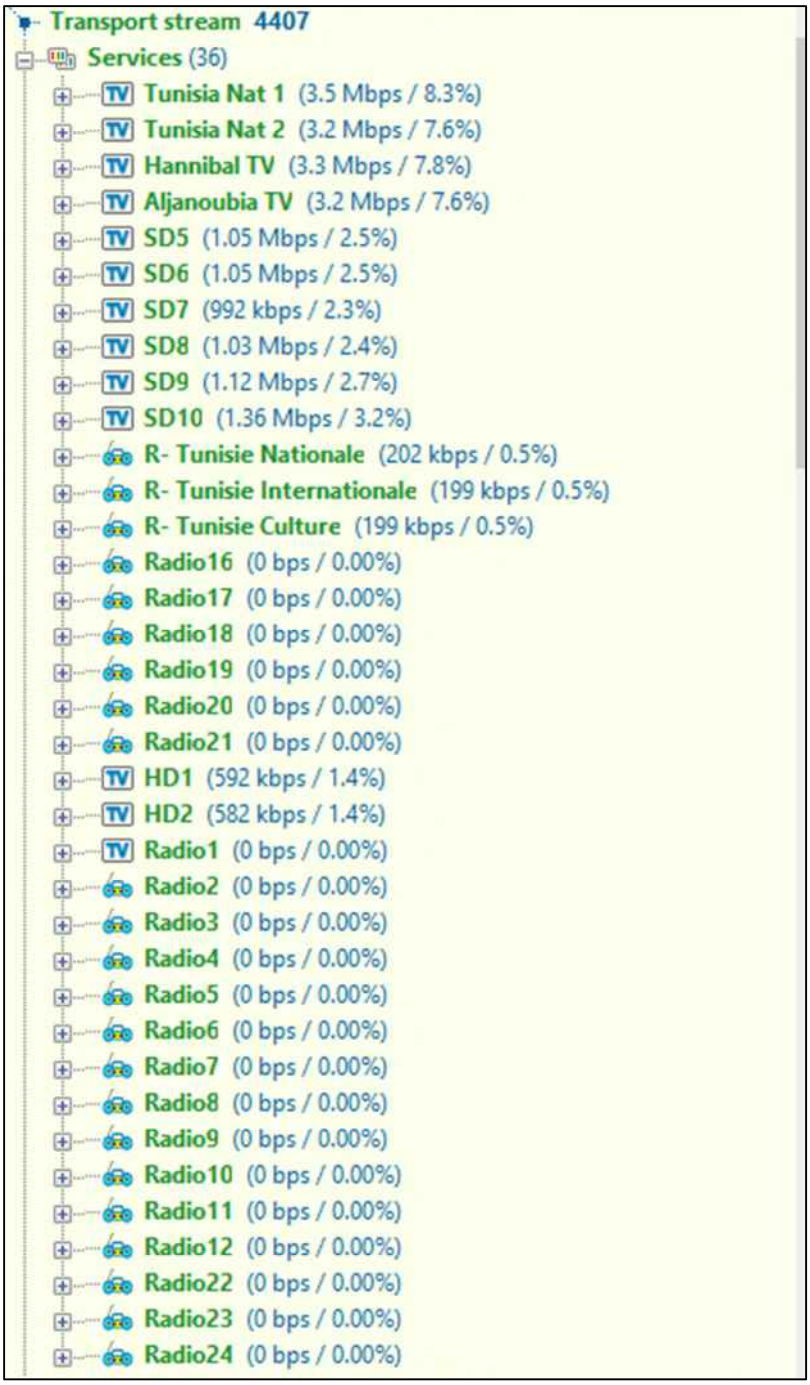
Carrier 68

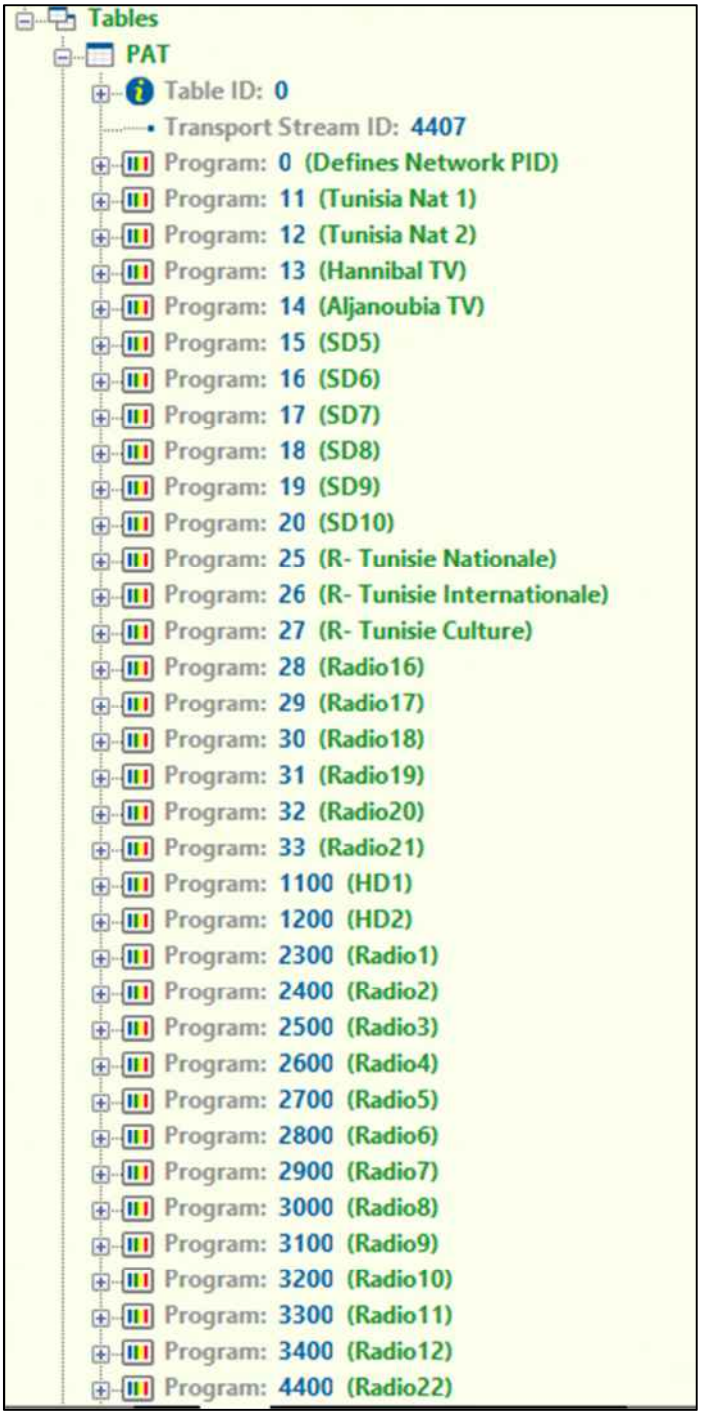

Transport stream 590
Services (23)
BN TV (3.0 Mbps / 7.9%)
ASHOROOQ (3.0 Mbps / 7.9%)
S24 (3.0 Mbps / 7.9%)
Neelain Sport (3.2 Mbps / 8.3%)
Sudan Drama (2.1 Mbps / 5.6%)
Sudan monwaat (2.1 Mbps / 5.6%)
IXIR (1.62 Mbps / 4.3%)
Sudan Music (3.0 Mbps / 7.9%)
Sudan Sport (3.2 Mbps / 8.5%)
Quran Omdurman (69 kbps / 0.2%)
FM-100 (69 kbps / 0.2%)
Omdurman Radio (68 kbps / 0.2%)
Darfur FM (68 kbps / 0.2%)
Alqwat Almosalaha (69 kbps / 0.2%)
Alraba94 (70 kbps / 0.2%)
Danga (68 kbps / 0.2%)
Sports FM104 (69 kbps / 0.2%)
BLADI SUDAN (69 kbps / 0.2%)
Sahiroon (70 kbps / 0.2%)
Albasira FM (70 kbps / 0.2%)
Sudania24HD (4.3 Mbps / 11.3%)
Sudan Sport HD (4.3 Mbps / 11.3%)
Sudan (3.2 Mbps / 8.5%)
Tables
PAT
CAT
PMT
NIT-actual
SDT-actual
EIT-actual
TDT

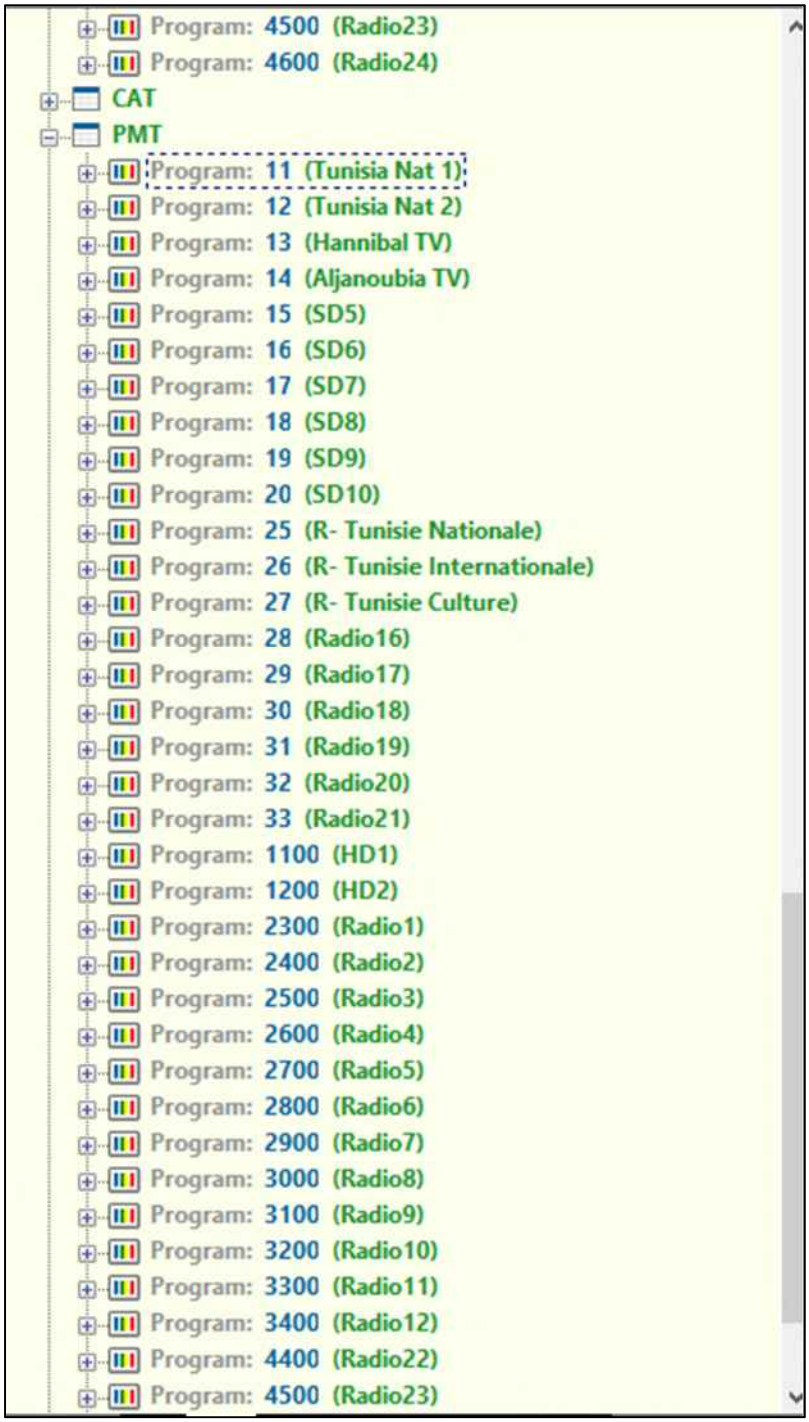
Carrier 69


Transport stream 26
Services (22)
ELMOURITANIA (2.8 Mbps / 7.4%)
ELMOURITANIA 2 (2.5 Mbps / 6.7%)
SAHEL TV (3.5 Mbps / 9.1%)
EL WATANIA TV (3.0 Mbps / 8.0%)
TDM Promotional Channel (2.2 Mbps / 5.8%)
ALMOURABITOUNE (2.3 Mbps / 6.0%)
EL MAHADRA (2.0 Mbps / 5.3%)
CHINGUIT TV (2.4 Mbps / 6.3%)
DAVA TV (729 kbps / 1.9%)
Athagavia MR (2.9 Mbps / 7.5%)
Arriadia MR (2.4 Mbps / 6.2%)
TV 12 (2.3 Mbps / 5.9%)
TV 13 (2.3 Mbps / 6.0%)
TV 14 (2.3 Mbps / 5.9%)
TV 15 (1.28 Mbps / 3.4%)
RADIO MAURITANIE (200 kbps / 0.5%)
RADIO CORAN (198 kbps / 0.5%)
RADIO JEUNESSE (200 kbps / 0.5%)
MFM MAURITANID (200 kbps / 0.5%)
SAHARA MEDIA (200 kbps / 0.5%)
RADIO KOUBENI (201 kbps / 0.5%)
R Nouakchott (200 kbps / 0.5%)
Tables
PAT
CAT
PMT
NIT-actual
SDT-actual
EIT-actual

Carrier 70

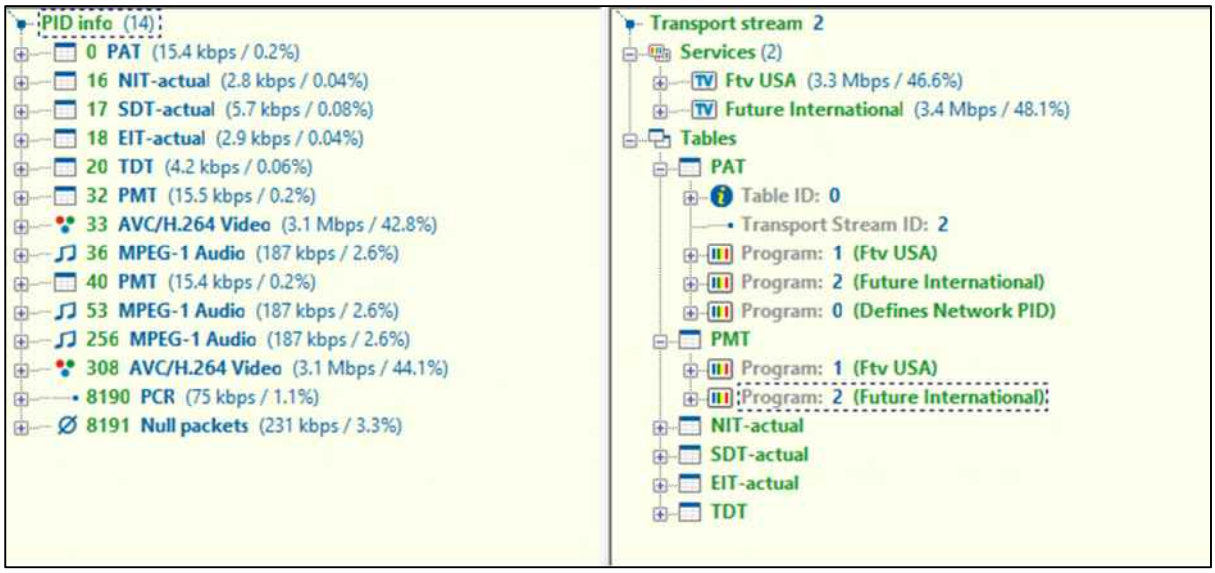

Transport stream 4407
Services (36)
Tunisia Nat 1 (3.5 Mbps / 8.3%)
Tunisia Nat 2 (3.2 Mbps / 7.6%)
Hannibal TV (3.3 Mbps / 7.8%)
Aljanoubia TV (3.2 Mbps / 7.6%)
SD5 (1.05 Mbps / 2.5%)
SD6 (1.05 Mbps / 2.5%)
SD7 (992 kbps / 2.3%)
SD8 (1.03 Mbps / 2.4%)
SD9 (1.12 Mbps / 2.7%)
SD10 (1.36 Mbps / 3.2%)
R- Tunisie Nationale (202 kbps / 0.5%)
R- Tunisie Internationale (199 kbps / 0.5%)
R- Tunisie Culture (199 kbps / 0.5%)
Radio16 (0 bps / 0.00%)
Radio17 (0 bps / 0.00%)
Radio18 (0 bps / 0.00%)
Radio19 (0 bps / 0.00%)
Radio20 (0 bps / 0.00%)
Radio21 (0 bps / 0.00%)
HD1 (592 kbps / 1.4%)
HD2 (582 kbps / 1.4%)
Radio1 (0 bps / 0.00%)
Radio2 (0 bps / 0.00%)
Radio3 (0 bps / 0.00%)
Radio4 (0 bps / 0.00%)
Radio5 (0 bps / 0.00%)
Radio6 (0 bps / 0.00%)
Radio7 (0 bps / 0.00%)
Radio8 (0 bps / 0.00%)
Radio9 (0 bps / 0.00%)
Radio10 (0 bps / 0.00%)
Radio11 (0 bps / 0.00%)
Radio12 (0 bps / 0.00%)
Radio22 (0 bps / 0.00%)
Radio23 (0 bps / 0.00%)
Radio24 (0 bps / 0.00%)


Tables
PAT
Table ID: 0
Transport Stream ID: 4407
Program: 0 (Defines Network PID)
Program: 11 (Tunisia Nat 1)
Program: 12 (Tunisia Nat 2)
Program: 13 (Hannibal TV)
Program: 14 (Aljanoubia TV)
Program: 15 (SD5)
Program: 16 (SD6)
Program: 17 (SD7)
Program: 18 (SD8)
Program: 19 (SD9)
Program: 20 (SD10)
Program: 25 (R- Tunisie Nationale)
Program: 26 (R- Tunisie Internationale)
Program: 27 (R- Tunisie Culture)
Program: 28 (Radio16)
Program: 29 (Radio17)
Program: 30 (Radio18)
Program: 31 (Radio19)
Program: 32 (Radio20)
Program: 33 (Radio21)
Program: 1100 (HD1)
Program: 1200 (HD2)
Program: 2300 (Radio1)
Program: 2400 (Radio2)
Program: 2500 (Radio3)
Program: 2600 (Radio4)
Program: 2700 (Radio5)
Program: 2800 (Radio6)
Program: 2900 (Radio7)
Program: 3000 (Radio8)
Program: 3100 (Radio9)
Program: 3200 (Radio10)
Program: 3300 (Radio11)
Program: 3400 (Radio12)
Program: 4400 (Radio22)

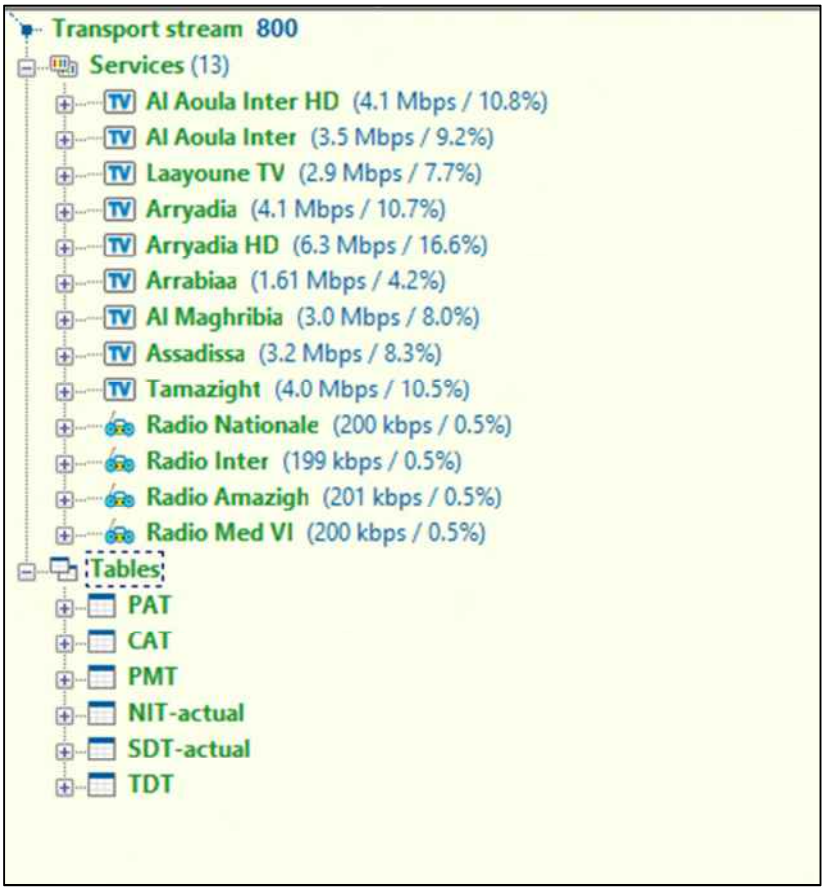

Program: 4500 (Radio23)
Program: 4600 (Radio24)
CAT
PMT
Program: 11 (Tunisia Nat 1)
Program: 12 (Tunisia Nat 2)
Program: 13 (Hannibal TV)
Program: 14 (Aljanoubia TV)
Program: 15 (SD5)
Program: 16 (SD6)
Program: 17 (SD7)
Program: 18 (SD8)
Program: 19 (SD9)
Program: 20 (SD10)
Program: 25 (R- Tunisie Nationale)
Program: 26 (R- Tunisie Internationale)
Program: 27 (R- Tunisie Culture)
Program: 28 (Radio16)
Program: 29 (Radio17)
Program: 30 (Radio18)
Program: 31 (Radio19)
Program: 32 (Radio20)
Program: 33 (Radio21)
Program: 1100 (HD1)
Program: 1200 (HD2)
Program: 2300 (Radio1)
Program: 2400 (Radio2)
Program: 2500 (Radio3)
Program: 2600 (Radio4)
Program: 2700 (Radio5)
Program: 2800 (Radio6)
Program: 2900 (Radio7)
Program: 3000 (Radio8)
Program: 3100 (Radio9)
Program: 3200 (Radio10)
Program: 3300 (Radio11)
Program: 3400 (Radio12)
Program: 4400 (Radio22)
Program: 4500 (Radio23)

Program: 4500 (Radio23)
Program: 4600 (Radio24)
NIT-actual
SDT-actual
EIT-actual
TDT

Carrier 71



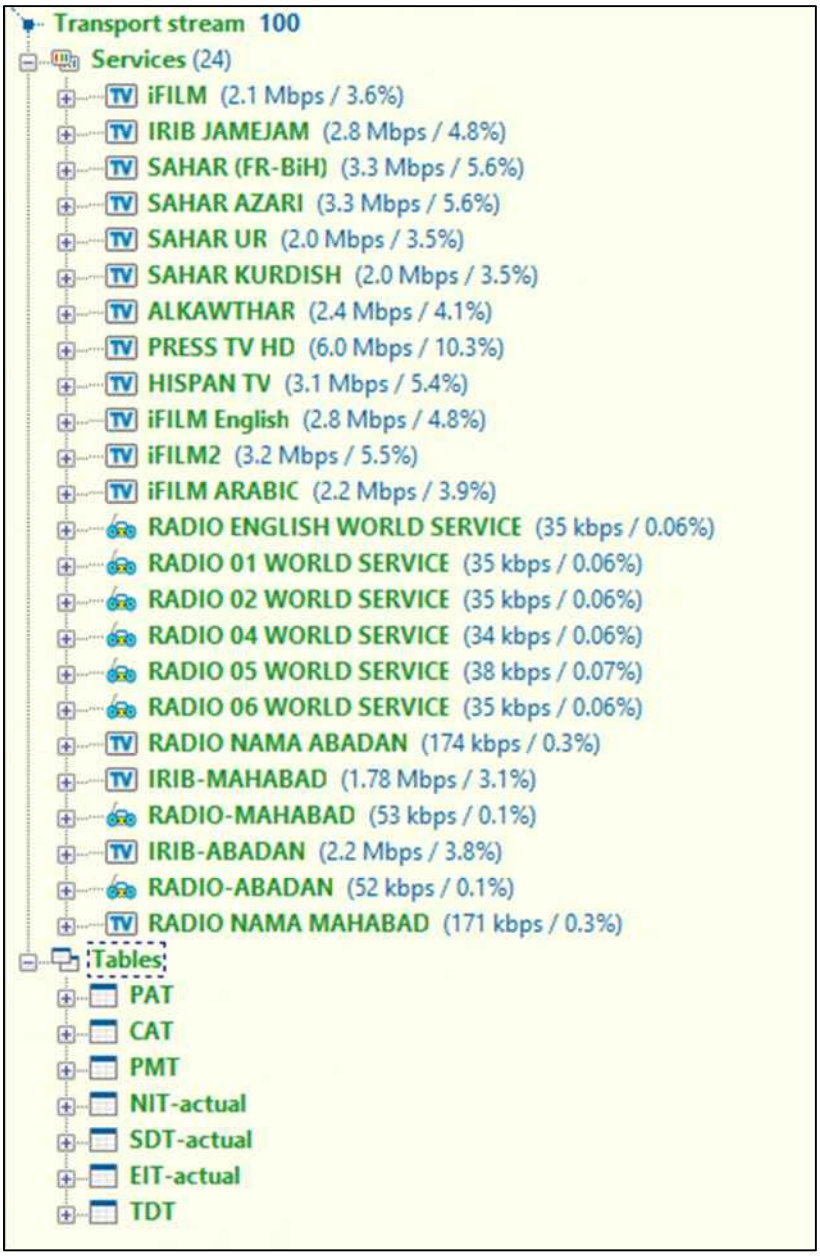
Carrier 72



Carrier 73

Transport stream 2040
Services (3)
FOX Life HD (6.3 Mbps / 11.5%)
411 AVC/H.264 Video (6.2 Mbps / 11.3%)
412 MPEG-1 Audio (135 kbps / 0.2%)
Program: 20401
PMT PID: 410
PCR PID: 411
Provider: beIN
FOX Crime HD (6.3 Mbps / 11.5%)
421 AVC/H.264 Video (6.2 Mbps / 11.3%)
422 MPEG-1 Audio (135 kbps / 0.2%)
Program: 20402
PMT PID: 420
PCR PID: 421
Provider: beIN
FOX Rewayat HD (6.3 Mbps / 11.6%)
431 AVC/H.264 Video (6.2 Mbps / 11.3%)
432 MPEG-1 Audio (135 kbps / 0.2%)
Program: 20403
PMT PID: 430
PCR PID: 431
Provider: beIN
Tables

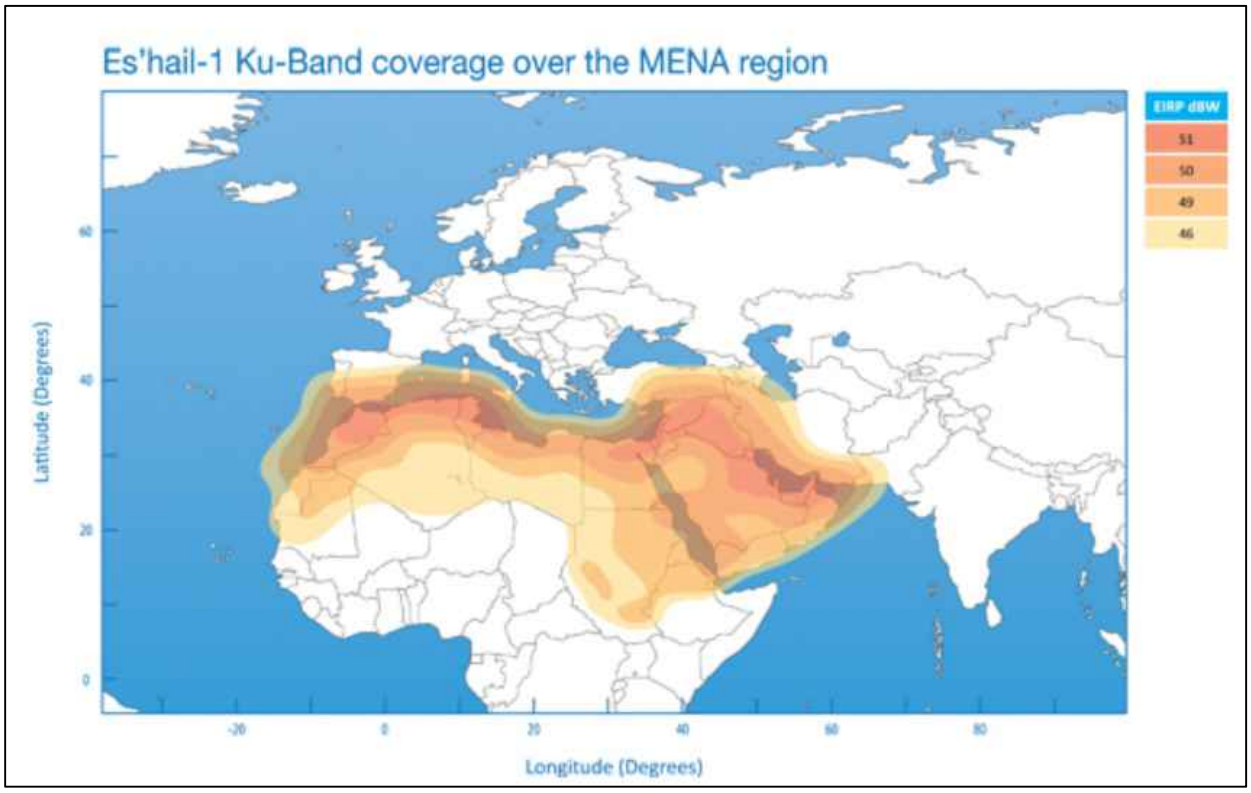
Carrier 74


Transport stream 100
Services (24)
iFILM (2.1 Mbps / 3.6%)
IRIB JAMEJAM (2.8 Mbps / 4.8%)
SAHAR (FR-BiH) (3.3 Mbps / 5.6%)
SAHAR AZARI (3.3 Mbps / 5.6%)
SAHAR UR (2.0 Mbps / 3.5%)
SAHAR KURDISH (2.0 Mbps / 3.5%)
ALKAWTHAR (2.4 Mbps / 4.1%)
PRESS TV HD (6.0 Mbps / 10.3%)
HISPAN TV (3.1 Mbps / 5.4%)
iFILM English (2.8 Mbps / 4.8%)
iFILM2 (3.2 Mbps / 5.5%)
iFILM ARABIC (2.2 Mbps / 3.9%)
RADIO ENGLISH WORLD SERVICE (35 kbps / 0.06%)
RADIO 01 WORLD SERVICE (35 kbps / 0.06%)
RADIO 02 WORLD SERVICE (35 kbps / 0.06%)
RADIO 04 WORLD SERVICE (34 kbps / 0.06%)
RADIO 05 WORLD SERVICE (38 kbps / 0.07%)
RADIO 06 WORLD SERVICE (35 kbps / 0.06%)
RADIO NAMA ABADAN (174 kbps / 0.3%)
IRIB-MAHABAD (1.78 Mbps / 3.1%)
RADIO-MAHABAD (53 kbps / 0.1%)
IRIB-ABADAN (2.2 Mbps / 3.8%)
RADIO-ABADAN (52 kbps / 0.1%)
RADIO NAMA MAHABAD (171 kbps / 0.3%)
Tables
PAT
CAT
PMT
NIT-actual
SDT-actual
EIT-actual
TDT

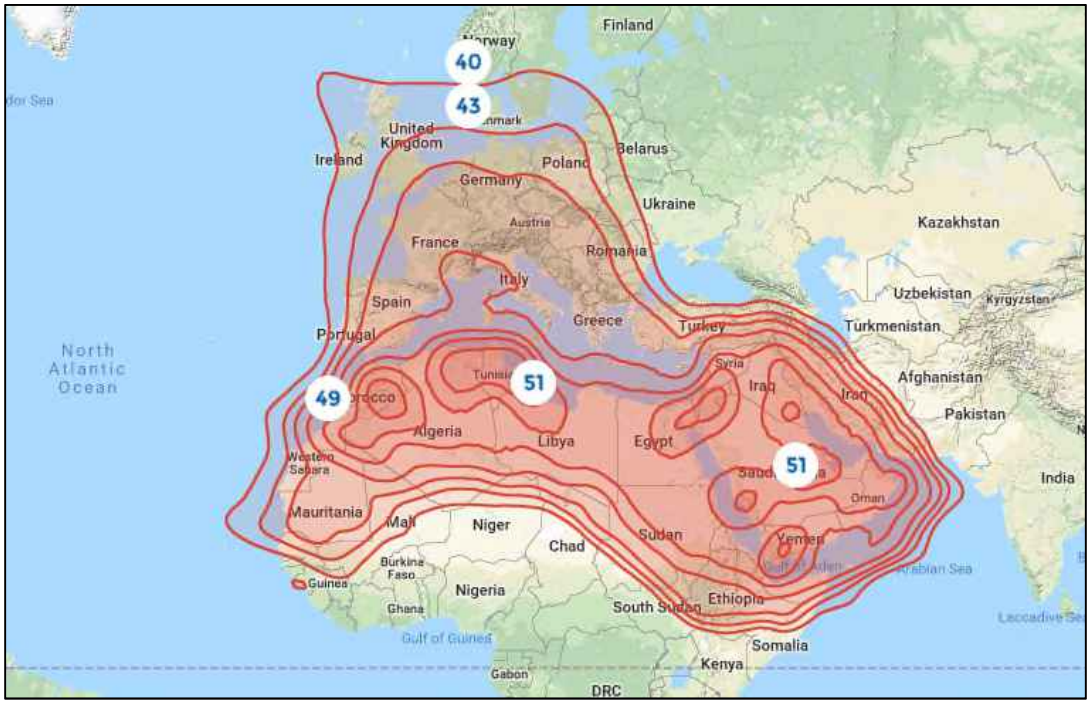
16. ANNEX 3 – Satellite Footprints

This annex contains the footprints of the satellites present at 25.5 and 26 degrees which cover the MENA region. As can be seen, the performance of the different satellites is similar over the region.

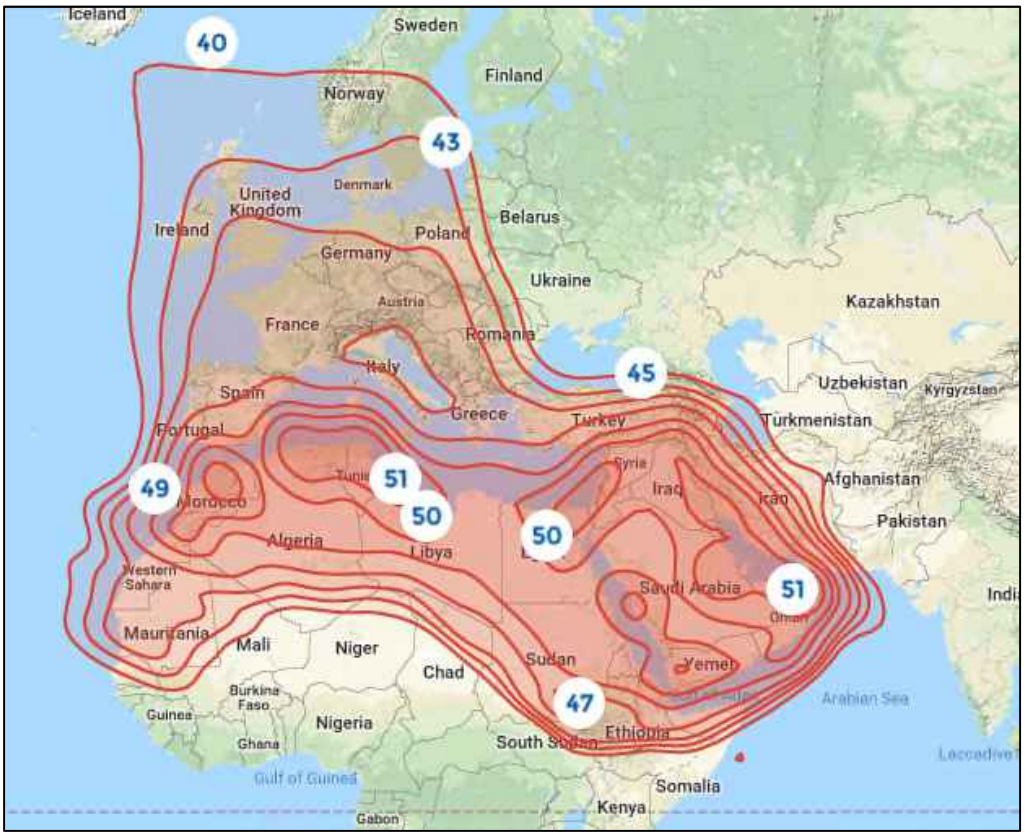
Es'Hail 1 (25.5 degrees East) *Ku-Band MENA beam*



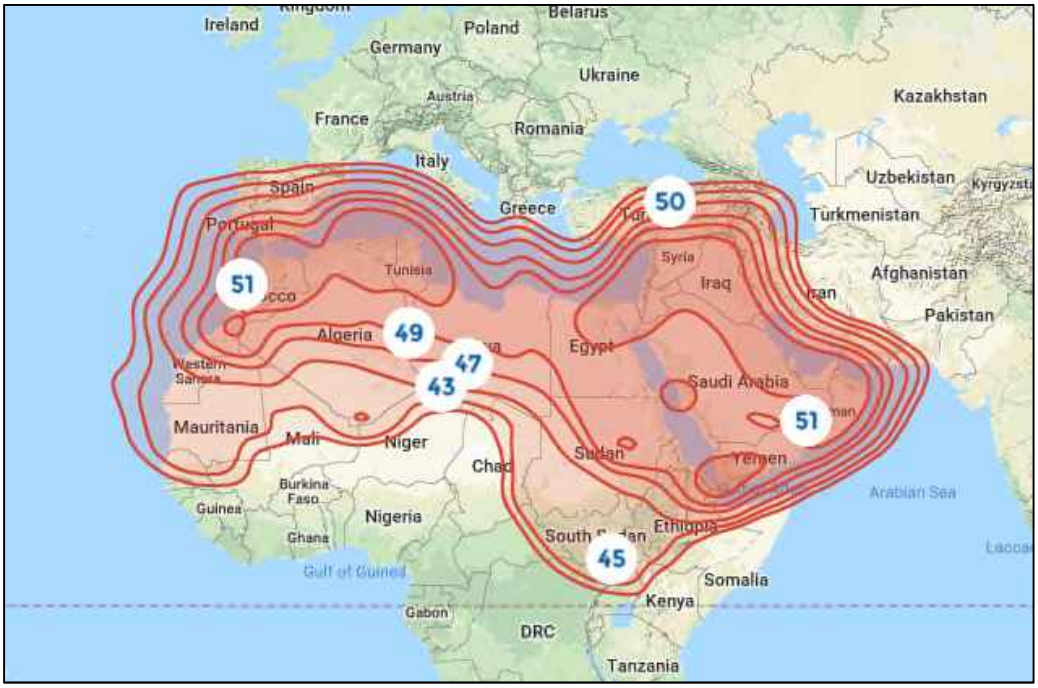
Badr-4 (26 degrees East) *Ku-Band FSS EMENA beam*



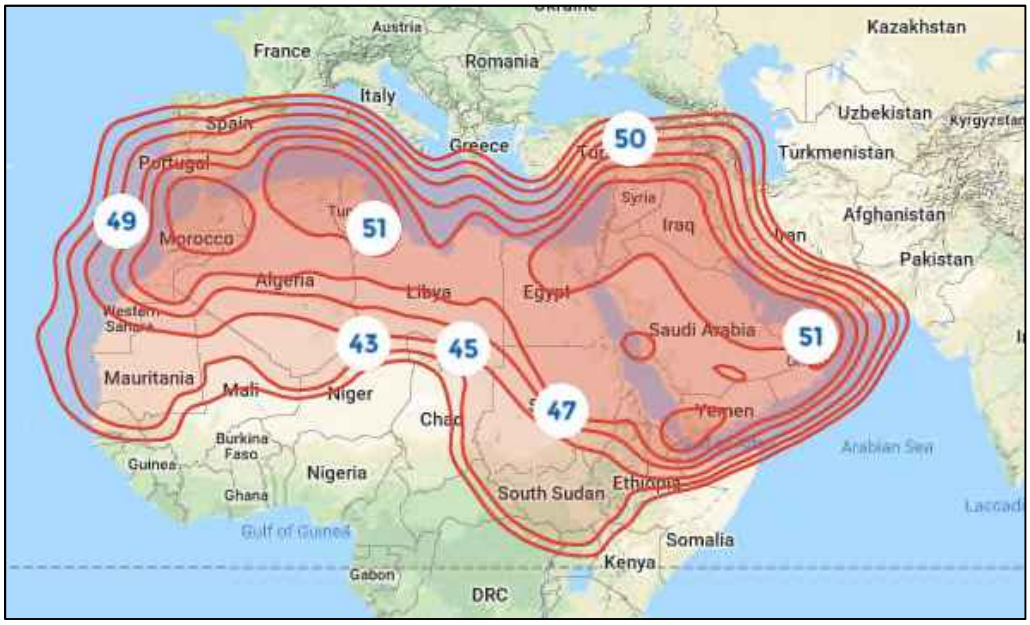
Badr-4 (26 degrees East) *Ku-Band BSS EMENA beam*



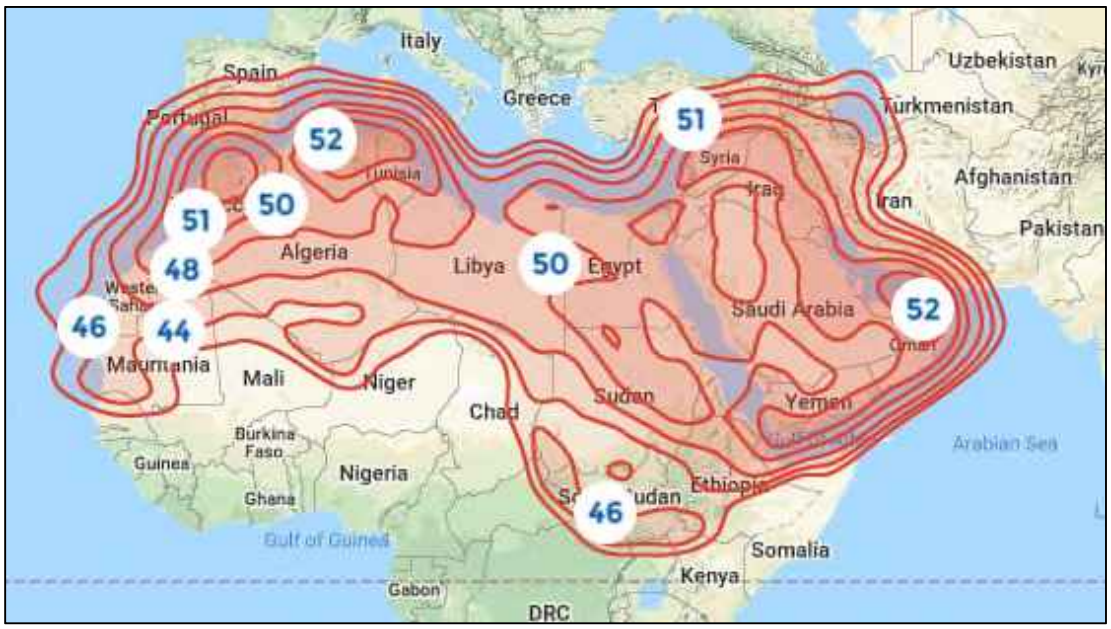
Badr-5 (26 degrees East) *Ku-Band BSS MENA beam*



Badr-5 (26 degrees East) *Ku-Band FSS MENA beam*



Badr-6 (26 degrees East) *Ku-Band BSS MENA beam*



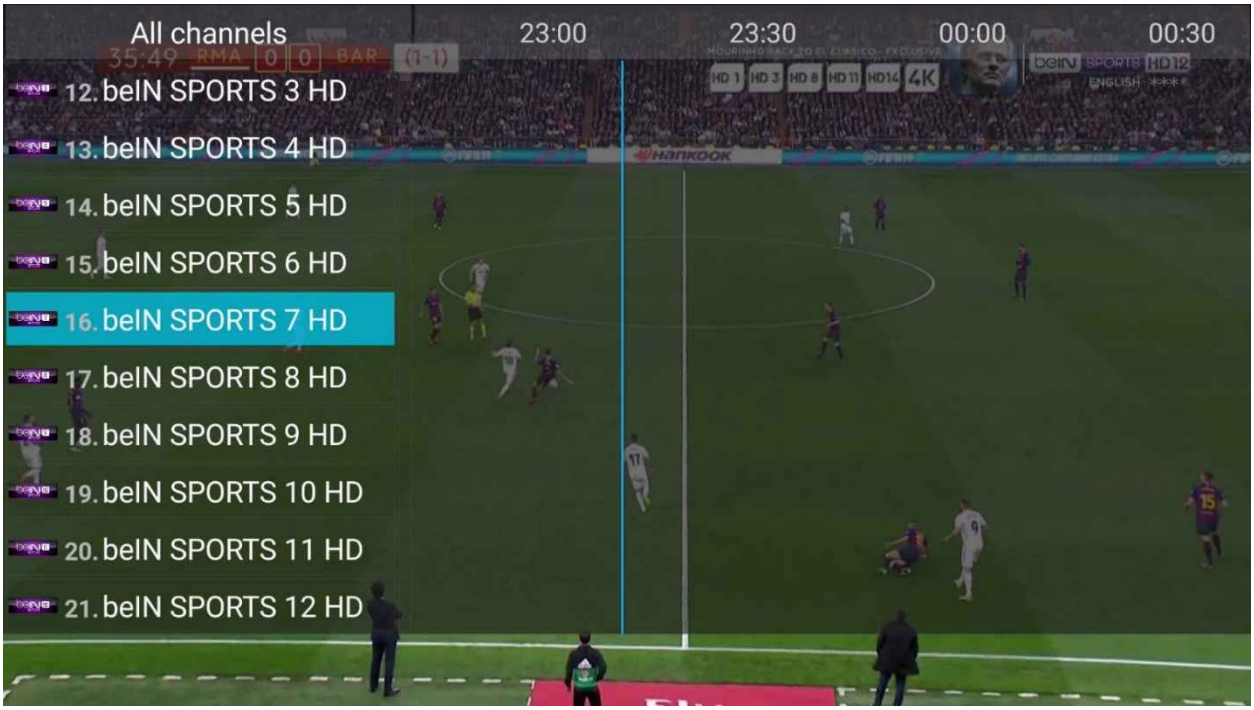
ANNEX 4 – IPTV Applications found in the beoutQ app store

App Name	Description	Subscription required?	Other availability
HBO Go	Official streaming service from US cable network HBO	Yes	Google Play, Apple iStore, HBO.com
Anime Starz	Unofficial anime streaming app	No	Various APK download sites, including hiapkdownload.com and appsgeyser.io
Update	Update app - to update the beoutQ Satellite app	n/a	n/a
IUDTV	IPTV service	Yes	See investigation
SUBTV	IPTV service	Yes	Various APK download sites, including apkinabox.com and appsgeyser.io
RED IPTV	IPTV service	Yes	See investigation
Gemini IPTV	IPTV service	Yes	Various APK download sites, including geminiproject.tv
YouTube	Official video streaming service	No	Google Play, Apple iStore, youtube.com
Dawri Plus	Official streaming service for the Saudi Football Championships	Yes	Google Play, Apple iStore, dawriplus.com
MTD	IPTV service	Yes	finecoo.com
EVDTV	IPTV service	Yes	See investigation
DIMA LIVE	IPTV service	Yes	Various APK download sites, including up-4ever.com
MITV	IPTV service		Various APK download sites, including getiptvonline.com
TV One	IPTV service	Yes	Various APK download sites
Best HD IPTV	IPTV service	Yes	Various APK download sites, including apkinabox.com and appsgeyser.io
Free2C IPTV	IPTV service	No	finecoo.com
Red Bull TV	Official streaming service from Red Bull	No	Google Play, Apple iStore, redbull.com
NesTV	Unofficial live TV streaming app	No	Various APK download sites, including hiapkdownload.com and appsgeyser.io
SoundCloud	Official music streaming service.	No	Google Play, Apple iStore, SoundCloud website
Spotify	Official music streaming service	Yes	Google Play, Apple iStore, Spotify website
Show Box	Unofficial live TV streaming app	No	Various APK download sites, including hiapkdownload.com and appsgeyser.io
TED	Official streaming app	No	Google Play, Apple iStore, Amazon
maxdome	TV streaming app	Yes	Google Play, Apple iStore, maxdome.de
VLC	Legitimate opensource media player	n/a	Google Play, videolan.org

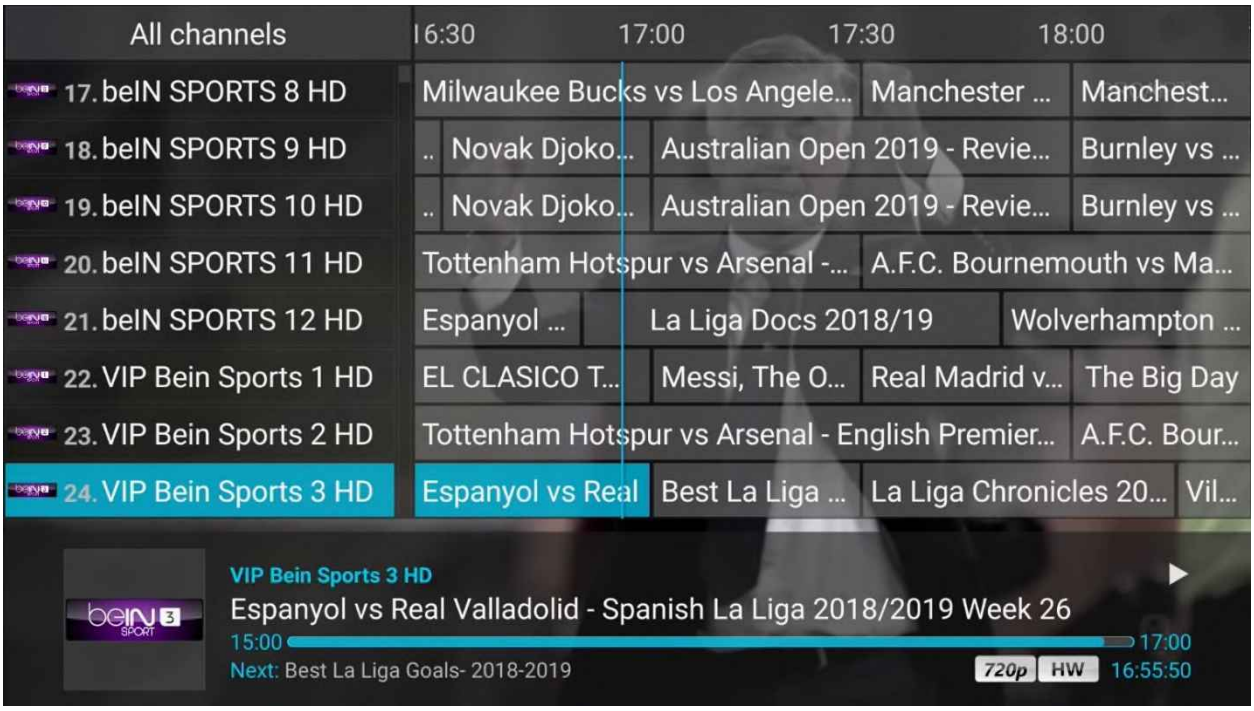
TuneIn Radio	Official radio streaming service	No	Google Play, tunein-radio.en.uptodown.com

ANNEX 5 – IPTV Screenshots

EVDTV Screenshots



EVDTV Bein Sports channels

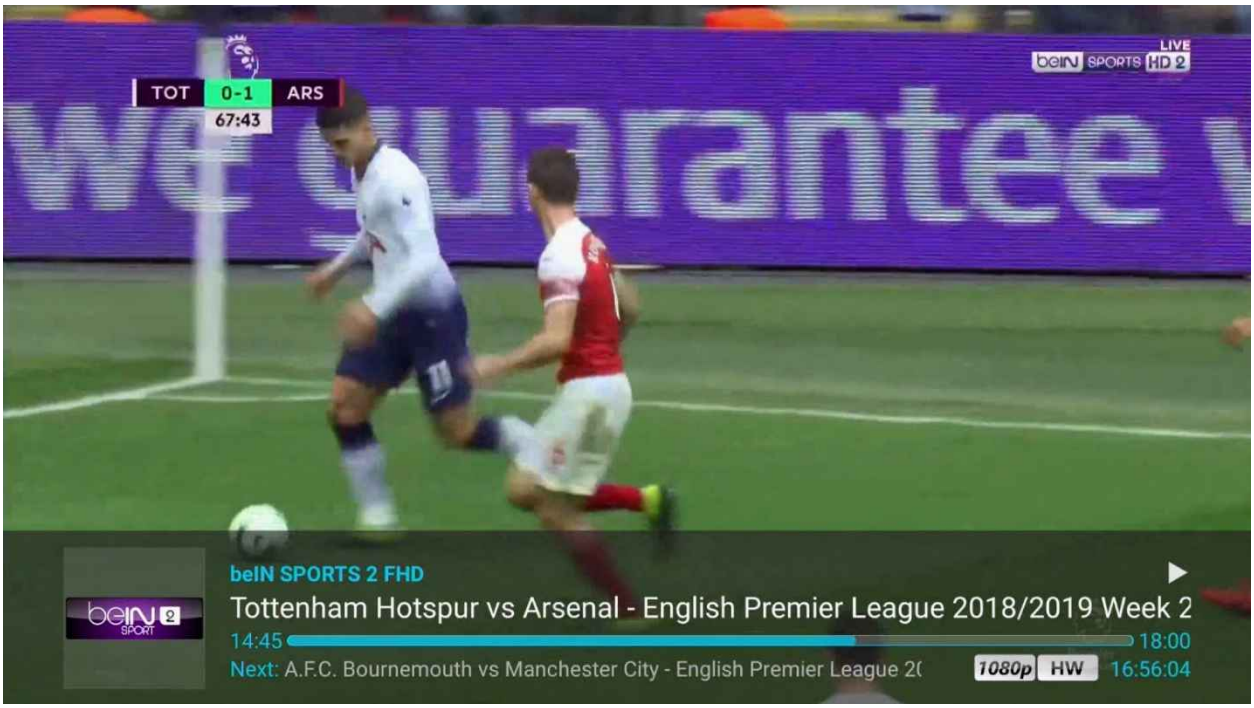


EVDTV Bein Sports channels

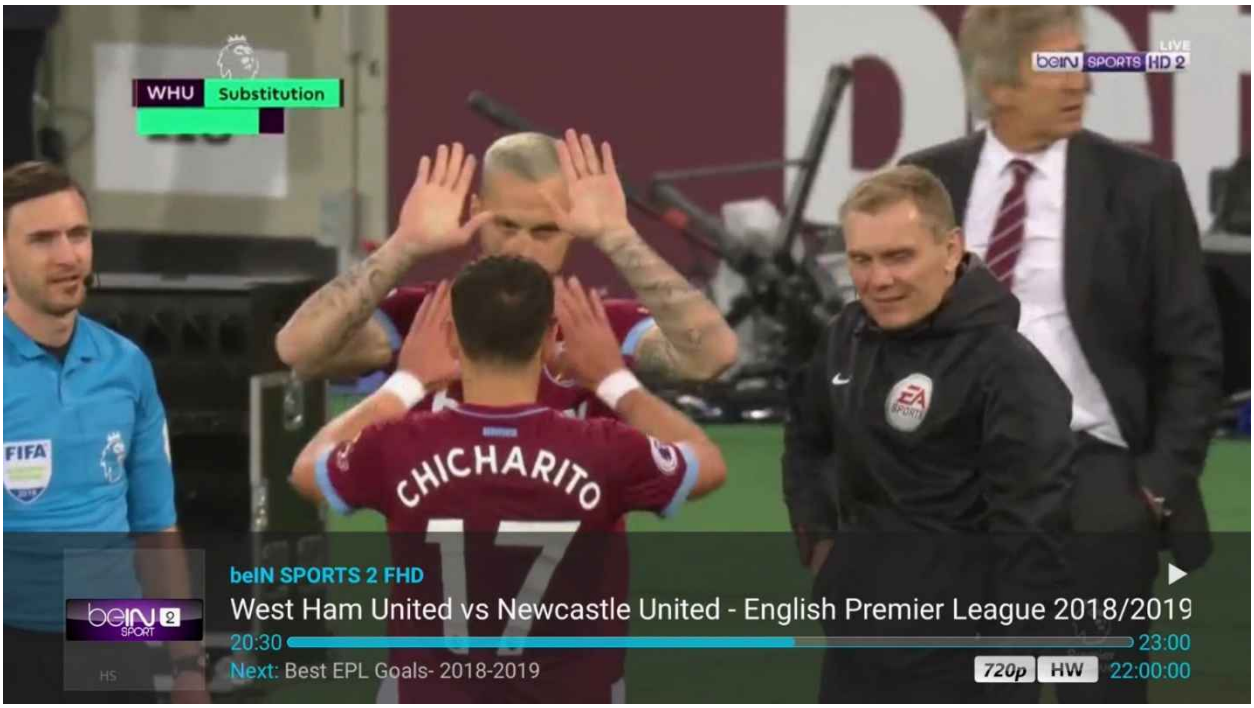
EVDTV Bein Sports channels

EVDTV Bundesliga (Bein Sports HD 5) – March 1st 2019 23:46 local time

EVDTV La Liga (Bein Sports HD 3) - March 1st 2019 23:32 local time



EVDTV Premier League (Bein Sports HD 2) – March 2nd 2019 16:56 local time



EVDTV Premier League (Bein Sports HD2) – 2nd March 2019 22:00 local time

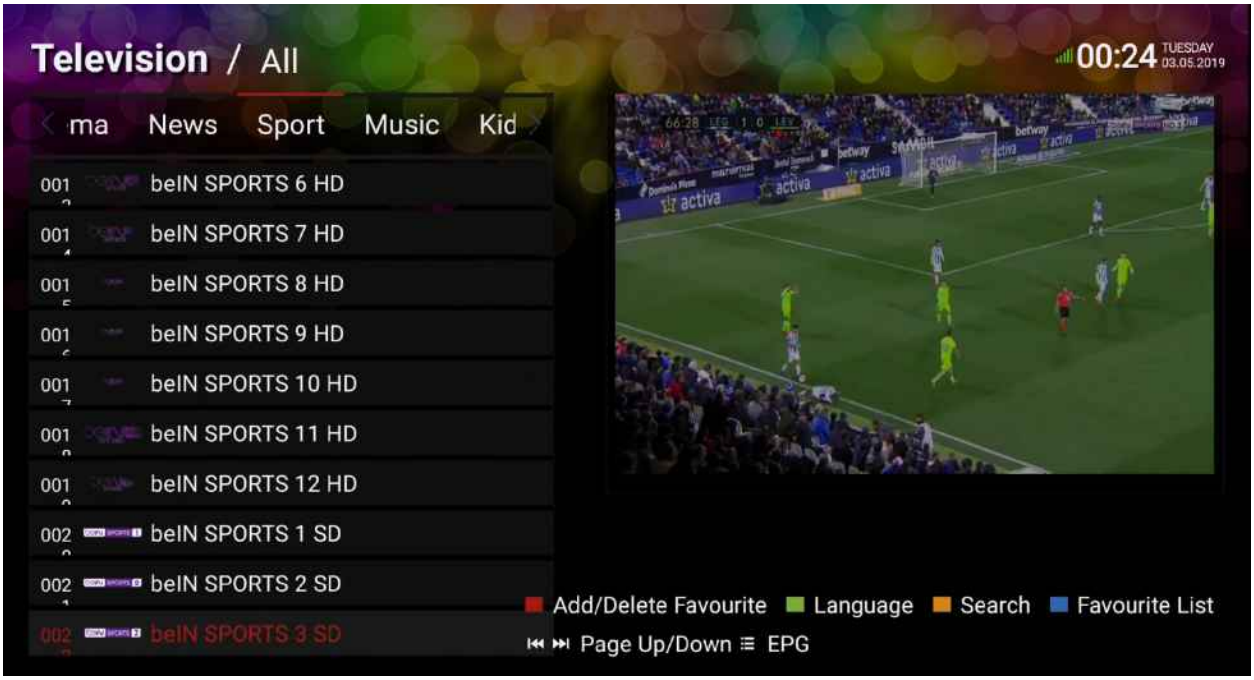
IUDTV Screenshots

IUDTV beoutQ channels – note that the channels are direct Bein Sports broadcasts, not rebranded beoutQ broadcasts

IUDTV Bundesliga (Bein Sports HD5) – 2nd March 2019 20:25 local time

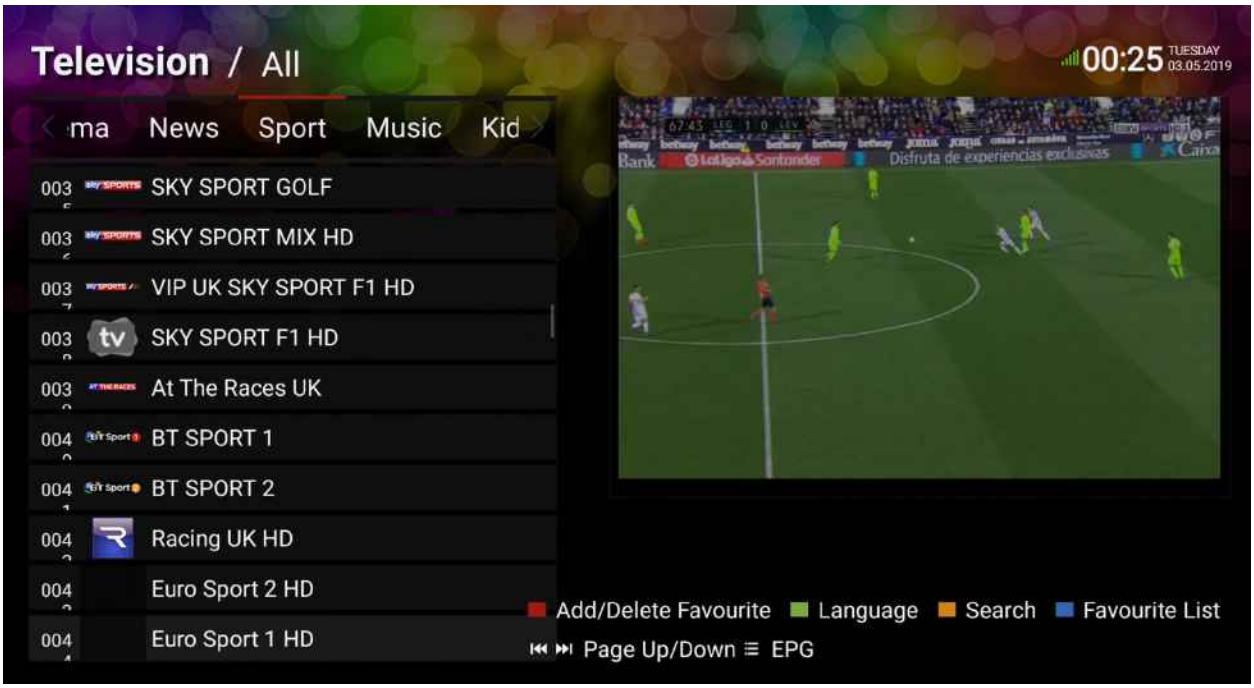
RED IPTV Screenshots

RED IPTV Sports channels

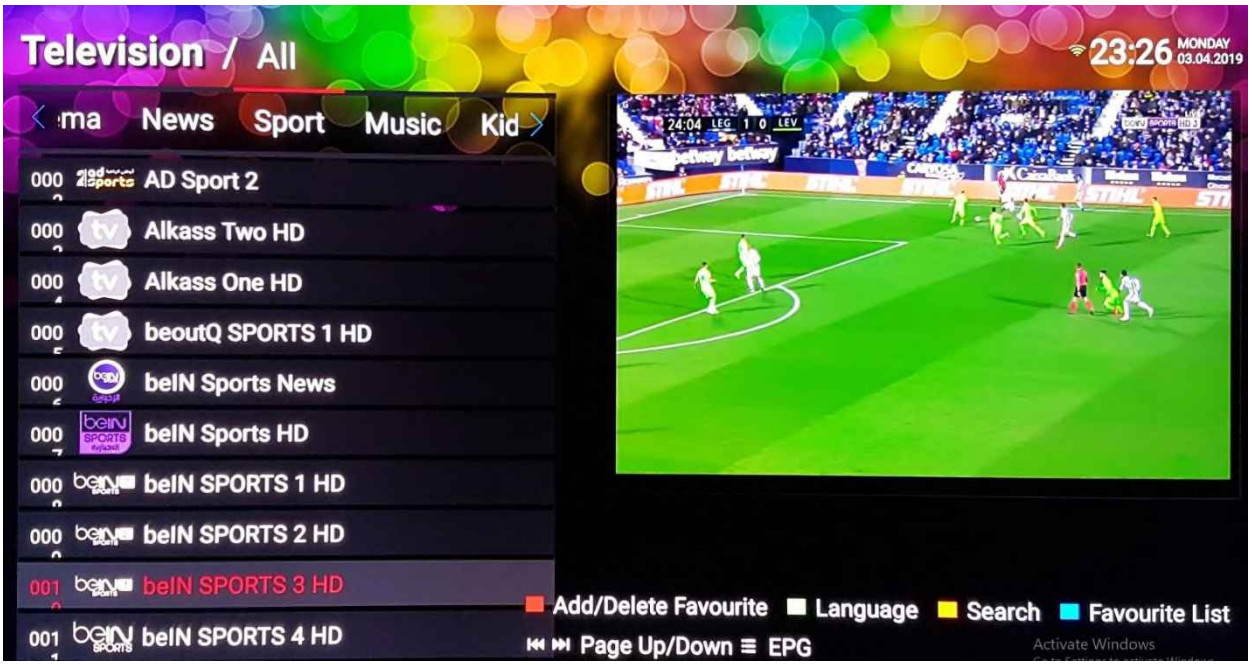


RED IPTV Sports channels

Red IPTV Sports channels

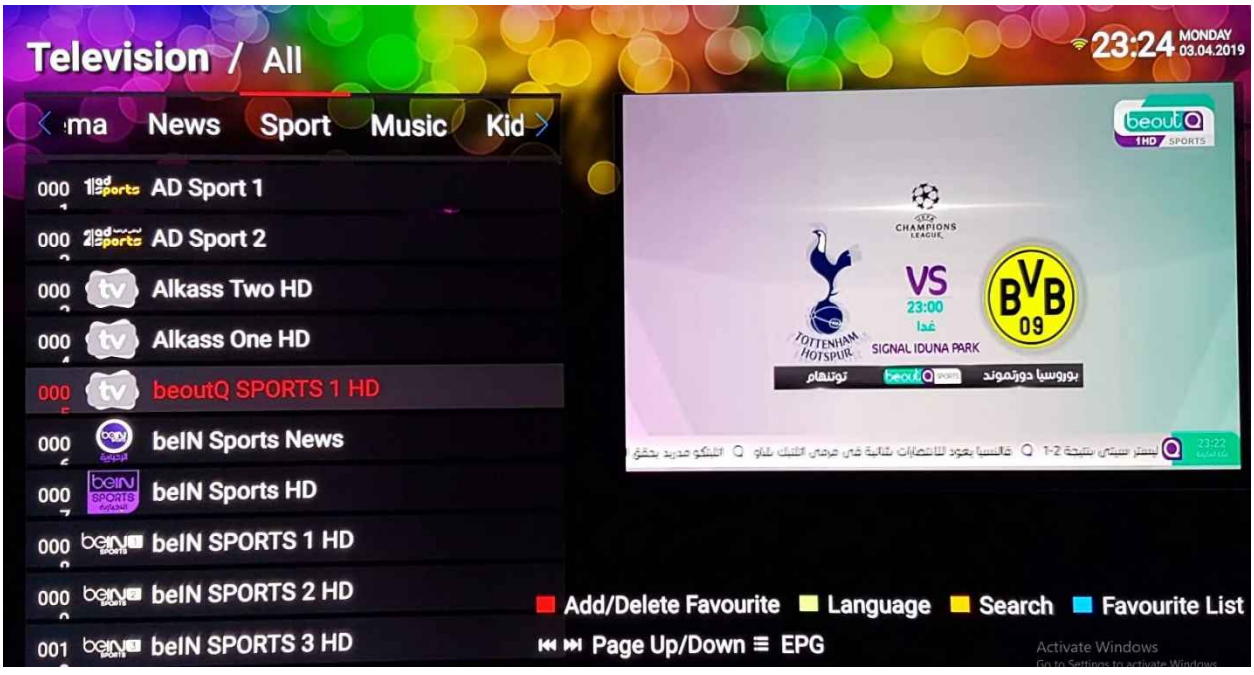


RED IPTV Sports channels



RED IPTV La Liga (Bein Sports HD3) – 4th March 2019 – 23.:26 local time

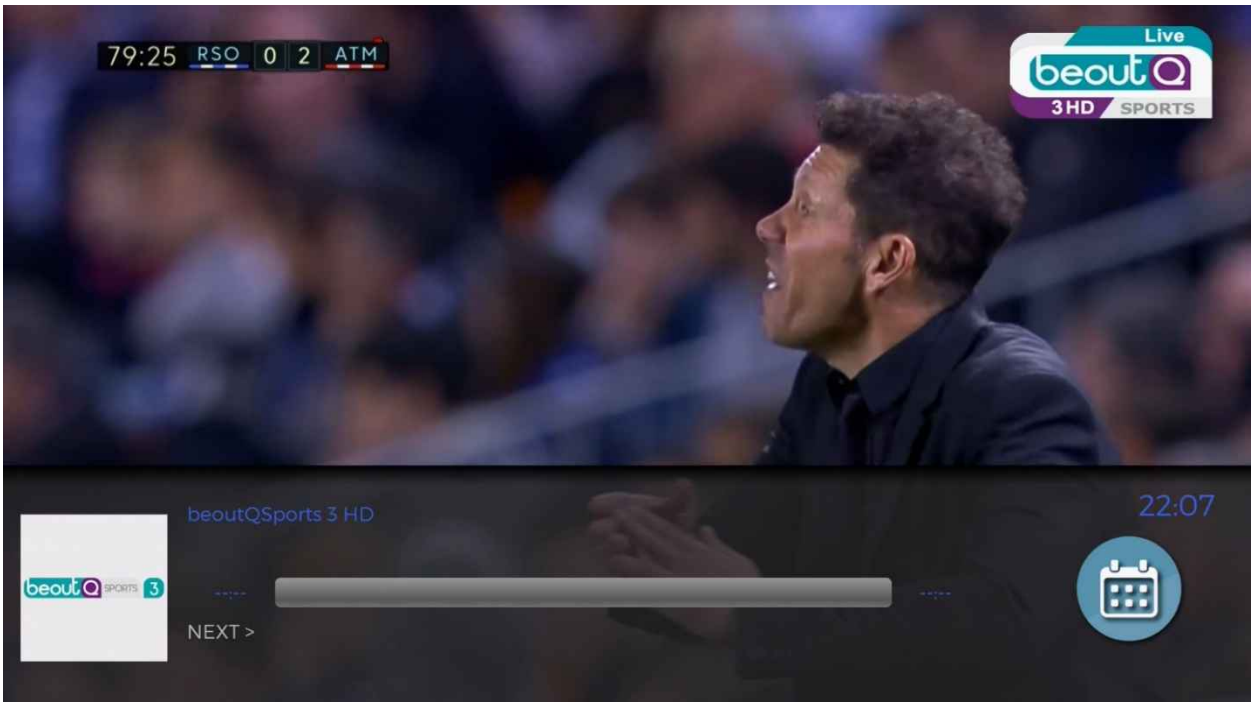
RED IPTV Premier League (Bein Sports HD1 – 4th March 2019 – 23:25 local time



RED IPTV UEFA (BeoutQ HD Sport 1) – 3rd March 2019 23:24 local time

ANNEX 6 – beoutQ Satellite TV Screenshots

beoutQ Satellite TV – Premier League (beoutQ Sports HD2) – 27th Feb 2019 22:07 local time



beoutQ Satellite TV – La Liga (beoutQ Sport HD 3) – 3rd March 2019 22:07 local time

beoutQ Satellite TV – Bundesliga (beoutQ Sport HD 5) – 1st March 2019 22:07 local time

beoutQ Satellite TV – UEFA (beoutQ Sport HD 1) – 5th March 2019 00:50 local time (6th March)