GENERAL

The iPower 9800 is a compact system for video conferences developed by Polycom. The system consists of a basic device with a Codec iPower 9000 including an adequate Windows PC with a special wireless infra-red keyboard, the interfacial microphone PowerMic, the camera PowerCam Plus and the data supply device Image Share. Its appealing design emphasizes its value as a modern means of communication. Because of its PC functions, the user is able to use all the possibilities of a Windows PC, e.g. log to the company network or access the internet.

The tests took place in April/May 2004 with software version 5.2.0.828 (exclusive features with 6.0). They were run with the operating system Windows 2000.

INSTALLATION AND OPERATION

The installation of the device works without problems. This is due amongst others to an enclosed installation survey, which is clearly laid out with texts and photos. For the configuration of the software a pleasing administration tool (according to iPower 680) with a convenient operation guide is available. If the user wants to make changes during the operation, however, the task has to be finished in order to start the administration tool.

The operation of the device is carried out by an infra-red remote control or a wireless key board with a track ball. The system can be set up to start automatically with a standard user log in. It has a friendly and easy-to-use user interface.

After starting the conference software the connection can be established easily. With the help of the People&Content window it is easy to switch between the main camera, the document camera, video recorders and the released data.

TESTS

The tests were carried out with the configuration mentioned above, with an additional VGA monitor and a TV monitor in dual monitor mode. It is unfavourable to place the keyboard in front of the basic device, as in this case there is no communication with the Codec.

The access to the conference software is protected by a login/pass word. It is of advantage to register a user as standard user, who is logged on when booting the conference system.

The audio and video codec of the conference should be adjusted to the possibilities of the VC devices taking part, as otherwise no connection can be established (no transcoding available) or one of the media streams does not work. For instance the transmission of images is inhibited by bandwidths which do not correspond exactly with each other and different video algorithms between Tandberg and Polycom systems. Furthermore the auto options do not work as well as expected.
The video quality of the iPower 9800 camera is excellent. Especially the capability to process images in 4CIF format has to be mentioned. In software release 5.0 4CIF video resolution is not available for the videos of the conference users (only for contents). This restriction does not exist in software release 6.0 anymore and was proved in the test with Tandberg 6000 successfully. Audio in CD quality (sampling rate 14kHz) is provided under the name of Siren 14.

A high sound and image quality -especially in multi point conferences- can be achieved by utilising a bandwidth of up to 4Mbps over IP network. Furthermore from software release 6.0 a stronger compression after H.264 is available.

With People&Content Polycom offers a solution for the simultaneous transmission of two information streams and indicates the implementation of the standard H.239. Actually the iPower is able to transmit video and sound of the conference users and additionally data from a connected PC simultaneously. For the PC supply the hard ware module Image Share II is interposed via cable joint for this purpose. Concerning the PC it has to be made sure that the VGA output for operating the dual monitor is activated. Furthermore, on all participating monitors the same screen resolution is to be set up, so that display errors are prevented (blurred image, parts of the original image are displayed severalfold; also adulteration of colours). The switching of the screen resolution during an active conference connection can lead to an interruption and the crash of the system software of the iPower PC. It takes quite a lot of time (about 7 sec) until the data image becomes visible at the recipients PC. Additionally, it takes about 2 sec until the image is focused.

People & Content is a proprietary solution, which is not yet a full realisation of the H.239 standard. Thus a smooth communication is only possible in the Polycom area with iPower+People & Content as well as VSX7000+Visual Concert at the time being. However, Polycom has announced the creation of an H.239 conformity for the 3rd quarter of 2004. A condition for the use of standard conform dual flow in multipoint conferences is the implementation in the MCU software. RADVision wants to implement this in the new version 3.5.

**CONCLUSIONS**

The VC system POLYCOM iPower 9800 impresses by the modern futuristic design of the camera PowerCam Plus. This design, however, does not end in itself, but makes an excellent covering for the high technical standard. The camera, which can be manually adjusted precisely and noiselessly, offers an excellent video quality. With ProMotion a video image in TV quality is reached. This assessment is emphasized by the video format up to 4CIF and the bandwidth of up to 4 Mbps over IP. Furthermore there are several microphones which serve the automatic adjustment of the camera, which, according to Polycom, is the best available on the market.

The iPower has two multipoint compatible versions for 4 or 12 users respectively. Polycom promises, that on from software release 6.0 for iPower and view station conference systems, the complete interoperability over save (AES encrypted) connections to devices of other producers, who are also fully compatible to the AES standards H.235 (IP networks) or H.233/234 (ISDN networks), is possible.

Its conception on PC basis gives the Power 9800 special features. Especially the manifold supply and steering possibilities of external devices have to be emphasized. Meeting Tool Assistent, for instance, offers the steering of document camera, video recorder and projector directly from the user interface on the screen. Transmission from the user's own desktop or from contents of a notebook connected via Image Share in XGA resolution can be carried out very easily.

POLYCOM iPower 9800 is a versatile VC system, which offers an interesting alternative to other compact systems because of its combination with a PC.

**Technical Data**

Producer: POLYCOM
<table>
<thead>
<tr>
<th>General</th>
<th>H.320, H.323, T.120</th>
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</thead>
<tbody>
<tr>
<td>Call options</td>
<td>64 kbps ... 4 Mbps</td>
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<tr>
<td></td>
<td>3.4 KHz: G.711, G.723, G.723.1, G.728, G.729</td>
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<tr>
<td></td>
<td>7 KHz: G.722, G.721.1</td>
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<td></td>
<td><strong>14 KHz: Siren 14</strong></td>
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<tr>
<td>Sound coding</td>
<td>H.261, H.263, H.363++, <strong>H.264</strong></td>
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<tr>
<td>Video bandwidth</td>
<td>maximum <strong>4 Mbps</strong> Send</td>
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<tr>
<td>Video coding</td>
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