TEST REPORT POLYCOM QDX 6000

PERIOD:

July 2009

SW VERSION:

3.0.1-2297

DEVICE CLASS:

The compact system QDX 6000 is a modular group system which facilitates video transmissions in standard resolution up to 4CIF (704x576 pixels) with 30 frames per second. It is suitable for conferences with up to 30 participants.

SCOPE OF DELIVERY:

The system is delivered with codec, Eagle Eye QDX camera, two microphones and a remote control. Apart from that all the necessary cables, a graphic documentation and a CD with manuals, data sheets and helpful overviews are provided.

BANDWIDTH:

The device facilitates video conferences according to H.323 (via IP networks) with up to 1920 kbps.
INSTALLATION

All the ports that are necessary to hold a video conference are available at the device, multiple video input ports facilitate the execution of different scenarios. Apart from the QDX camera a secondary camera as well as a document camera and an external player can be connected via S-Video or Cinch. The RGB port is used for data presentations. Two output media can be connected via different ports (YPbPr/S-Video/Cinch for main monitor, VGA/S-Video/Cinch for secondary monitor).

The first operation of the device works smoothly and fast thanks to the well designed graphical overview as well as the clear labels of the interfaces at the back of the codec. The configuration proceeds smoothly as well, due to the logical and self-explanatory menu navigation.

TEST

OPERATION

The Polycom QDX series are controlled by a remote control similar to the one of the VSX series. All the important features, which are used often, are distinct and therefore available with one keystroke, but the new design of the HDX series is not used for the remote control (codec and camera are kept in the new design though).

Design and arrangement of the menus do not present a versed Polycom user with a challenge. The menu navigation conforms to the HDX series. But first time users will find their way fast because of the clear structure.

Under the menu item [Diagnostics/Network] you can find the tools [PING] and [Trace Route], which facilitate the detection of potential connection problems, even without a PC.

AUDIO/VIDEO

The system Polycom QDX 6000 is not designed for HD video transmissions and provides a video resolution of 4CIF (704x576) respectively 4SIF (704x480) maximum with the QDX camera, which corresponds to the standard resolution of older video conference devices. Image encoding is mostly done according to H.264 (H.263 and H.261 are also supported). Audio works well, all the current audio codecs have been implemented.

The quality of all audio connections can be rated good to very good. Codecs G.722, G.722.1C and Polycom Siren 14 were used. In connections with Emblaze-VCON products, audio disturbances were temporarily noticeable (in the form of short sound dropouts with xPoint, with vPointHD in the form of very disturbing audio artefacts, but only during H.239 data presentations).

The video quality was good to very good in most cases, considering that QDX 6000 is a system with standard resolution. The video was impaired in connections to Sony XG-80, which displayed an image that is not usable in practice. It was also impaired in connections to Mirial Softphone where audio and video were partially asynchronous during the first minutes of a connection and the video image paused for a short amount of time in a 30 second cycle.
H.264 was used in all connections (except for connections to VCON xPoint with H.263+ in sending direction). The QDX 6000 always sent in the image format 4CIF with 25 fps, the received image resolution corresponded to this resolution range (4CIF, 4SIF, VGA, 448p).

**H.239**

With Polycom QDX 6000, receiving data presentations via H.239 was always possible in XGA, nevertheless when connected with LifeSize Room the received data presentation only had a resolution of 4SIF (704x480). H.263+ as well as H.264 were made use of for image compression. The received slides were generally readable beginning with a font size of 8 pixels. With the exception of connections to Polycom PVX, colour distortions or any other noticeable image errors did not occur. Computationally intensive slides which were sent by Polycom PVX were error-prone and are only limitedly recommendable for practical use. Receiving presentations from the system Emblaze-VCON xPoint lead to crashes of the QDX 6000 and the xPoint several times (especially when transmitting the presentation from a USB stick). In other cases data transmission worked well between the two systems. Apart from these exceptions, disturbing signals were compensated in all slide transmissions. Switching times were always under one second, therefore slides were transmitted synchronous to the presentation.

Video footage which was transmitted via H.239 (SD and HD) was received with an acceptable image rate (5-8 fps), except when connected with Polycom PVX and Mirial Softphone - in this case, the video was irregular. Both of the soft clients sent the video with an unacceptable image rate under 4 fps. In cases when data transmission from xPoint to QDX 6000 via USB stick worked, the quality of the transmitted SD video was very good (CIF with 15 fps), but HD videos were not feasible (sound and image dropouts).

Sending presentations worked smoothly, the resolution of transmitted H.239 data was always XGA, H.263+ as well as H.264 were negotiated as video codecs. The quality of the transmitted slides was always very good, i.e. opposite sides could read the presentations beginning with a font size of 8 pixels without colour distortions or image errors, the only exception being the system Emblaze-VCON xPoint, which did not display the H.239 transmission.

**REMOTE CONTROL**

The camera's remote control always worked without restrictions, as long as the technical requirements were met.

**MCU**

Cooperation with the Codian MCU, which belongs to the service DFNVideoConference, worked smoothly with video with H.264 4CIF in sending direction and H.263+ 4CIF in receiving direction and with audio with G.722.1C respectively Siren 14. The quality of the transmitted audio channel was very good, the quality of the transmitted video channel was rated good due to the restriction of the resolution.

The presentation of slides via H.239 worked in high quality in XGA, when sending as well as receiving. The font was readable beginning with a size of 8 pixels. There were no colour purity errors and disturbing signals were compensated.

Transmitting a video file via H.239 was possible, the frame rate amounted to around 8 fps (for HD video and SD video).

**GATEKEEPER**

The cooperation with the gatekeepers GNU-GK 2.0.7 and CISCO MCM worked without any restrictions.
TEST IMAGES

Tests of the test images for resolution and colour fidelity showed that the QDX camera does not exhibit any changes in colour in the spectrum of muted natural colours and that it records the colour values authentically. The visual resolution that can be achieved does not approach capabilities of current HD cameras by far: in the centre, a maximum of 300 lines can be displayed horizontally as well as vertically. Due to blurriness on the edges the camera only achieves 250 horizontal and vertical lines in the peripheral area. In general, the camera is slightly out of focus.

MISCELLANEOUS

The device QDX 6000 facilitates URI-Dialing according to H.323 Annex O (e.g. via "mcu.vc.dfn.de##97918168"), whether the system is registered with a gatekeeper or not. The encryption with AES according to H.235 worked for all connections, except for Mirial Softphone (encryption functionalities for H.323 are not implemented) and Emblaze-VCON xPoint (a connection could not be established when encryption was activated).

CONCLUSION

The device QDX 6000 can be adjusted flexibly to the user's needs and can be used in different scenarios depending on the requirements. Polycom's strategy here is unique in the current video conference landscape: unlike its competition, the main property of this device is its low price, while "HD (high definition)" has been left out as a marketing property. With this in mind the Polycom QDX 6000 achieves very good results in all areas.

DOCUMENTATION

Provider: Polycom
Distributor: MVC

<table>
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<tr>
<th>Supported Standards</th>
<th>H.323, H.239</th>
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<td>Video Compression</td>
<td>H.261, H.263, H.263+, H264</td>
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<tr>
<td>Bandwidth</td>
<td>IP up to 1920 kbps</td>
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We thank the enterprise MVC for providing us with this system.