



Avaya Solution & Interoperability Test Lab

Application Notes for the Sennheiser CEHS-AV 01 Interface with DW Wireless Headsets Connected to Avaya 1600 and 9600 Series IP Telephones – Issue 1.0

Abstract

These Application Notes describe the compliance testing of the Sennheiser CEHS-AV 01 Interface with DW Wireless Headsets connected to Avaya 1600 and 9600 Series IP Telephones. These headsets are intended to be used by office workers, call center agents, and others who have frequent or extensive telephone conversations. The compliance testing tested the major functions of the Sennheiser products.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

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1. Introduction

These Application Notes describe the compliance testing of the Sennheiser CEHS-AV 01 Interface with DW Wireless Headsets connected to Avaya 1600 and 9600 Series IP Telephones. In addition to its telephone headset interface, each of the Sennheiser headset solutions also has a USB interface which allows it to be connected to a PC-based softphone. However, this mode of operation is not covered by these Application Notes. Each of the Sennheiser headset solutions consists of the following components:

- CEHS-AV 01 interface
- DW DECT wireless base station
- DW Pro1, DW Pro2, or DW Office wireless DECT headset
- Contact microphone with integrated cable and microphone plug

The CEHS-AV 01 interface is used to adapt the Sennheiser DW wireless DECT base station to the Avaya 9600 and 1600 Series IP Telephones, including the microphone which is used to detect telephone ringing.

The Sennheiser DW wireless DECT base station front panel has the following controls and interfaces:

- a charging station for the Sennheiser wireless headset
- blue/red status LED
- a “PC” button
- a “Telephone” button

The “PC” button is used to select the USB interface, which was not used for the tests described by these Application Notes. Repeated depressions of the “Telephone” button serve as a switch-hook which can be used to answer and terminate calls. The charging station also acts as a switch-hook, which will cause an active call to be terminated if the headset is returned to the charging unit.

The Sennheiser DW wireless DECT headsets each have the following controls and interfaces:

- a multi-function switch
- a “mute” button which can turn off / on the headset microphone
- a volume control which allows the headset earpiece volume to be turned up or down
- a blue/red status LED

The multi-function switch provides the following functionality:

- by short depression, it acts as a “switch-hook” which can be used to answer and terminate calls
- by a long depression, it acts as an on/off switch

1.1. Interoperability Compliance Testing

The compliance testing included the following test scenarios:

- Verification of acceptable talk path in both directions for local and PSTN calls.
- Verification of the base station's ability to answer and terminate calls with its "PC" button
- Verification of the headset's ability to answer and terminate calls with its switch-hook button
- Verification of the headset's ability to be powered on to answer an alerting call
- Verification of the headset's ability to terminate an active call by being powered off
- Verification of the headset's ability to terminate an active call by being placed on the base station's changer
- Verification of the headset's ability to initiate an outgoing call
- Verification of the base station's ability to initiate an outgoing call
- Verification of the operation of the headset's mute switch
- Verification of the operation of the headset's volume control
- Verification of the base station's ability to recover from interruption to its power supply
- Verification of the base station's ability to recover from interruption of the headset interface, and that active calls are preserved after reconnection
- Verification of the base station's ability to recover restarting the Avaya telephone

Avaya's formal testing and Declaration of Conformity is provided only on the headsets/handsets that carry the Avaya brand or logo. Avaya may conduct testing of non-Avaya headset/handset to determine interoperability with Avaya phones. However, Avaya does not conduct the testing of non-Avaya headsets/handsets for: Acoustic Pressure, Safety, Hearing Aid Compliance, EMC regulations, or any other tests to ensure conformity with safety, audio quality, long-term reliability or any regulation requirements. As a result, Avaya makes no representations whether a particular non-Avaya headset will work with Avaya's telephones or with a different generation of the same Avaya telephone.

Since there is no industry standard for handset interfaces, different manufacturers utilize different handset/headset interfaces with their telephones. Therefore, any claim made by a headset vendor that its product is compatible with Avaya telephones does not equate to a guarantee that the headset will provide adequate safety protection or audio quality.

1.2. Support

Support from Avaya is available at <http://support.avaya.com/>.

Support for Sennheiser products is available at

- Web: http://www.senncom.com/comm/home_en.nsf/root/service_support-contact
- Email: support@senncom.com
- help desk: +45 56180000

2. Reference Configuration

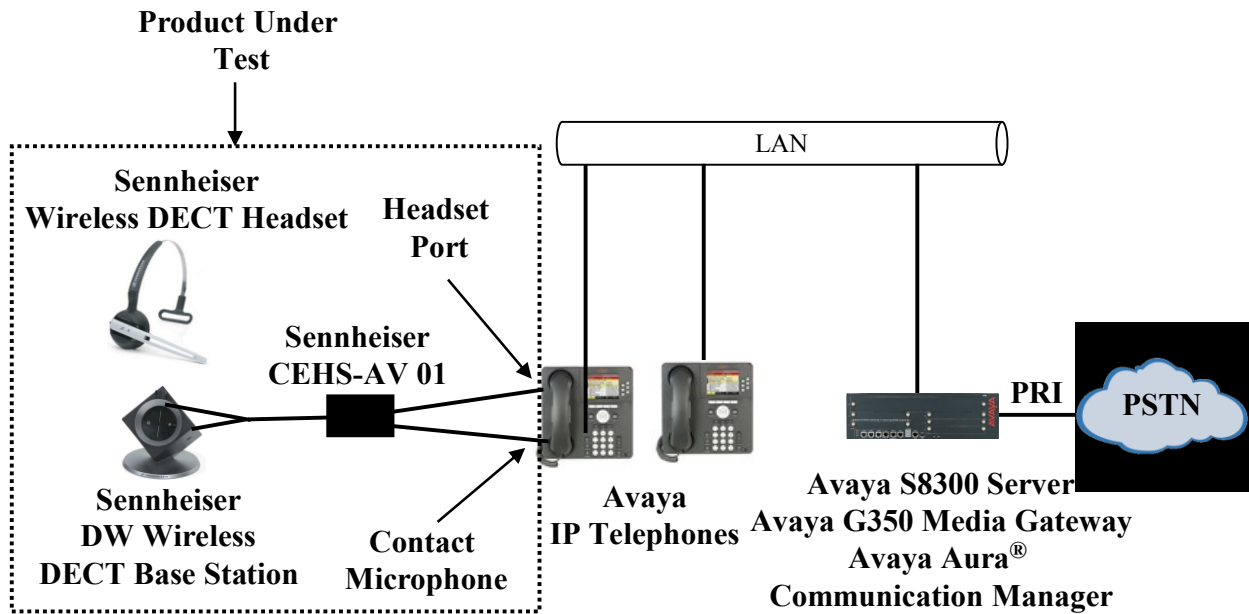


Figure 1: Reference Configuration

The Sennheiser headset solution in the above diagram interfaces to the headset ports of Avaya 1600 and 9600 Series IP Telephones via the Sennheiser CEHS-AV 01 interface. A contact microphone is used to detect the alerting tone from the telephone. The PSTN interface was included in the configuration to place calls to a PSTN based voicemail system to verify the intelligibility of voice messages which were recorded and replayed through the Sennheiser headset.

3. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Component	Version
Avaya Aura® Communication Manager	R015x.02.1.016.4 Update 18365
Avaya G430 Media Gateway	30.14.0
Avaya 9640 IP Telephone	3.1.1
Avaya 1608 IP Telephone	1.3
Sennheiser CEHS-AV 01 interface accessory	(no version)
Sennheiser DW Pro1 Base Station & Headset	5A.4A.5B.6C.71
Sennheiser DW Pro2 Base Station & Headset	5A.4A.5B.6C.70
Sennheiser DW Office Base Station & Headset	6C.4A.5B.6C.66

Table 1: Equipment and Versions Validated

4. Configure Avaya Aura® Communication Manager

The configuration and verification operations illustrated in this section were performed using the Communication Manager System Access Terminal (SAT).

Note that the configuration of the interface to the PSTN is out of the scope of these Application Notes.

Use the **add station** command to add an extension for the telephone to which the Sennheiser headset solution is attached.

Parameter	Usage
Type	Enter endpoint type which corresponds to the endpoint being used.
Name	Enter an appropriate name to identify the station.
Security Code	Enter an appropriate security code for the station.

Table 2: IP Station Parameters

```

add station 10091                                     Page 1 of 5
                                                    STATION
Extension: 10091                                     Lock Messages? n           BCC: 0
  Type: 9640                                       Security Code: 123456    TN: 1
  Port: S00006                                       Coverage Path 1:          COR: 1
  Name: extn 10091                                   Coverage Path 2:          COS: 1
                                                    Hunt-to Station:
STATION OPTIONS
                                                    Time of Day Lock Table:
  Loss Group: 19                                       Personalized Ringing PSennheiser ern: 1
                                                    Message Lamp Ext: 10091
  Speakerphone: 2-way                                   Mute Button Enabled? y
  Display Language: english
  Survivable GK Node Name:
  Survivable COR: internal                               Media Complex Ext:
  Survivable Trunk Dest? y                               IP SoftPhone? n
                                                    Customizable Labels? y

```

Figure 2: IP Station Form

5. Configure Sennheiser Headset

Each of the DW wireless headset solutions consists of a DW wireless DECT headset packaged together with a DW DECT wireless base station and contact microphone. The CEHS-AV 01 is a separate unit which serves as a hub to interconnect the DW DECT base station, Avaya telephone, and contact microphone. The CEHS-AV 01 has the following interfaces:

- an integrated 25cm cable on one side which is terminated by an RJ-11 plug which attaches to the headset port of the Avaya 9600 or 1600 Series IP Telephone
- a microphone jack
- a 60cm cable attached to a Y-connection which splits into two 10cm cables, each of which are terminated by a Western connector which connects to a jack on the Sennheiser DW wireless DECT base station.

The components should be interconnected as follows (described in further detail in [6]) after power has been removed from the base station.

- The contact microphone plug should be connected to the CEHS-AV 01 microphone jack, and the microphone affixed to the front of the Avaya telephone speaker located under the handset.
- The headset plug should be connected to headset jack on the rear of the Avaya telephone
- The two plugs which emanate from the Y-connector should be attached to the jacks on the back of the DW wireless base station, with the red plug in the red jack and the green plug in the green jack.

The settings on the Sennheiser DW wireless DECT base station should be set as show in the following table:

Item	Setting
Mic. Vol.	Set this to "4".
Slide Switch	"A"
DIP switches	Switch 1 "down", all others "up".

Table 3: Sennheiser DW Base Station Switch Settings

6. Configure Avaya 9600 or 1600 Series IP Telephone

The Sennheiser headset solution alerting tone detection works more reliably if the Avaya telephone is configured to select a multi-tonal ring tone. For the tests described in these Application Notes, the second ring tone in the ring tone list offered by both the Avaya 9600 and 1600 Series IP Telephone worked more reliably that the default first tone from the list.

Once the Sennheiser CEHS-AV 01 has been connected to the Avaya telephone and DW wireless DECT base station as described above, calls can be made and accepted with the "headset" button on the Avaya telephone, as described in Error! Reference source not found..

7. General Test Approach and Test Results

The compliance testing of the Sennheiser headset solution interoperating with 1600 and 9600 Series IP Telephones was performed manually. The tests were functional in nature, and no performance testing was done. The following tests were performed:

- Placing calls to a PSTN voicemail system. Voice messages were recorded and played back to verify that the playback volume and recording level were good.
- Placing calls to internal extensions to verify the audio quality.
- Placing calls to the PSTN to verify the audio quality.
- Using the headset and base station to perform call control actions
- Serviceability tests to verify recovery from power and interface interruptions

All tests produced the expected result.

8. Verification Steps

The correct installation and configuration of the Sennheiser headset solution can be verified by using the telephone to which the headset is attached to place and receive calls from other extensions and verifying good audio quality in both directions.

9. Conclusion

These Application Notes contain instructions for configuring Avaya 1600 and 9600 Series IP Telephones to connect to the Sennheiser headset solution. All test cases were completed successfully.

10. Additional References

This section references documentation relevant to these Application Notes. The Avaya product documentation is available at <http://support.avaya.com>.

- [1] *Avaya one-X® Deskphone Edition for 9600 Series IP Telephones Installation and Maintenance Guide*, November 2009, Document Number 16-300694
- [2] *Avaya 1600 Series IP Deskphones Installation and Maintenance Guide*, April 2010, Document Number 16-601438
- [3] *Sennheiser DW Office Quick Guide*
- [4] *Sennheiser DW Pro1/Pro2 Quick Guide*
- [5] *Sennheiser Adapter Cables for Avaya 9600 Series, 1600 Series*
- [6] *Sennheiser Adapter Cables for Avaya 9600 Series, 1600 Series*, November 2009

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