Report reference No	332153-1TRFTTE
Test item description	Plantronics Headset Base Station
Model	W8200B
Testing Laboratory	**Nemko Canada Inc.**
Address	303 River Road Ottawa, Ontario, Canada, K1V 1H2 +1 (613) 737-9680
Applicant's Name	**Plantronics, Inc.**
Address	345 Encinal Street, Santa Cruz, CA 95060 U.S.A.
Test specification	ANSI/TIA-968-B, Telecommunications, Telephone Terminal Equipment, Technical Requirements for Connection of Terminal Equipment to the Telephone Network, Approved: August 11, 2009 TIA-968-B-1 Addendum 1, June 2012 TIA-968-B-2 Addendum 2, January 2015 TIA-968-B-3 Addendum 3, March 2016 & Part 68, FCC rules for Registration of Telephone Equipment & CS-03 Part I, Issue 9 Amendment 5, March 2016, Requirements for terminal equipment and related access arrangements intended for direct connection to analogue wireline facilities
Tested by	Kurt Mikolajewski Telecom Specialist
Approved by	S.C. Beck, Director of Certification
Date of issue	October 11, 2017
Number of Pages	80

Table of contents

1 Client information

Client name:	Plantronics, Inc.
Address:	345 Encinal Street, Santa Cruz, CA 95060
Telephone:	+441793842416
Fax:	Mark.lawson@plantronics.com
E-mail:	Mark Lawson
Contact name:	Plantronics, Inc.

2 Equipment details

Product name:	Plantronics Headset Base Station
Product type:	Headset base Station
Model(s):	W8200B

3 Test project performance

Project ID:	332153-1TRFTTE
Location:	Nemko Canada Inc. 303 River Road, RR#5 Ottawa, Ontario, Canada K1V 1H2
Test started:	7/6/2017 11:07:00 AM
Test specification(s):	ANSI/TIA-968-B, Telecommunications, Telephone Terminal Equipment, Technical Requirements for Connection of Terminal Equipment to the Telephone Network, Approved: August 11, 2009 TIA-968-B-1 Addendum 1, June 2012 TIA-968-B-2 Addendum 2, January 2015 TIA-968-B-3 Addendum 3, March 2016 & Part 68, FCC rules for Registration of Telephone Equipment & CS-03 Part I, Issue 9 Amendment 5, March 2016, Requirements for terminal equipment and related access arrangements intended for direct connection to analogue wireline facilities
Test suite:	TIA-968-B-3, CS-03 analogue combined and HAC (1/3/2017, modified)

4 Test report summary

Testing was completed against all relevant requirements of the test standard as per the technical judgement. The results obtained indicate that the product under test does comply in full with the requirements tested.

The test results relate only to the items tested.

5 Equipment under test

5.1 EUT Description

The EUT is a Headset switch and wireless Headset base station. It is an adjunct to a telephone intended to connect to a handset port on the phone or the USB port on a PC or wirelessly to a DECT headset or Bluetooth device. The selector switch allows connection of the headset to the PC or Telephone audio. The unit provides 6 position switch to adjust to the type of interface on the telephone handset port.

The W8200B wireless base station supports various Plantronics wireless headsets. The plastic charging cradle can be replaced with one to support other headsets. The W8200B was tested with the WH500 wireless headset.

Supported headsets; WH500, W8220T, W8210T

The W8200B is marketed under the following marketing names;

-Marketing name: Savi 740 (system), Base Model number: W8200B, Headset Model number: WH500

-Marketing name: Savi 8210 (system), Base Model number: W8200B, Headset Model number: W8210T

-Marketing name: Savi 8220 (system), Base Model number: W8200B, Headset Model number: W8220T

5.2 Technical judgement

The following technical judgements were made during the assessment:

5.2.1 Technical judgement 1

The EUT does not connect directly to the PSTN. It was judged that the EUT be tested with a representative PSTN telephone for noise, balance and surge to determine if the telephone continues to be compliant. A Northern telecom DAKOTA 1000 set was used as a host and was evaluated both connected and not connected to a PC USB port.

5.2.2 Technical judgement 2

The EUT can be paired with various wireless headsets. It was judged that the WH500 headset is representative of the headsets that could be used with the base.

5.3 Modification performed during the assessment

No modifications were made during the assessment.

5.4 Additional observations

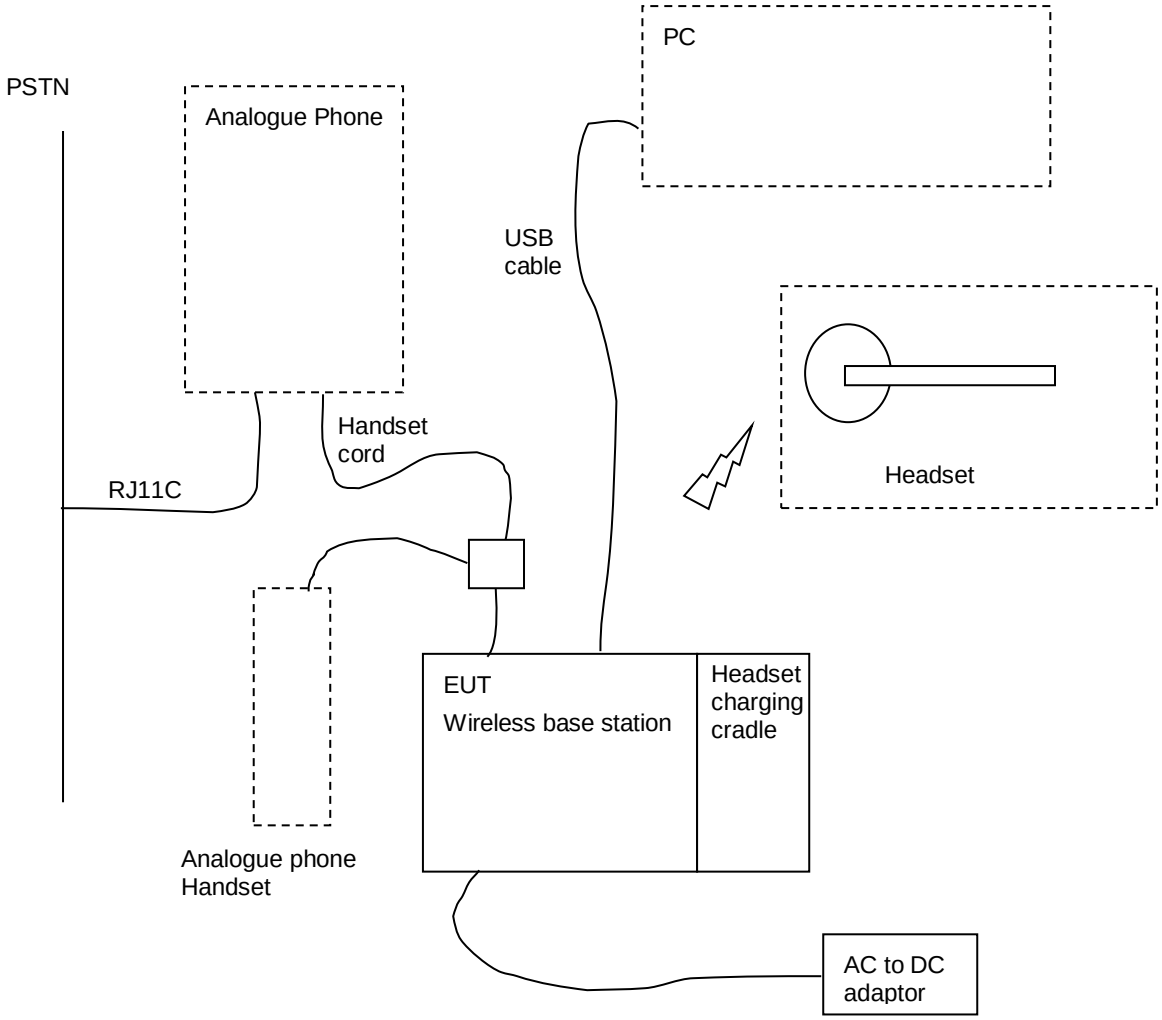
Connector: N/A

CS-03 REN: N/A

TIA-968-A REN: N/A

Power adaptor: Model number: SSC-090100, PN: 203382-01, Output 9V dc @ 1000 mA

Block Diagram



5.5 Samples Submitted for testing

The following samples have been for type assessment:

Sample	Description	Model Number	Serial Number
1	SAVI W740 Plantronics Headset base station c/w WH500 wireless headset	W8200B – Base WH500 - Headset	0K9V8K V28.25
	Support Equipment		
n/a	Analog phone NT DAKOTA 1000	NT2N72AA	n/a

The first samples were received on: May 23, 20171

6 Test laboratory description

Nemko Canada Inc., a testing laboratory, is accredited by the Standards Council of Canada. The tests included in this report are within the scope of this accreditation.

7 Test equipment used

Description	Model	S/N	Hardware Rev.	Software Rev.	Last Calibration	Calibration Due
Telecom Conformance Analyzer	Hermon Laboratories TCA-8200	FA002045	A5.01	2.4.65, build 3499, 25-Dec-16 16:01:04.14	1/1/2017 8:30:56 AM	Jan. 1, 2019
Surge Generator	KeyTek ECAT	FA001348	—	—	Oct. 12, 2016	Oct. 12, 2017
Dielectric Analyzer	AR Inc. Hypot III	FA002719	—	—	Feb. 15, 2017	Feb. 15, 2018

8 Photographs of test samples

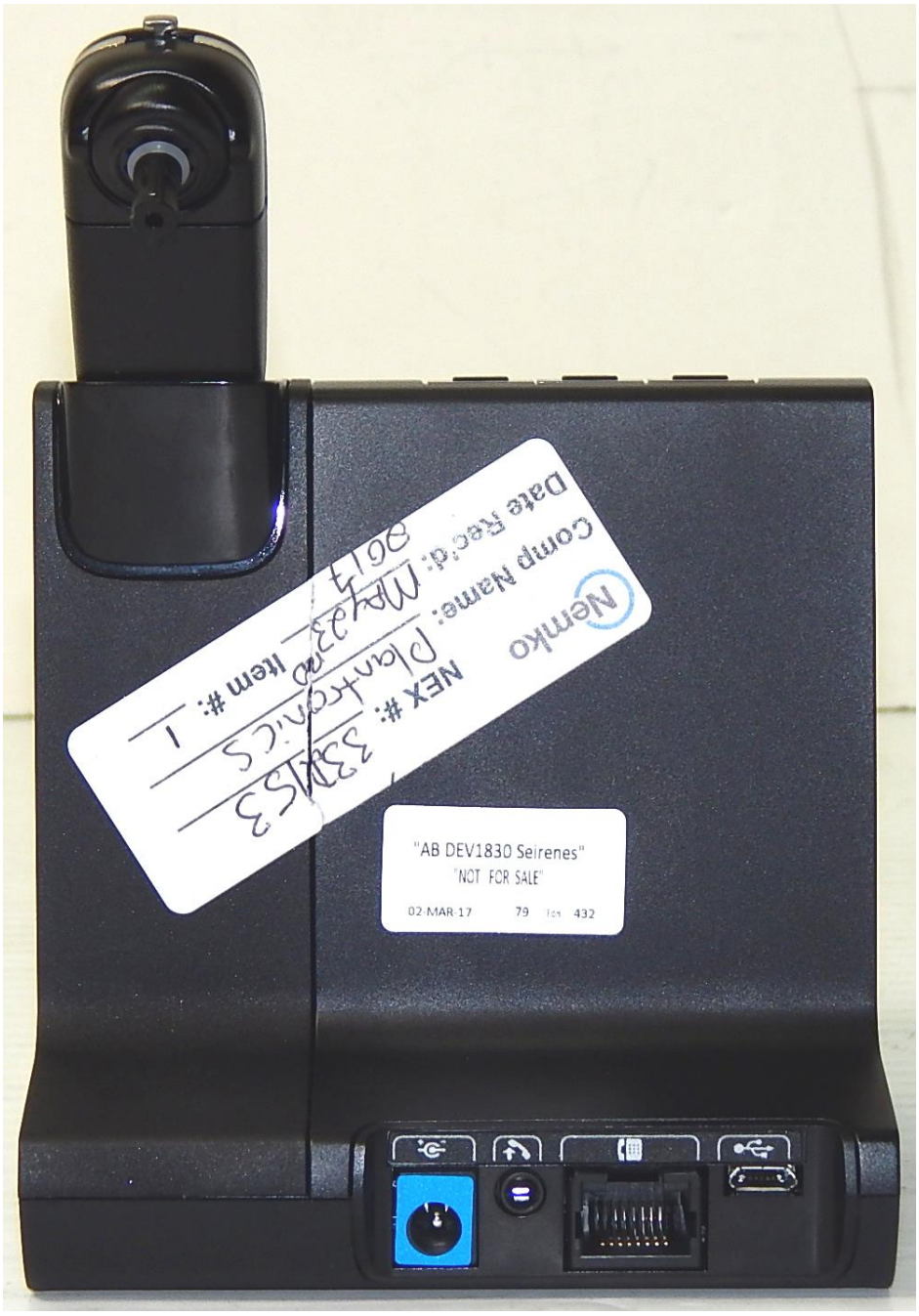
Photographs were taken of relevant samples during the assessment. These are detailed below and are included in this section.

8.1 EUT Top & Front View
8.2 EUT Rear View
8.3 EUT Bottom View
8.4 EUT Wireless Headset View
8.5 EUT Handset Adaptor Cable View
8.6 EUT Power Pack Bottom View

The photographs depict the samples as originally submitted.

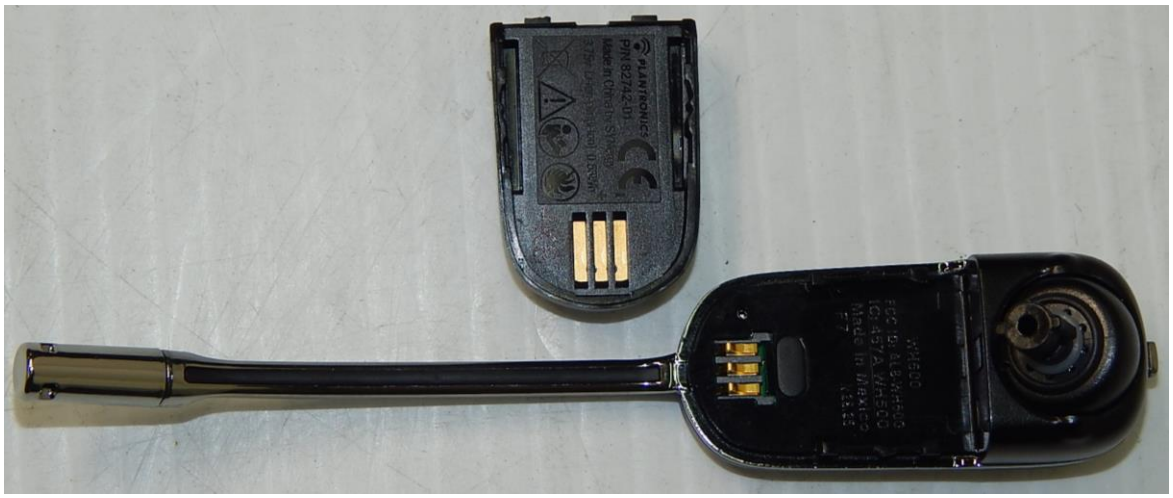
8.1 EUT Top & Front View

8.2 EUT Rear View

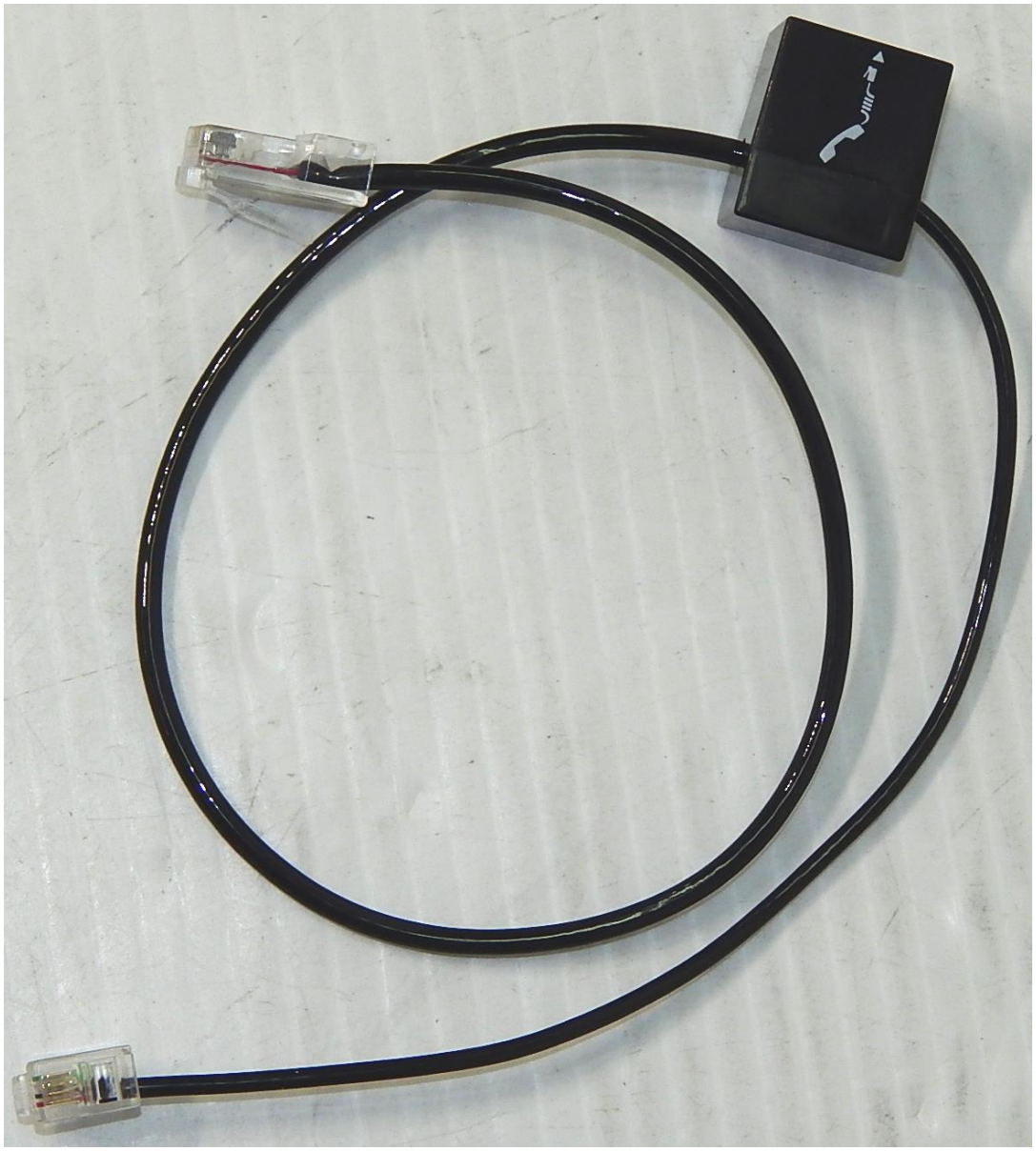


8.3 EUT Bottom View

8.4 EUT Wireless Headset View



8.5 EUT Handset Adaptor Cable View



8.6 EUT Power Pack Bottom View

9 Requirement conditions table

Condition	Applies
TIA-968-B-3, CS-03 analogue combined and HAC (1/3/2017, modified)	
Is the TE hand-held or table-top equipment with a weight less then 5 kg?	Yes
Is the TE AC powered?	Yes
Does the TE have an intentional dc conducting path from its telephone connection to earth ground at operational voltages?	No
Does the TE have an intentional dc conducting path from its telephone connection to earth ground for protection purposes?	No
Is the TE type A ringer (20 Hz to 30 Hz?	Yes
Is the TE intended for network control signaling?	Yes
Does the TE provide through-transmission paths?	No
Does the TE have a loop-start interface (LS)?	Yes
Does the TE have a ground-start interface (GS)?	No
Does the TE have a Tie-trunk interface (Tie)?	No
Does the TE have an Off-Premise station(s) (OPS)?	No
Does the TE have an On-Premise station(s) (ONS)?	No
Does the TE have a 1.544 Mbps digital PBX-CO trunk ports?	No
Does the TE have a VoIP WAN/LAN ports?	No
Does the TE contain an analog-to-digital converter or generates a data bit stream?	No
Does the TE have a voiceband metallic channel interface?	No
Does the TE have a Private Line?	No
Does the TE have Ringing sources?	No
Is the TE an approved data circuit terminal?	No
Is the TE data terminal equipment intended to operate with a programming resistor?	No
Is the TE approved test equipment or approved test circuitry?	No
Does the TE have a handset?	No
Does the EUT support stuttered dial tone detection	No
Does the EUT go off-hook to program dialing numbers	No
Does the TE provide automatic re-dial?	No
Does the TE provide automatic answer?	No
Does the TE present signal sources other than for Network control signalling?	No

10 Test results summary

Test	Status
TIA-968-B-3, CS-03 analogue combined and HAC (1/3/2017, modified)	
4 / 2.0 Common requirements	
4.1 / 2/0 Environmental simulation	
4.1 / Environmental simulation	Pass
4.1.1 / 2.1 Mechanical shock	Pass
4.1.2 / 2.4.1 Telephone line surge - type A	
4.1.2.1 / 2.4.1.1 Metallic voltage surge - type A	Pass
4.1.2.2 / 2.4.1.3 Longitudinal voltage surge - type A	Pass
4.1.3 / 2.4.2 Telephone line surge - type B	
4.1.3.1 / 2.4.2.1 Metallic voltage surge - type B	Pass
4.1.3.2 / 2.4.2.3 Longitudinal voltage surge - type B	Pass
4.1.4 / 2.5 Power line surge	Pass
4.2 / 2.2 Leakage current limitation	Pass
4.3 / 2.3 Hazardous voltage limitations	
4.3.1 / 2.3.1 to 2.3.6 General requirement	Not required
4.3.2 / 2.3.7.1 Physical separation of leads	Pass
4.3.3 / 2.3.8 Non-hazardous voltage source	Pass
4.3.4 / 2.3.10 Intentional paths to ground	
4.3.4.1 / 2.3.10.1 Operational paths to ground	Not required
4.3.4.2 / 2.3.10.2 Protective paths to ground	Not required
4.4 / 3.3.1, 3.5 Billing protection	
4.4.1 / 3.5.1.1 Call duration requirements on data equipment	Not required
4.4.2 / 3.3.1 Voice and data equipment on-hook signal requirements	Pass
4.4.3 / 3.5.3 Signaling interference requirements	Not required
4.5 / Encoded analog content	
4.5.1 (a) Encoded analog content (all signals other than voice or network control signals)	
4.5.1 (a) Encoded analog content limits (Analog port (FXS) to Network interface (VoIP))	Not required
4.5.1 (a) Encoded analog content limits (Analog port (FXS) to Network interface (1544 kbps PBX-CO))	Not required
4.5.1 (a) Encoded analog content limits (Internal signal sources to Network interface (VoIP))	Not required
4.5.1 (a) Encoded analog content limits (Internal signal sources to Network interface (1544 kbps PBX-CO))	Not required
4.5.1 (c) Encoded analog content (network control signals)	
4.5.1 (c) Encoded analog content limits (Network control signals to Network interface (VoIP))	Not required
4.5.1 (c) Encoded analog content limits (Network control signals to Network interface (1544 kbps PBX-CO))	Not required
4.6 / 1.6 Connectors & wiring configurations	
4.6 / 1.6 Connectors & wiring configurations	Not required

Test	Status
4.7 / 3.4.4.1(3) Allowable net amplification between ports	
4.7.2 / 3.4.4.1(3)(a) Allowable net amplification between network interface ports	
4.7.2 / 3.4.4.1 (3)(a) Allowable net amplification (LS <-> LS)	Not required
4.7.2 / 3.4.4.1 (3)(a) Allowable net amplification (OPS <-> OPS)	Not required
4.7.2 / 3.4.4.1 (3)(a) Allowable net amplification (OPS <-> LS)	Not required
4.7.2 / 3.4.4.1 (3)(a) Allowable net amplification (OPS <-> 1.544 Mbps)	Not required
4.7.2 / 3.4.4.1 (3)(a) Allowable net amplification (LS <-> OPS)	Not required
4.7.3 / 3.4.4.1(3)(a) Allowable net amplification between ports for other approved TE and network interface ports	
4.7.3 / 3.4.4.1 (3)(a) Allowable net amplification (ONS -> Tie trunk Lossless)	Not required
4.7.3 / 3.4.4.1 (3)(a) Allowable net amplification (ONS -> OPS)	Not required
4.7.3 / 3.4.4.1 (3)(a) Allowable net amplification (ONS -> LS)	Not required
4.7.3 / 3.4.4.1 (3)(a) Allowable net amplification (ONS -> 1.544 Mbps)	Not required
4.7.4 / 3.4.4.1(3)(b) Single frequency (SF) guard band	
4.7.4 / 3.4.4.1 (3)(b) Single frequency (SF) guard band (LS -> LS)	Not required
4.7.4 / 3.4.4.1 (3)(b) Single frequency (SF) guard band (ONS -> OPS)	Not required
4.7.4 / 3.4.4.1 (3)(b) Single frequency (SF) guard band (ONS -> LS)	Not required
4.7.4 / 3.4.4.1 (3)(b) Single frequency (SF) guard band (ONS -> 1.544 Mbps)	Not required
4.7.4 / 3.4.4.1 (3)(b) Single frequency (SF) guard band (OPS <-> OPS)	Not required
4.7.4 / 3.4.4.1 (3)(b) Single frequency (SF) guard band (OPS <-> LS)	Not required
4.7.4 / 3.4.4.1 (3)(b) Single frequency (SF) guard band (OPS <-> 1.544 Mbps)	Not required
4.7.4 / 3.4.4.1 (3)(b) Single frequency (SF) guard band (LS <-> OPS)	Not required
4.7.5 / 3.4.4.1(3) Note (7) SF cut-off	
4.7.5 / 3.4.4.1 (3)(a) Note (7) SF cut-off (ONS -> OPS)	Not required
4.7.5 / 3.4.4.1 (3)(a) Note (7) SF cut-off (ONS -> LS)	Not required
4.7.5 / 3.4.4.1 (3)(a) Note (7) SF cut-off (ONS -> 1.544 Mbps)	Not required
4.7.5 / 3.4.4.1 (3)(a) Note (7) SF cut-off (OPS <-> OPS)	Not required
4.7.5 / 3.4.4.1 (3)(a) Note (7) SF cut-off (OPS <-> LS)	Not required
4.7.5 / 3.4.4.1 (3)(a) Note (7) SF cut-off (OPS <-> 1.544 Mbps)	Not required
4.7.5 / 3.4.4.1 (3)(a) Note (7) SF cut-off (LS <-> OPS)	Not required
5.1 / 3.4 Analog voice band interface requirements	
5.1.2 / 3.4.1 Limitations on signals not intended for network control signaling	
5.1.2.1 / 3.4.1 (1) Voice band metallic signal power (LS, GS Limit: -9 dBm)	Not required
5.1.2.2 / 3.4.1 (2) Voice band metallic signal power (Tie trunk. Limit: -11 dBm)	Not required
5.1.2.3 / 3.4.1 (3) Voice band metallic signal power (OPS, Limit: -9 dBm)	Not required
5.1.2.4 / 3.4.1 (4) Voice band metallic signal power (Test equipment, Limit: 0 dBm)	Not required
5.1.2.5 / 3.4.1 (5) Voice band metallic signal power (Private line, Limit: -13 dBm)	Not required
5.1.2.6 / 3.4.1 (6) Metallic signal power in the band 2600 ± 150 Hz (Private line, Limit: -8 dBm)	Not required
5.1.2.6 / 3.4.1 (6) Voice band metallic signal power (Private line in On-hook, Limit: -20 dBm)	Not required
5.1.2.6 / 3.4.1 (6) Voice band metallic signal power (Private line non-signaling mode, Limit: -13 dBm)	Not required
5.1.2.7 / 3.4.1 Data terminal equipment	
5.1.2.7 (a) / 3.4.1 Data TE with programming resistors	Not required
5.1.2.7 (b) / 3.4.1 Data TE operating in the fixed loss loop FLL (-4 dBm)	Not required
5.1.2.7 (c) / 3.4.1 Data circuit TE (-9 dBm)	Not required

Test	Status
5.1.3 / 3.4.2 Limitations on signals intended for network control signaling	
5.1.3.1 (a)(b) / 3.4.2 (1)(a)(b) Voice band metallic signal power for network control signaling (LS, GS, Limit: 0 dBm)	Not required
5.1.3.1 (c) / 3.4.2 (c) Voice band metallic signal power for network control signaling (LS, GS, Limit: -9 dBm)	Not required
5.1.3.2 / 3.4.2 (2) Voice band metallic signal power for network control signaling (Tie trunk, Limit: -4 dBm)	Not required
5.1.4 / 3.4.8 Audio signal limiting	
5.1.4 / 3.4.8.1 (1)(2) MOH Voice band metallic signal power (LS, GS Limit: -9 dBm)	Not required
5.1.4 / 3.4.8.1 (1)(2) MOH Voice band metallic signal power (OPS, Limit: -9 dBm)	Not required
5.1.4 / 3.4.8.1 (1)(2) MOH Voice band metallic signal power (Tie trunk. Limit: -11 dBm)	Not required
5.1.4 / 3.4.8.1 (3) MOH 5.1.6.1 / 3.4.6 (1) Signal power in 3995-4005 Hz band from internal signal sources (LS, GS)	Not required
5.1.4 / 3.4.8.1 (4) MOH 5.1.6.2 / 3.4.4.1 (1) 3 dB loss difference in the 600-4000 Hz and in the 3995-4005 Hz bands (ONS -> LS)	Not required
5.1.4 / 3.4.8.1 (4) MOH 4.4.3 / 3.5.3 Signaling interference requirements	Not required
5.1.5 / 3.4.4.1 (2) Through transmission limitations	
5.1.5.1 / 3.4.4.1 (2)(a) DC conditions	
5.1.5.1 (a) / 3.4.4.1 (2)(a)(1) DC conditions. Max open circuit voltage	Not required
5.1.5.1 (b) / 3.4.4.1 (2)(a)(2) DC conditions. Short circuit current	Not required
5.1.5.1 (c) / 3.4.4.1 (2)(a)(3) DC conditions. Min current provided into 430 Ohms.	Not required
5.1.5.2 / 3.4.4.1 (2)(b) Data terminal equipment jack limitations	Not required
5.1.5.3 / 3.4.4.1 (3) Allowable net amplification between ports	Not required
5.1.5.4 / 3.8 Tie trunk interface Return loss	
5.1.5.4 (a) / 3.8.1 Tie trunk interface Return loss (two-wire interface)	Not required
5.1.5.4 (b) / 3.8.1 Tie trunk interface Return loss (four-wire interface)	Not required
5.1.6 / 3.4.6 Signal power in the 3995–4005 Hz frequency band	
5.1.6.1 / 3.4.6 Signal power in the 3995–4005 Hz frequency band from internal signal sources	
5.1.6.1 / 3.4.6 (1) Signal power in 3995-4005 Hz band from internal signal sources (LS, GS)	Not required
5.1.6.2 / 3.4.4.1 (1) Signal power in the 3995–4005 Hz band - through-transmission TE	
5.1.6.2 / 3.4.4.1 (1) 3 dB loss difference in the 600-4000 Hz and in the 3995-4005 Hz bands (ONS -> OPS)	Not required
5.1.6.2 / 3.4.4.1 (1) 3 dB loss difference in the 600-4000 Hz and in the 3995-4005 Hz bands (ONS -> LS)	Not required
5.1.6.2 / 3.4.4.1 (1) 3 dB loss difference in the 600-4000 Hz and in the 3995-4005 Hz bands (OPS <-> OPS)	Not required
5.1.6.2 / 3.4.4.1 (1) 3 dB loss difference in the 600-4000 Hz and in the 3995-4005 Hz bands (OPS <-> LS)	Not required
5.1.6.2 / 3.4.4.1 (1) 3 dB loss difference in the 600-4000 Hz and in the 3995-4005 Hz bands (LS <-> OPS)	Not required
5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz	Pass
5.1.8 / 3.3.2.2, 3.4.6 Voltage in the 4 kHz to 30 MHz frequency range	
5.1.8.1 / 3.4.6 Metallic voltage, 4 kHz to 270 kHz	
5.1.8.1 / 3.4.6 (2) Metallic voltage 8 kHz - 12 kHz	Pass
5.1.8.1 / 3.4.6 (2) Metallic voltage 12 kHz - 266 kHz	Pass
5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz	Pass

Test	Status
5.1.8.3 / 3.3.2.2 Longitudinal voltage, 4 kHz to 270 kHz	
5.1.8.3 / 3.3.2.2 Longitudinal voltage 8 kHz - 12 kHz	Pass
5.1.8.3 / 3.3.2.2 Longitudinal voltage 12 kHz - 270 kHz	Pass
5.1.8.4 / 3.3.2.3 Longitudinal voltage 270 kHz - 6 MHz	Pass
5.1.10 / 3.6 Analog voice band transverse balance	
5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)	Pass
5.1.10 / 3.6 Transverse balance for analog voiceband equipment (GS)	Not required
5.1.10 / 3.6 Transverse balance for analog voiceband equipment (OPS)	Not required
5.1.11 / 3.5, 3.7, 3.10, 3.11 Loop start interfaces	
5.1.11.2 / 3.7 Limitations on equipment intended for operation on loop start telephone facilities	
5.1.11.2.1, 5.1.11.2.2 / 3.7.1 On-hook resistance, metallic and longitudinal	Not required
5.1.11.2.3 / 3.7.2 DC current during ringing, 5.1.11.2.4 / 3.7.3 Ringing impedance (metallic), REN - Ringing type A	Not required
5.1.11.2.5 / 3.7.3 (2) Ringing frequency impedance (longitudinal)	Not required
5.1.11.3 / 3.10, 3.11 Transitioning to the off-hook state / Stuttered dial tone	Not required
5.1.11.4 / 3.5.2 Voice and data equipment loop current requirements	
5.1.11.4 (a) / 3.5.2.1 Loop current requirements (Min current)	Not required
5.1.11.4 (b) / 3.5.2.1 Loop current requirements (25% current decrease)	Not required
5.1.12 Ground start interfaces	
5.1.12.2 Limitations on individual equipment intended for operation on ground start	
5.1.12.2.1 DC current during ringing, 5.1.12.2.2 Ringing impedance, REN - Ringing Type A	Not required
5.1.12.3 Transitioning to the off-hook state	Not required
5.1.12.4 (a) Loop current requirements (Min current)	Not required
5.1.12.4 (b) Loop current requirements (25% current decrease)	Not required
5.1.16 / 2.3.9, 3.4.5 Off premises station (OPS)	
5.1.16.2 / 3.4.5 Minimum DC loop current	
5.1.16.2 / 3.4.5 (2)(b) Minimum DC loop current for OPS ports classes A, B, C	Not required
5.1.16.2 / 3.4.5 (2)(c) Additional requirements for the minimum DC loop current for OPS ports classes B, C	Not required
5.1.16.3 / 3.4.5 (2)(b) Maximum DC current into a short circuit	Not required
5.1.16.4 / 3.4.5 (1) Maximum open circuit DC voltage	Not required
5.1.16.5 / 3.4.5 (1) Hazardous voltage limit for talking and supervisory voltages	Not required
5.1.16.6 / 3.4.5 (1), 2.3.4 (2), 2.3.9.3 Hazardous voltage limits for ringing signals	Not required
5.1.16.6.5 / 2.3.9 Ringing voltage sources requirements	
5.1.16.6.5 (a) / 2.3.9.4(1) Ring signal requirements for ring current not exceed 100 mA (p-p) at 500 Ohm	Not required
5.1.16.6.5 (b)(1) / 2.3.9.4(2)(a) Ring signal requirements for ring current exceed 100 mA (p-p) at 1500 Ohm and 500 Ohm load	Not required
5.1.16.6.5 (b)(2) / 2.3.9.4(2)(b) Ring signal requirements for ring current exceed 100 mA (p-p) at 1500 Ohm	Not required
6.2 Series Devices	
6.2.1 Transverse balance for series connected analog voiceband equipment (LS)	Not required

Test	Status
/ 3.10 Stuttered dial tone detection	
/ 3.10.1 Stuttered dial tone detection	Not required
/ 3.10.1 Stuttered Dial Tone Detection after a completed calling event (without dialtone)	Not required
/ 3.10.1 Stuttered Dial Tone Detection after a completed calling event (with dialtone)	Not required
/ 3.10.1 Stuttered Dial Tone Detection after unanswered incoming calling (without dialtone)	Not required
/ 3.10.1 Stuttered Dial Tone Detection after unanswered incoming calling (with dialtone)	Not required
68.318 / CS-03 part 1, 3.9 Automatic dialing and automatic redialing	
(1) Automatically repeated call attempts (TE without busy and reorder signals detection)	
(1) Automatically repeated call attempts (TE without busy and reorder signals detection) (LS, GS)	Not required
(1) Automatically repeated call attempts (TE without busy and reorder signals detection) (Tie)	Not required
(1) Automatically repeated call attempts (TE with busy and reorder signals detection)	
(1) Automatically repeated call attempts (TE with busy and reorder signals detection) (LS, GS)	Not required
(1) Automatically repeated call attempts (TE with busy and reorder signals detection) (Tie)	Not required
(2), (3), (4) Clearing of automatic calls	
(2), (3), (4) Clearing of automatic calls (LS, GS)	Not required
(2), (3), (4) Clearing of automatic calls (Tie)	Not required
(6)(a) Dialing with dial tone detection	
(6)(a) Dialing with dial tone detection (LS, GS)	Not required
(6)(a) Dialing with dial tone detection (Tie)	Not required
(6)(b) Dialing without dial tone detection	
(6)(b) Dialing without dial tone detection (LS, GS)	Not required
(6)(b) Dialing without dial tone detection (Tie)	Not required

11 Detailed test results

Test specification:	4.1 / Environmental simulation		
Test purpose:			
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:50:55 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Test results

Standard reference	Requirement	Description	Verdict
4.1	Unpackaged approved terminal equipment and approved protective circuitry shall comply with all the criteria specified in this Standard, both prior to and after application of the mechanical and electrical stresses specified in this section.	The Headset base station with the reference phone continued to comply after the application of stresses.	Pass

Test specification:	4.1.1 / 2.1 Mechanical shock		
Test purpose:	To simulate handling of terminal equipment during installation and use		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 3:40:46 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.B.S.			

Test results

Standard reference	Requirement	Description	Verdict
4.1.1.1	Hand-held items normally used at head height: 18 random drops from a height of 1.5 meters onto concrete covered with 3 mm asphalt tile or similar surface.	Headset dropped from 1.5 m 18 times three times on each face. Battery separated from headset on each drop Fully operational after drops	Pass
4.1.1.2	Table (desk)-top equipment 0–5 kg: Six random drops from a height of 750 mm onto concrete covered with 3 mm asphalt tile or similar surface.	Base dropped once on each face. Case opened and was pressed shut again. Fully operational after drops	Pass
4.1.1.3	The drop tests specified in 4.1.1 shall be performed as follows: The unit shall be positioned prior to release to ensure as nearly as possible that for every six drops there is one impact on each of the major surfaces and that the surface to be struck is approximately parallel to the impact surface.		Noted

Test specification:	4.1.2.1 / 2.4.1.1 Metallic voltage surge - type A		
Test purpose:	Two metallic voltage surges (one of each polarity) shall be applied between any pair of connections on which lightning surges may occur. Surges parameters shall comply with requirements 4.1.2.1.1 of the standard.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 3:28:19 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S.			

Test results

Test leads		On-hook		Off-hook	
		Normal	**Inverse**	**Normal**	**Inverse**
2-wire	Tip - Ring	Operational	Operational	Operational	Operational
4-wire	Tip - Ring				
	Tip1 - Ring1				
4-wire simplex Tip and Ring 1 Tip 1 and Ring					

Observations:

- none

Test specification:	4.1.2.2 / 2.4.1.3 Longitudinal voltage surge - type A		
Test purpose:	Two longitudinal voltage surges (one of each polarity) shall be applied to any pair of connections on which lightning surges may occur. Surges parameters shall comply with requirements 4.1.2.2.1 of the standard.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 3:27:13 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S.			

Test results

Test leads	On-hook		Off-hook	
	Normal	Inverse	Normal	Inverse
Tip/Ring to Ground	Operational	Operational	Operational	Operational
Tip 1/Ring 1 to Ground				
M (Type I, A side)				
Any other leads				
Tip/Ring to All leads	Operational	Operational	Operational	Operational

Observations:

- No current drawn
-

Test specification:	4.1.3.1 / 2.4.2.1 Metallic voltage surge - type B		
Test purpose:	Two metallic voltage surges (one of each polarity) shall be applied to equipment between any pair of connections on which lightning surges may occur. Surges parameters shall comply with requirements 4.1.3.1 of the standard.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 3:26:41 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.B.S.			

Test results

Test leads		On-hook		Off-hook	
		Normal	**Inverse**	**Normal**	**Inverse**
2-wire	Tip - Ring	Operational	Operational	Operational	Operational
4-wire	Tip - Ring				
	Tip1 - Ring1				
4-wire simplex Tip and Ring 1 Tip 1 and Ring					

Observations:

- none

Test specification:	4.1.3.2 / 2.4.2.3 Longitudinal voltage surge - type B		
Test purpose:	Two longitudinal voltage surges (one of each polarity) shall be applied to any pair of connections on which lightning surges may occur. Surges parameters shall comply with requirements 4.1.3.2 of the standard.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 3:24:16 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.B.S.			

Test results

Test leads	On-hook		Off-hook	
	Normal	Inverse	Normal	Inverse
Tip/Ring to Ground	Operational	Operational	Operational	Operational
Tip 1/Ring 1 to Ground				
M (Type I, A side)				
Any other leads				
Tip/Ring to All leads	Operational	Operational	Operational	Operational

Observations:

- No current drawn
-

Test specification:	4.1.4 / 2.5 Power line surge		
Test purpose:	Six power line surges (three of each polarity) shall be applied between the phase and neutral terminals of the AC power line while the equipment is being powered. Surges parameters shall comply with requirements 4.1.4.1 of the standard.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 3:42:58 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S.			

Test results

Test leads	On-hook		Off-hook	
	Normal polarity	Inverse polarity	Normal polarity	Inverse polarity
Phase - Neutral	Operational	Operational	Operational	Operational
Phase - Neutral	Operational	Operational	Operational	Operational
Phase - Neutral	Operational	Operational	Operational	Operational

Observations: power pack from Headset base was surged (phone did not have AC power)

Test specification:	4.2 / 2.2 Leakage current limitation		
Test purpose:	Leakage current shall not exceed 10 mA peak at any time during the 90 second test interval described below when the 50-60 Hz AC test voltage in table 1 is applied between the test points in table 1.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 3:59:33 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S.			

Environmental Conditions

TEST	Conditions		
	Temperature	Relative Humidity	Air Pressure
Before Environmental Stress (BES)	23.5 °C	49.7%	100.3 kPa
After Type “B” Surge (ABS)	-	-	-
After Environmental Stress (AES)	23.9 °C	49.9%	100.2 kPa

Test results

Test leads	Test voltage	Leakage current		
		BES	ABS	AES
T/R (1) to exposed conductive surfaces (3)	1000 V rms	66 µA		71 µA
T/R (1) to non registered (4)	1000 V rms	31 µA		35 µA
T/R (1) to auxiliary (6)	1000 V rms			
T/R (1) to E&M (7)	1000 V rms			
T/R (1) to PR, PC, CY1, CY2 (8)	1000 V rms			
Auxiliary (6) to exposed conductive surfaces (3)	1000 V rms			
E&M (7) to exposed conductive surfaces (3)	1000 V rms			
E&M (7) to non registered (4)	1000 V rms			
Auxiliary (6) to non registered (4)	1000 V rms			
Auxiliary (6) to PR, PC, CY1, CY2 (8)	1000 V rms			
AC (2) to T/R (1)	1500 V rms	17 µA		18 µA
AC (2) to exposed conductive surfaces (3)	1500 V rms	34 µA		36 µA
AC (2) to non registered (4)	1500 V rms	32 µA		33 µA
AC (1) to points (5)	1500 V rms			
AC (2) to PR, PC, CY1, CY2 (8)	1500 V rms			
	Verdict	Pass	N/A	Pass

Notes:
1. USB on Plantronics Headset base used as non-registered

Test specification:	4.3.2 / 2.3.7.1 Physical separation of leads		
Test purpose:	To check the connection of non-approved equipment to approved terminal equipment or approved protective circuitry		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:52:14 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Requirement	Description	Verdict
Connection of non-approved equipment to approved terminal equipment or approved protective circuitry: Leads to, or any elements having a conducting path to telephone connections, auxiliary leads or E&M leads shall: a) Be reasonably physically separated and restrained from and be neither routed in the same cable as nor use the same connector as leads or metallic paths connecting power connections; b) Be reasonably physically separated and restrained from and be neither routed in the same cable as nor use adjacent pins on the same connector as metallic paths that lead to non-approved equipment, when the voltages on such metallic paths exceed the non-hazardous voltage source limits in next clause.	The W8200B provides separate connectors for each signal type	Pass

Test specification:	4.3.3 / 2.3.8 Non-hazardous voltage source		
Test purpose:	To verify that the approved terminal equipment or approved protective circuitry comply with requirements of Non-hazardous voltage source		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:53:03 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Test results

Standard reference	Requirement	Description	Verdict
4.3.3	**Non-hazardous voltage source:** For the purposes of this Standard and the limitations on electrical signals applied to system premises wiring in 47 C.F.R. 68.215(d)(5), a voltage source shall be considered a non-hazardous voltage source if it conforms with the requirements of sections 4.1, 4.2 and 4.3.2, with all connections to the source other than primary power connections treated as "telephone connections," and if such source supplies voltages no greater than the following under all modes of operation and of failure: a) AC voltages less than 42.4 VP; b) DC voltages less than 60 V; and c) Combined AC and DC voltages between any conductor and ground are less than 42.4 VP when the absolute value of the DC component is less than 21.2 V, and less than (32.8 + 0.454 x VDC) when the absolute value of the DC component is between 21.2 and 60 V.	The W8200B does not have any hazardous voltage sources.	Pass

Test specification:	4.4.2 / 3.3.1 Voice and data equipment on-hook signal requirements		
Test purpose:	The total power transmitted in the on-hook state by loop-start or ground-start equipment, shall not exceed -55 dBm within the voiceband		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 11:38:29 AM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S.			

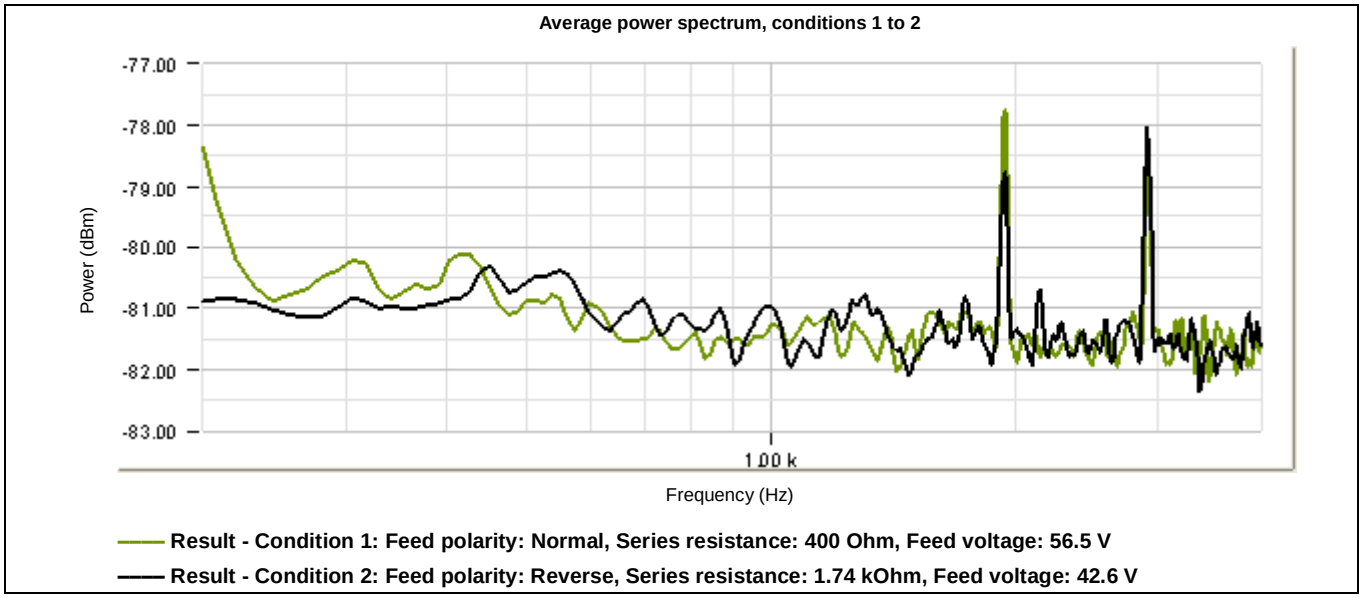
Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

Test ranges

Frequency			
Start	**Stop**	**Acquisition settings**	**Termination**
200.00 Hz	4.00 kHz	Acquisition time = 100 ms, Overall meas. time = 30 s	600 Ohm



Max power

Power	Limit	Verdict
Condition 1: Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-60.18 dBm	-55 dBm	Pass
Condition 2: Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-60.31 dBm	-55 dBm	Pass

Test specification:	4.4.2 / 3.3.1 Voice and data equipment on-hook signal requirements		
Test purpose:	The total power transmitted in the on-hook state by loop-start or ground-start equipment, shall not exceed -55 dBm within the voiceband		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:41:20 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

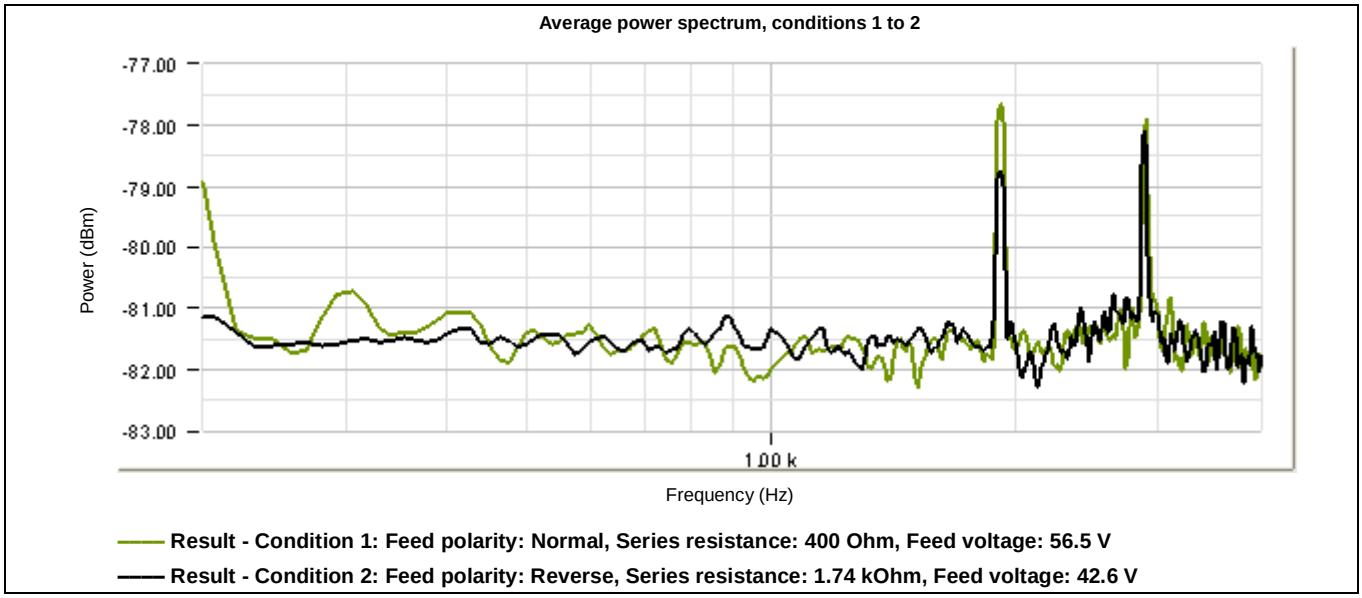
Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

Test ranges

Frequency			
Start	**Stop**	**Acquisition settings**	**Termination**
200.00 Hz	4.00 kHz	Acquisition time = 100 ms, Overall meas. time = 30 s	600 Ohm



Max power

Power	Limit	Verdict
Condition 1: Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-60.83 dBm	-55 dBm	Pass
Condition 2: Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-60.70 dBm	-55 dBm	Pass

Test specification:	4.4.2 / 3.3.1 Voice and data equipment on-hook signal requirements		
Test purpose:	The total power transmitted in the on-hook state by loop-start or ground-start equipment, shall not exceed -55 dBm within the voiceband		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:11:12 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

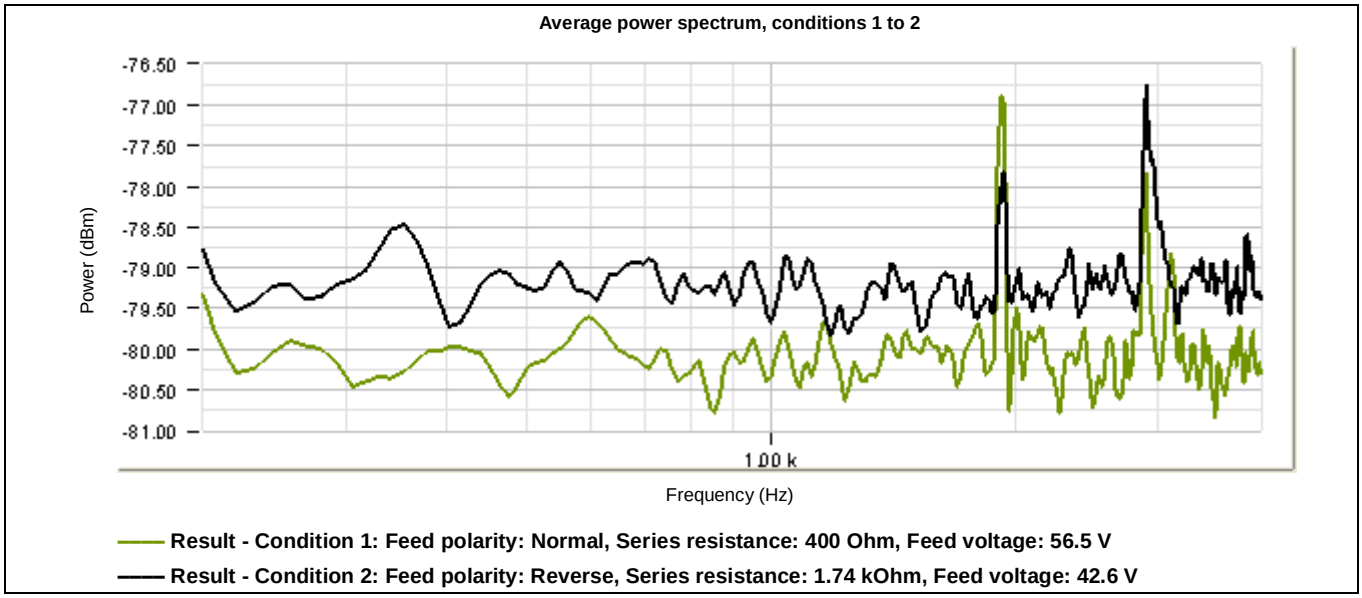
Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

Test ranges

Frequency			
Start	**Stop**	**Acquisition settings**	**Termination**
200.00 Hz	4.00 kHz	Acquisition time = 100 ms, Overall meas. time = 30 s	600 Ohm



Max power

Power	Limit	Verdict
Condition 1: Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-59.31 dBm	-55 dBm	Pass
Condition 2: Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-58.58 dBm	-55 dBm	Pass

Test specification:	5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms within the 0.1 - 4 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 11:49:25 AM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

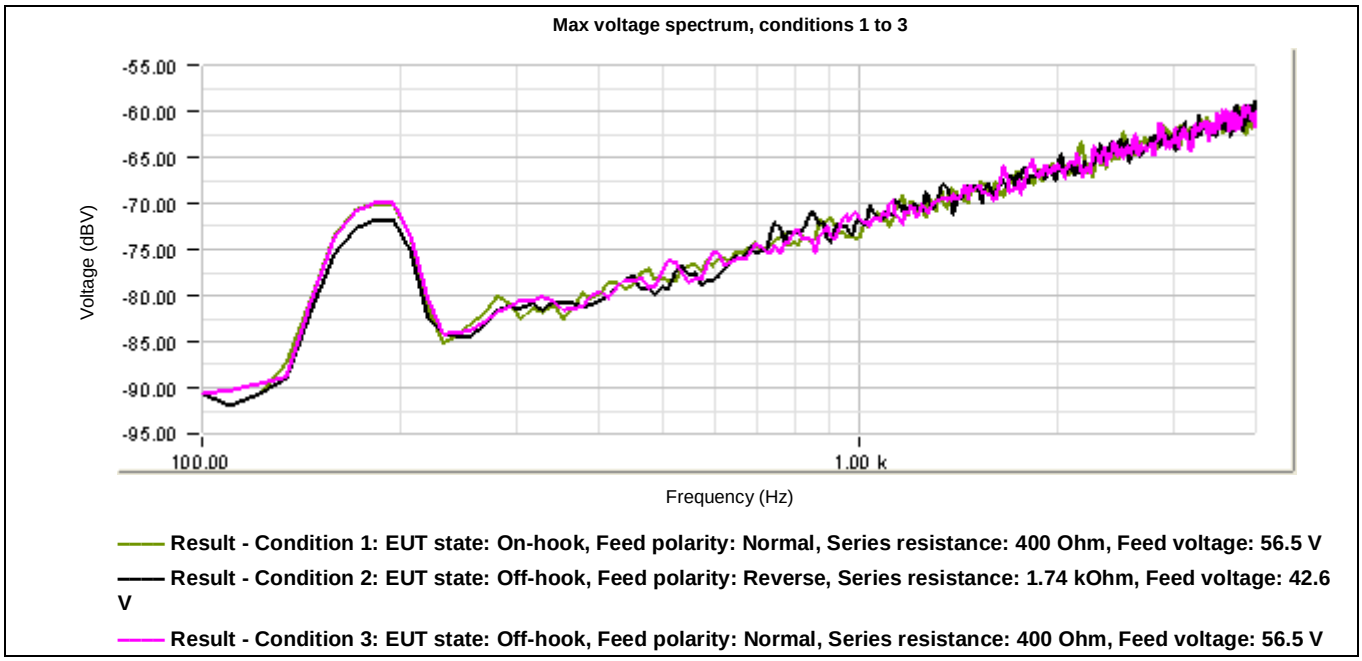
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Transfer function**
100.00 Hz	4.00 kHz	Acquisition time = 100 ms, Overall meas. time = 30 s	600 Ohm Metallic / 500 Ohm Longitudinal	u(f)*f/Fmax



Test specification:	5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms within the 0.1 - 4 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 11:49:25 AM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Max voltage

Maximum voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-51.20 dBV	-30 dBV	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-51.69 dBV	-30 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-51.22 dBV	-30 dBV	Pass

Test specification:	5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms within the 0.1 - 4 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:17:06 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

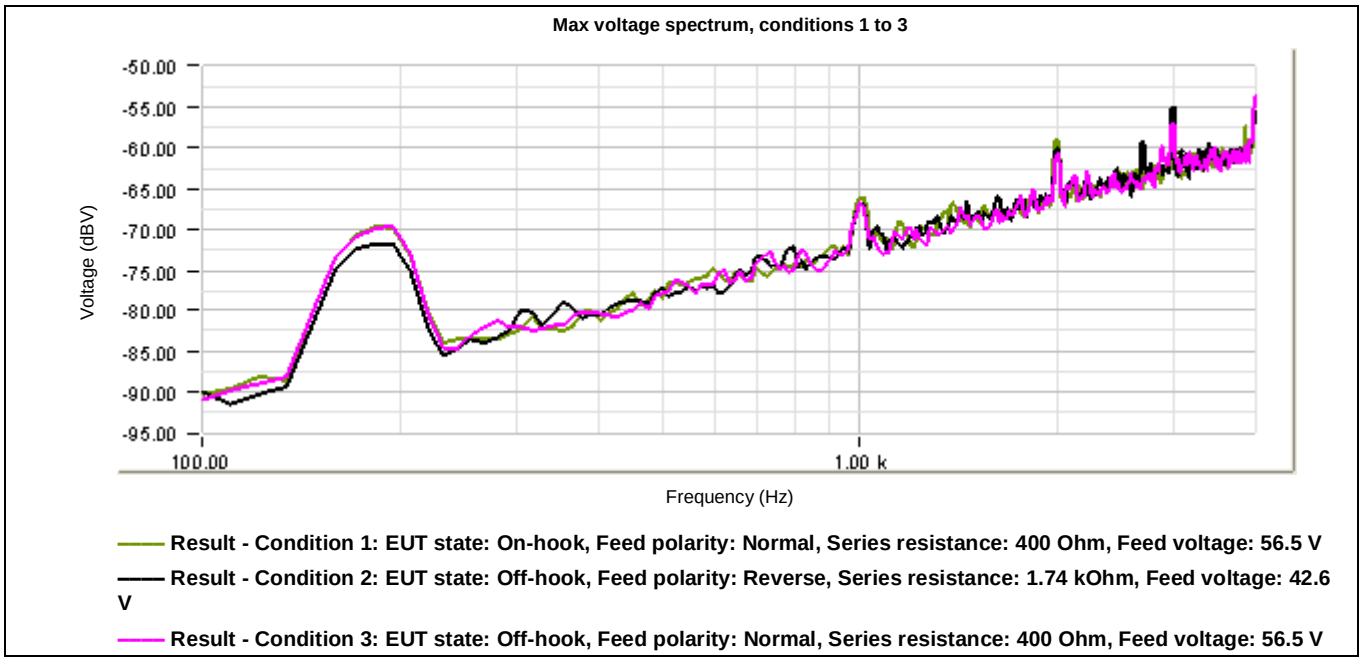
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Transfer function**
100.00 Hz	4.00 kHz	Acquisition time = 100 ms, Overall meas. time = 30 s	600 Ohm Metallic / 500 Ohm Longitudinal	u(f)*f/Fmax



Test specification:	5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms within the 0.1 - 4 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:17:06 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Max voltage

Maximum voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-50.50 dBV	-30 dBV	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-49.90 dBV	-30 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-49.99 dBV	-30 dBV	Pass

Test specification:	5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms within the 0.1 - 4 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:13:41 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

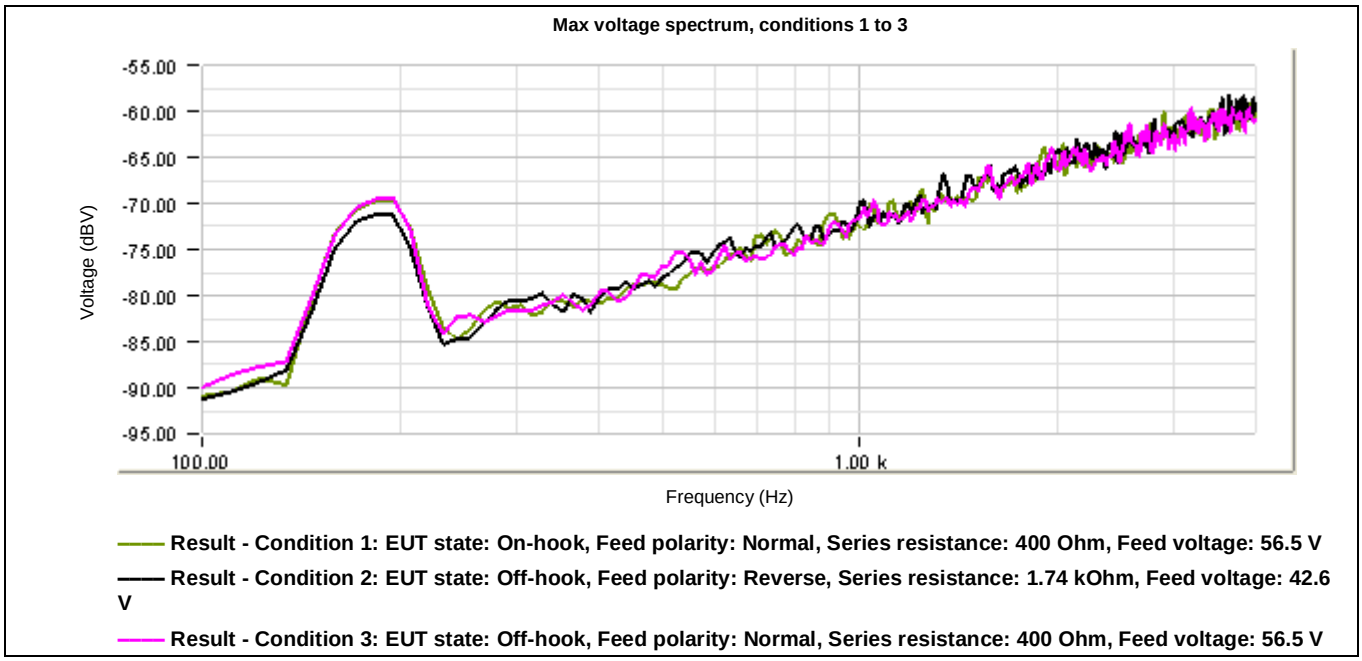
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Transfer function**
100.00 Hz	4.00 kHz	Acquisition time = 100 ms, Overall meas. time = 30 s	600 Ohm Metallic / 500 Ohm Longitudinal	u(f)*f/Fmax



Test specification:	5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms within the 0.1 - 4 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:13:41 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Max voltage

Maximum voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-51.63 dBV	-30 dBV	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-50.89 dBV	-30 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-51.53 dBV	-30 dBV	Pass

Test specification:	5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms within the 0.1 - 4 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:36:31 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

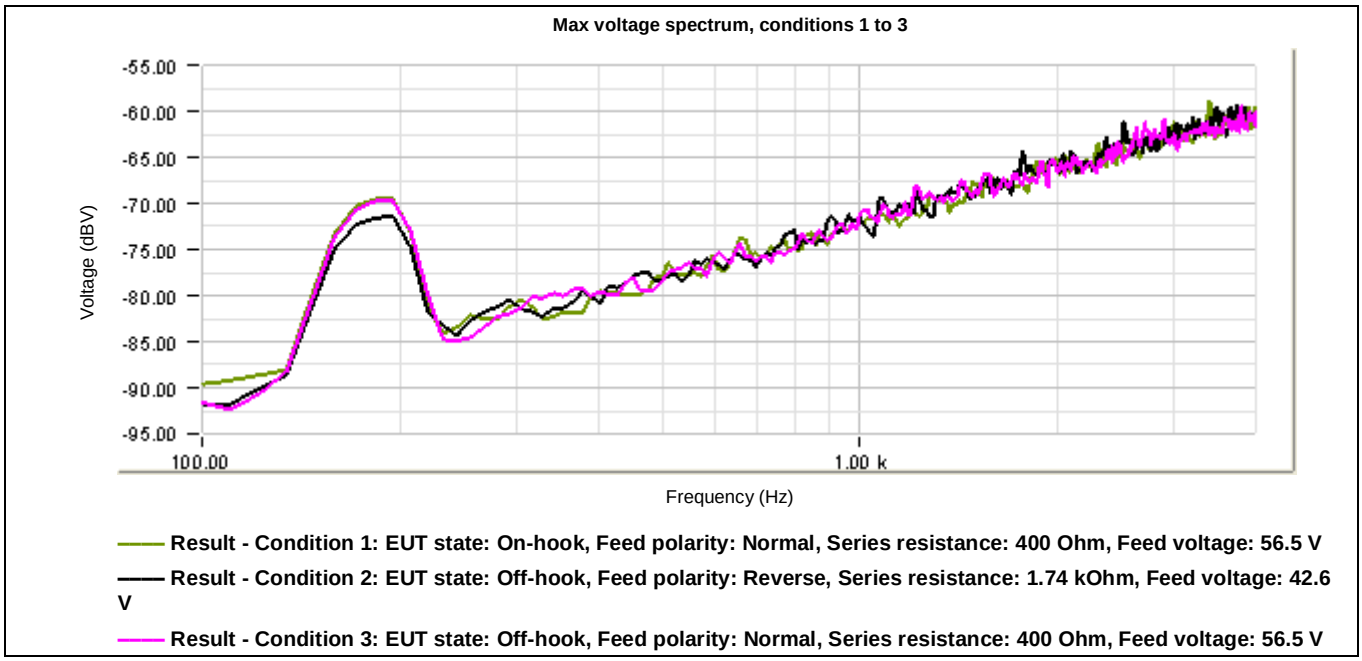
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Transfer function**
100.00 Hz	4.00 kHz	Acquisition time = 100 ms, Overall meas. time = 30 s	600 Ohm Metallic / 500 Ohm Longitudinal	u(f)*f/Fmax



Test specification:	5.1.7 / 3.3.2.1 Longitudinal voltage at frequencies below 4 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms within the 0.1 - 4 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:36:31 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Max voltage

Maximum voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-51.80 dBV	-30 dBV	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-51.31 dBV	-30 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-51.86 dBV	-30 dBV	Pass

Test specification:	5.1.8.1 / 3.4.6 (2) Metallic voltage 8 kHz - 12 kHz		
Test purpose:	To verify that metallic rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 8 - 12 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 11:51:24 AM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

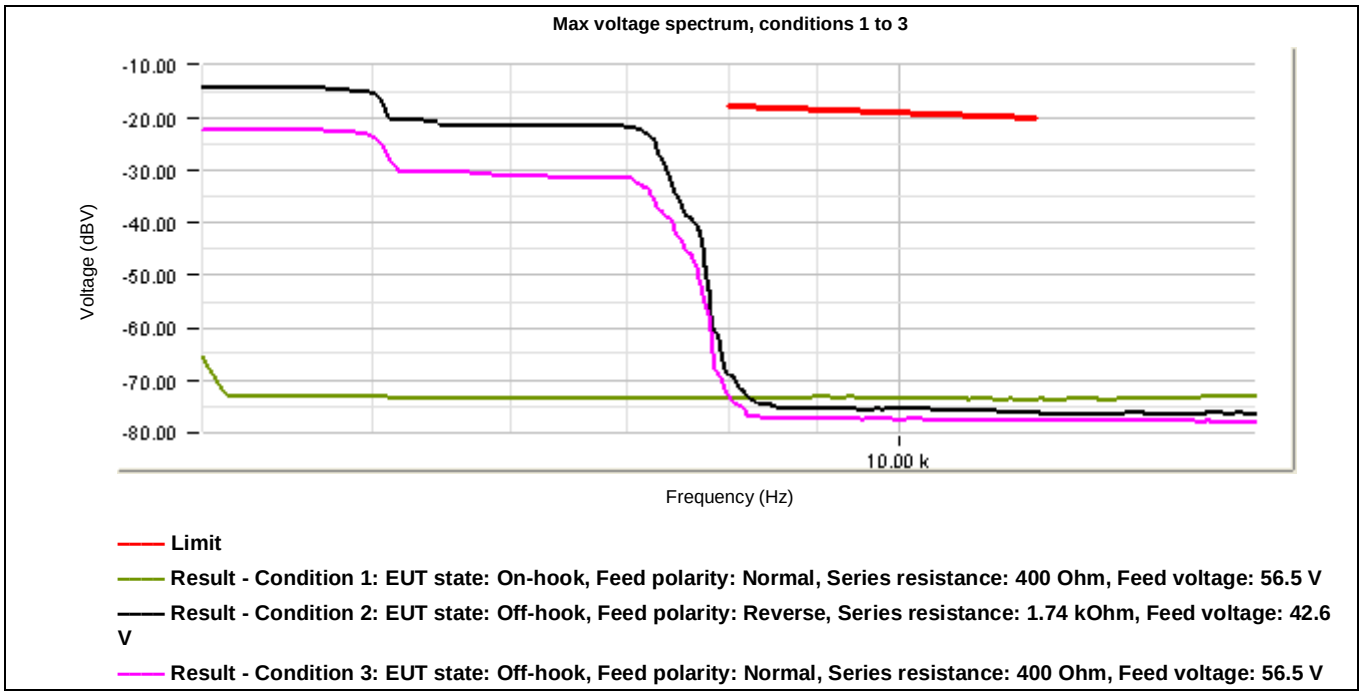
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
4.00 kHz	16.00 kHz	8 kHz	Resolution bandwidth = 100.00 Hz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	300 Ohm



Test specification:	5.1.8.1 / 3.4.6 (2) Metallic voltage 8 kHz - 12 kHz		
Test purpose:	To verify that metallic rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 8 - 12 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:20:23 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

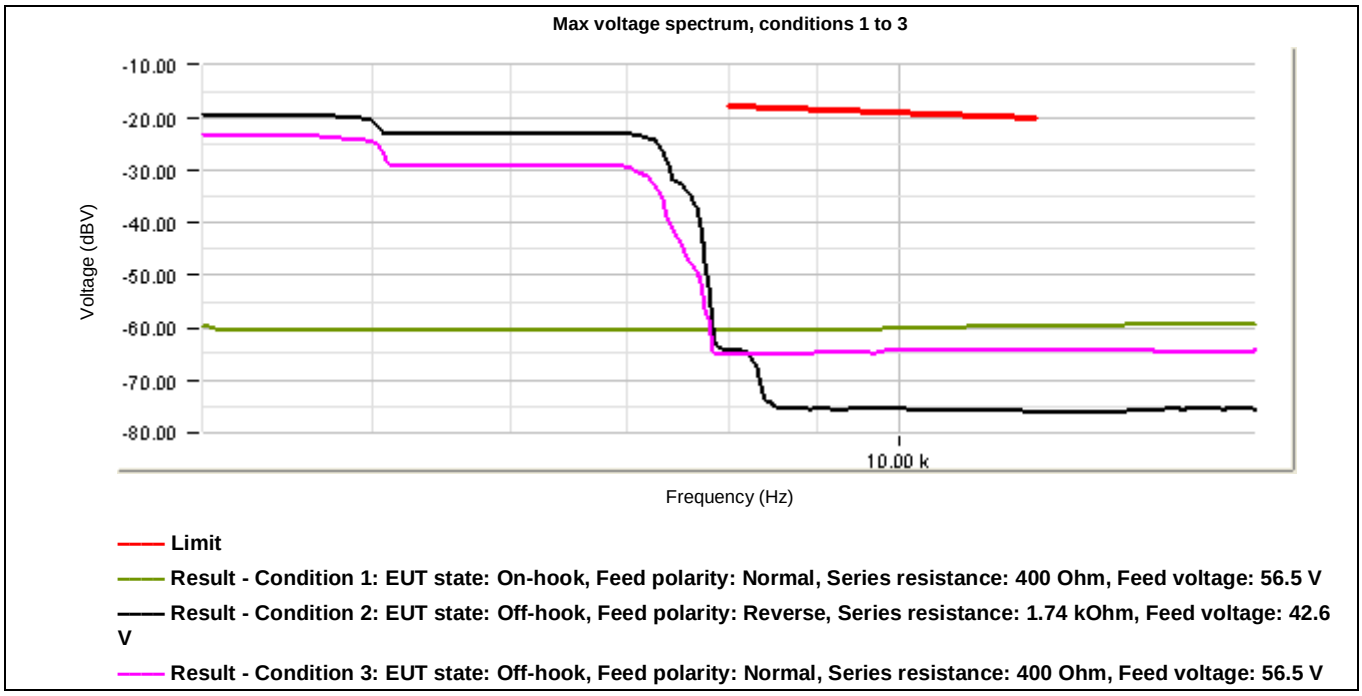
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
4.00 kHz	16.00 kHz	8 kHz	Resolution bandwidth = 100.00 Hz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	300 Ohm



Test specification:	5.1.8.1 / 3.4.6 (2) Metallic voltage 8 kHz - 12 kHz		
Test purpose:	To verify that metallic rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 8 - 12 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:15:32 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

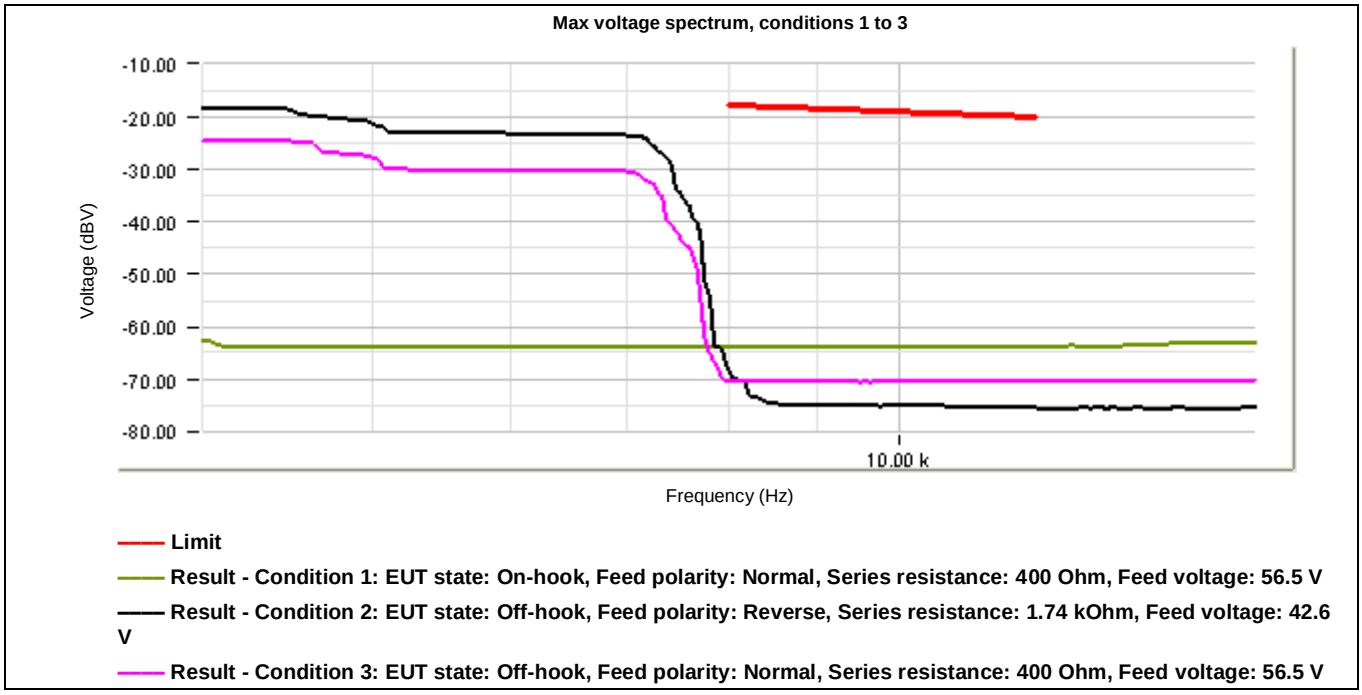
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
4.00 kHz	16.00 kHz	8 kHz	Resolution bandwidth = 100.00 Hz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	300 Ohm



Test specification:	5.1.8.1 / 3.4.6 (2) Metallic voltage 8 kHz - 12 kHz		
Test purpose:	To verify that metallic rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 8 - 12 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:38:29 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

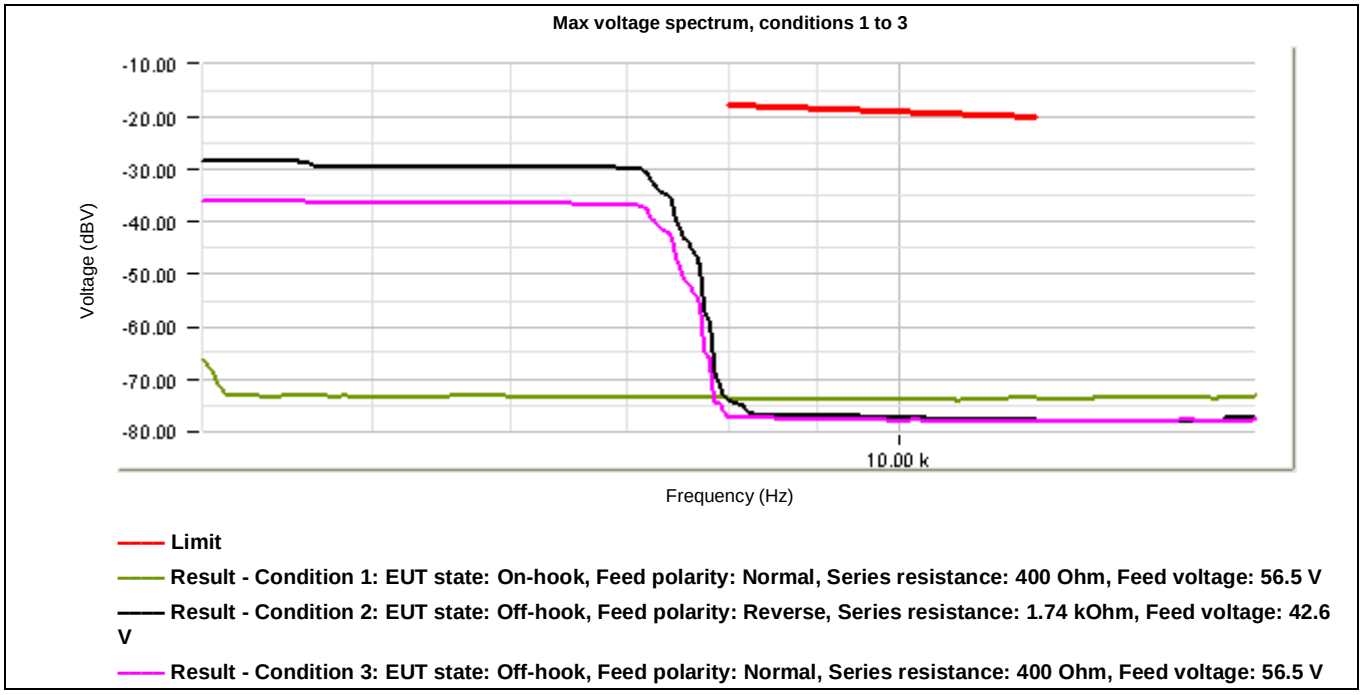
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
4.00 kHz	16.00 kHz	8 kHz	Resolution bandwidth = 100.00 Hz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	300 Ohm



Test specification:	5.1.8.1 / 3.4.6 (2) Metallic voltage 12 kHz - 266 kHz		
Test purpose:	To verify that metallic rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 12 - 266 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 11:53:45 AM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

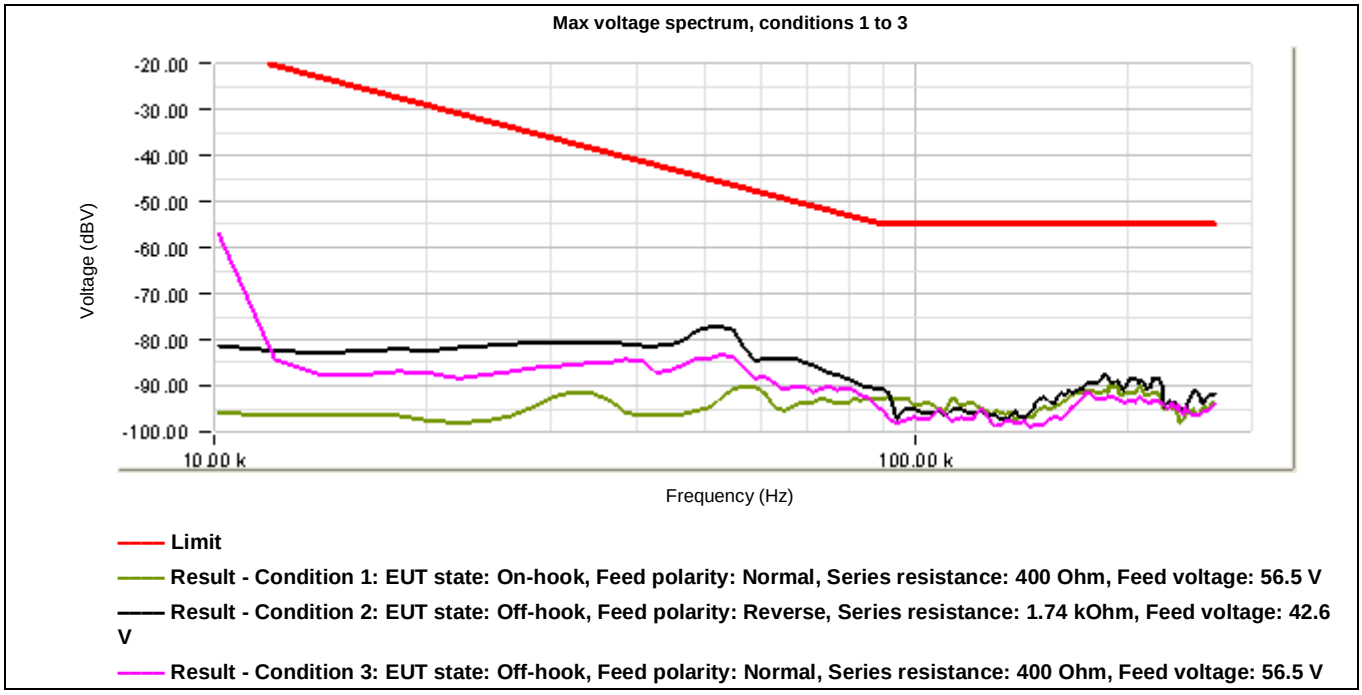
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.5 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
12.00 kHz	266.00 kHz	0 Hz	Resolution bandwidth = 8.00 kHz, Averaging interval = 100.00 ms, Overall meas. time = 30 s	135 Ohm



Test specification:	5.1.8.1 / 3.4.6 (2) Metallic voltage 12 kHz - 266 kHz		
Test purpose:	To verify that metallic rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 12 - 266 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:23:12 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.5 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

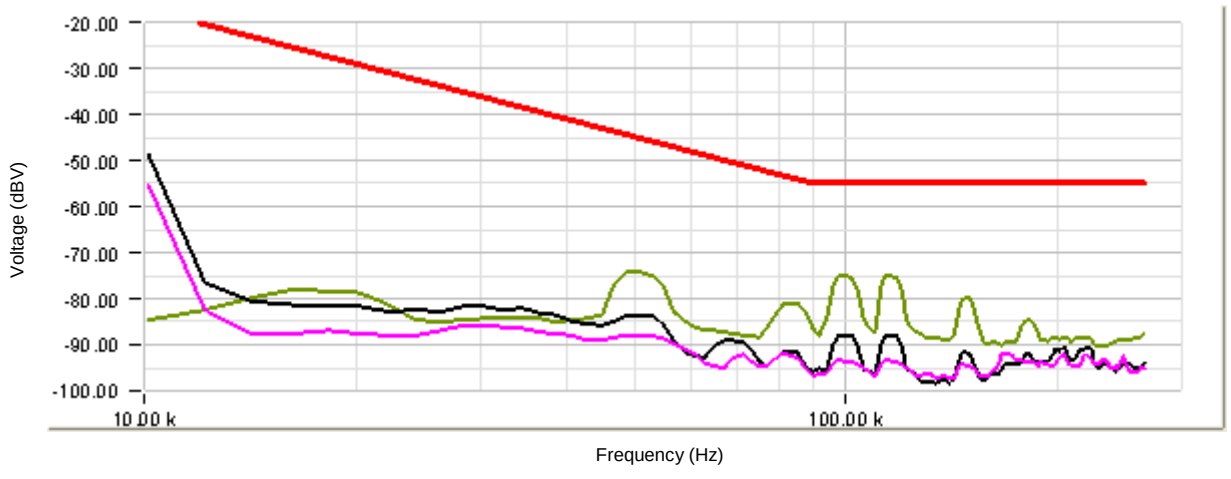
General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
12.00 kHz	266.00 kHz	0 Hz	Resolution bandwidth = 8.00 kHz, Averaging interval = 100.00 ms, Overall meas. time = 30 s	135 Ohm

Max voltage spectrum, conditions 1 to 3



Limit

Result - Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V

Result - Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V

Result - Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V

Test specification:	5.1.8.1 / 3.4.6 (2) Metallic voltage 12 kHz - 266 kHz		
Test purpose:	To verify that metallic rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 12 - 266 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:17:49 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

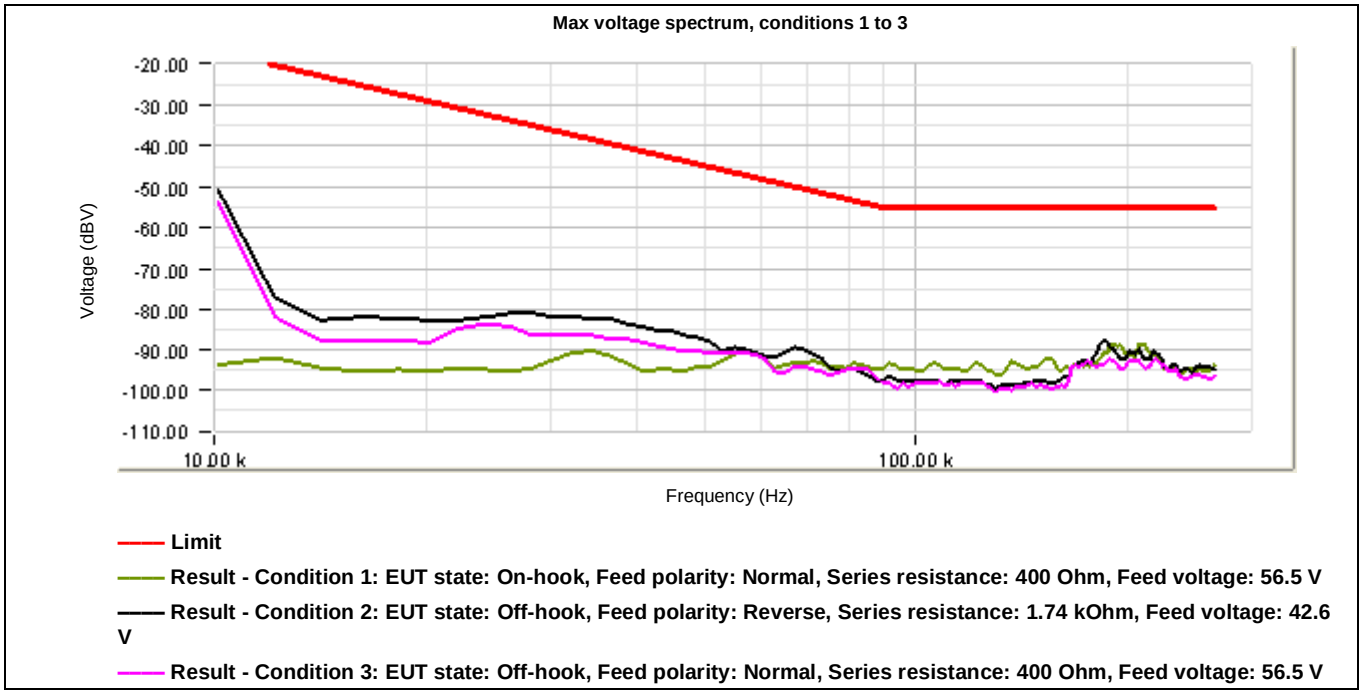
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.5 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
12.00 kHz	266.00 kHz	0 Hz	Resolution bandwidth = 8.00 kHz, Averaging interval = 100.00 ms, Overall meas. time = 30 s	135 Ohm



Test specification:	5.1.8.1 / 3.4.6 (2) Metallic voltage 12 kHz - 266 kHz		
Test purpose:	To verify that metallic rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 12 - 266 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:41:22 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

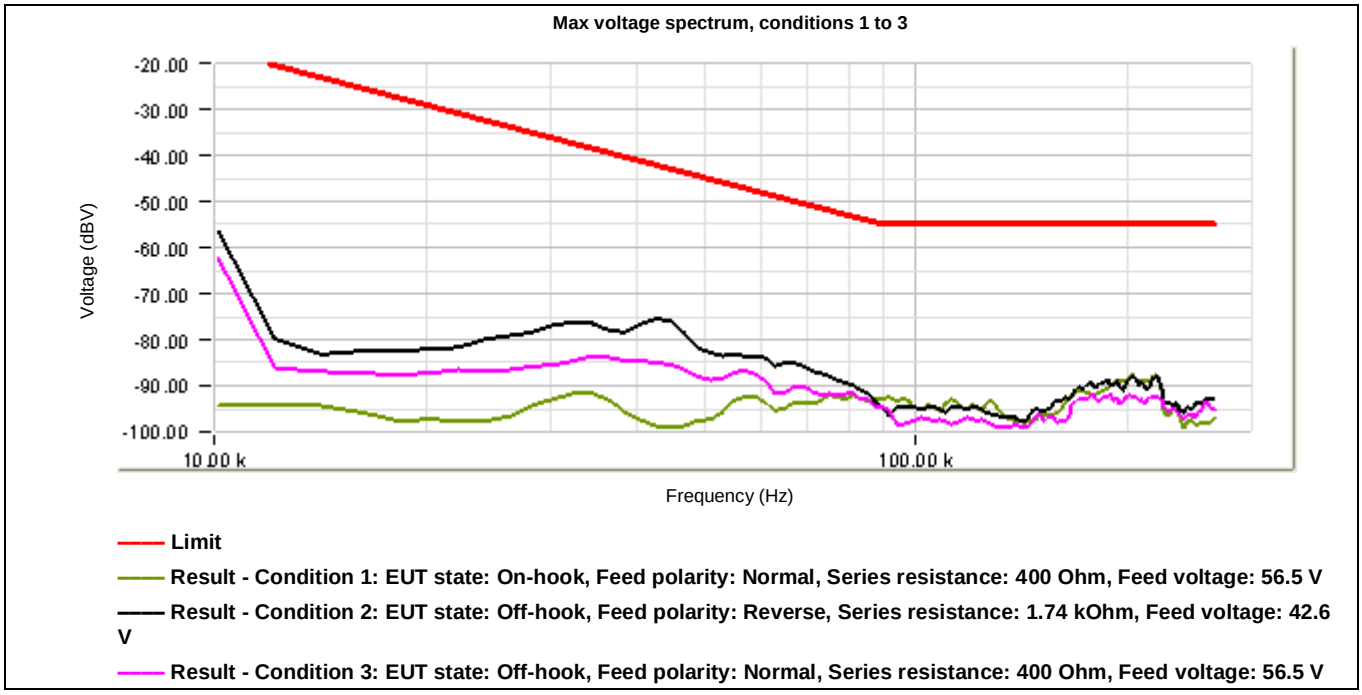
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.5 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
12.00 kHz	266.00 kHz	0 Hz	Resolution bandwidth = 8.00 kHz, Averaging interval = 100.00 ms, Overall meas. time = 30 s	135 Ohm



Test specification:	5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz		
Test purpose:	To verify that metallic rms voltage averaged over 2 us at 270 kHz - 30 MHz frequency range does not exceed -15 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 11:56:08 AM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

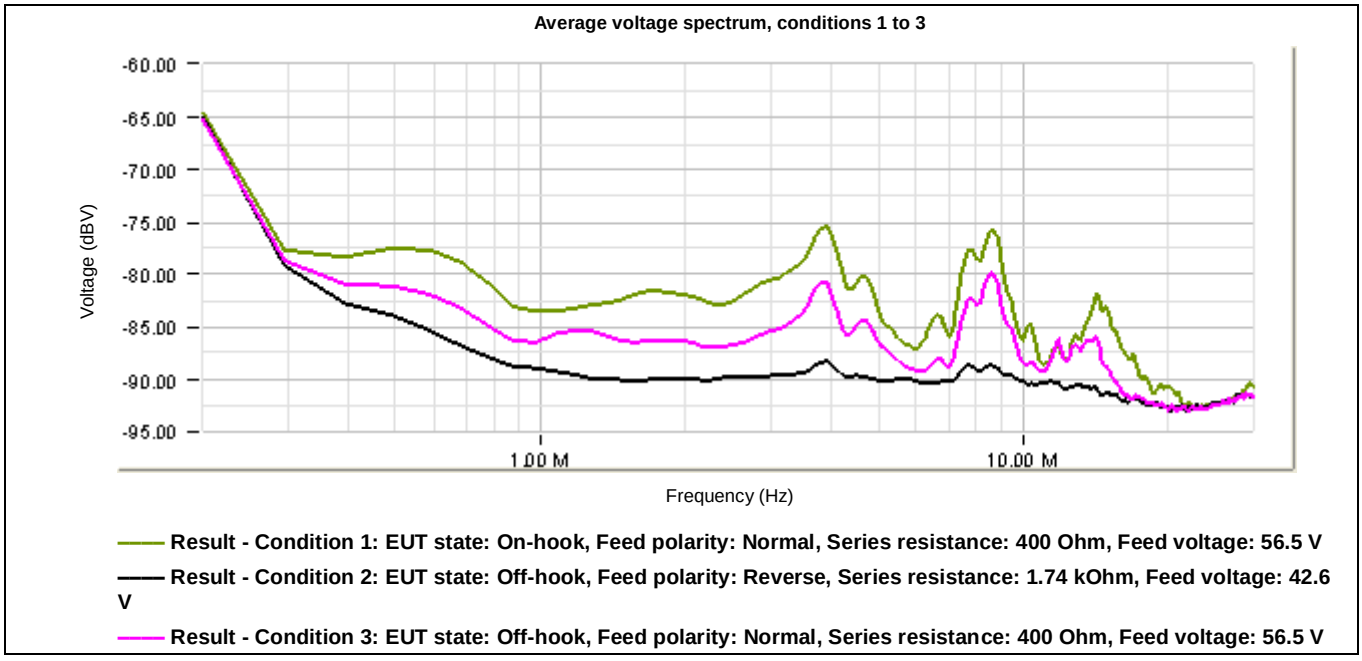
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Filter**
270.00 kHz	30.00 MHz	Acquisition time = 10 us, Overall meas. time = 20 s	135 Ohm	250kHz high pass filter



Max voltage

Voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-55.69 dBV	-15 dBV	Pass

Test specification:	5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz		
Test purpose:	To verify that metallic rms voltage averaged over 2 us at 270 kHz - 30 MHz frequency range does not exceed -15 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 11:56:08 AM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Voltage	Limit	Verdict
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-62.70 dBV	-15 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-59.78 dBV	-15 dBV	Pass

Test specification:	5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz		
Test purpose:	To verify that metallic rms voltage averaged over 2 us at 270 kHz - 30 MHz frequency range does not exceed -15 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:25:26 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

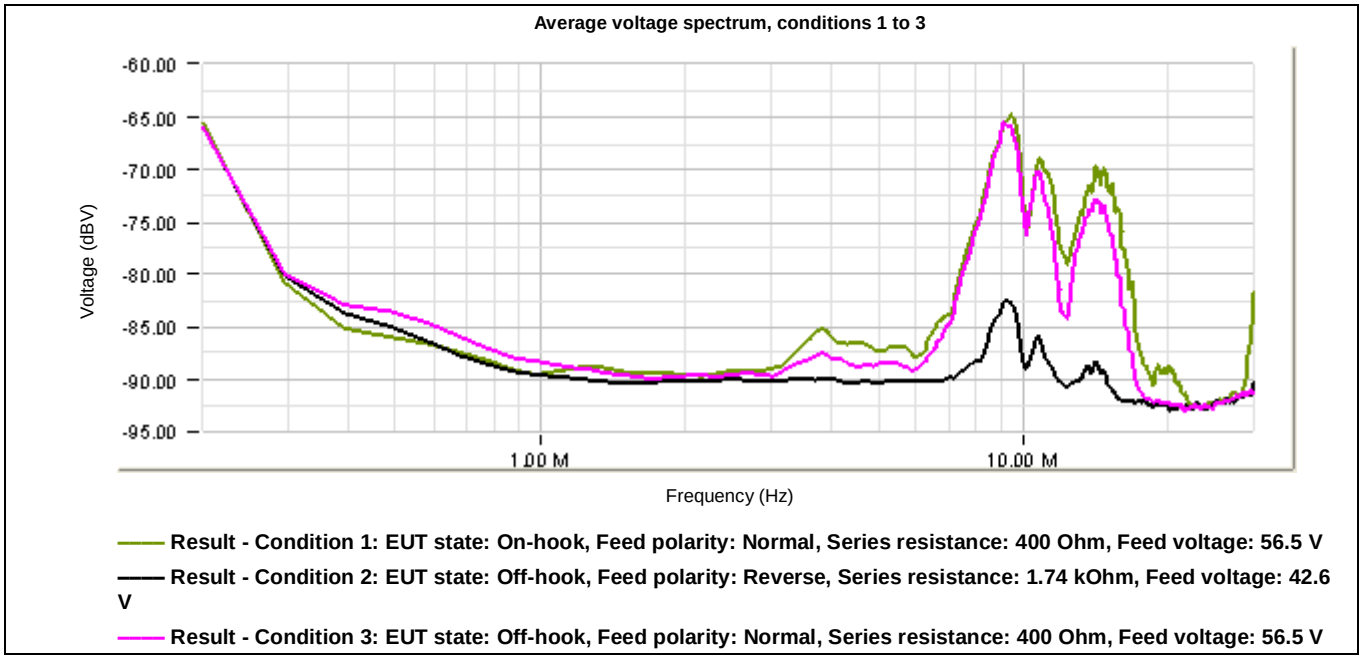
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Filter**
270.00 kHz	30.00 MHz	Acquisition time = 10 us, Overall meas. time = 20 s	135 Ohm	250kHz high pass filter



Max voltage

Voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-34.50 dBV	-15 dBV	Pass

Test specification:	5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz		
Test purpose:	To verify that metallic rms voltage averaged over 2 us at 270 kHz - 30 MHz frequency range does not exceed -15 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:25:26 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Voltage	Limit	Verdict
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-56.52 dBV	-15 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-38.80 dBV	-15 dBV	Pass

Test specification:	5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz		
Test purpose:	To verify that metallic rms voltage averaged over 2 us at 270 kHz - 30 MHz frequency range does not exceed -15 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:19:43 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

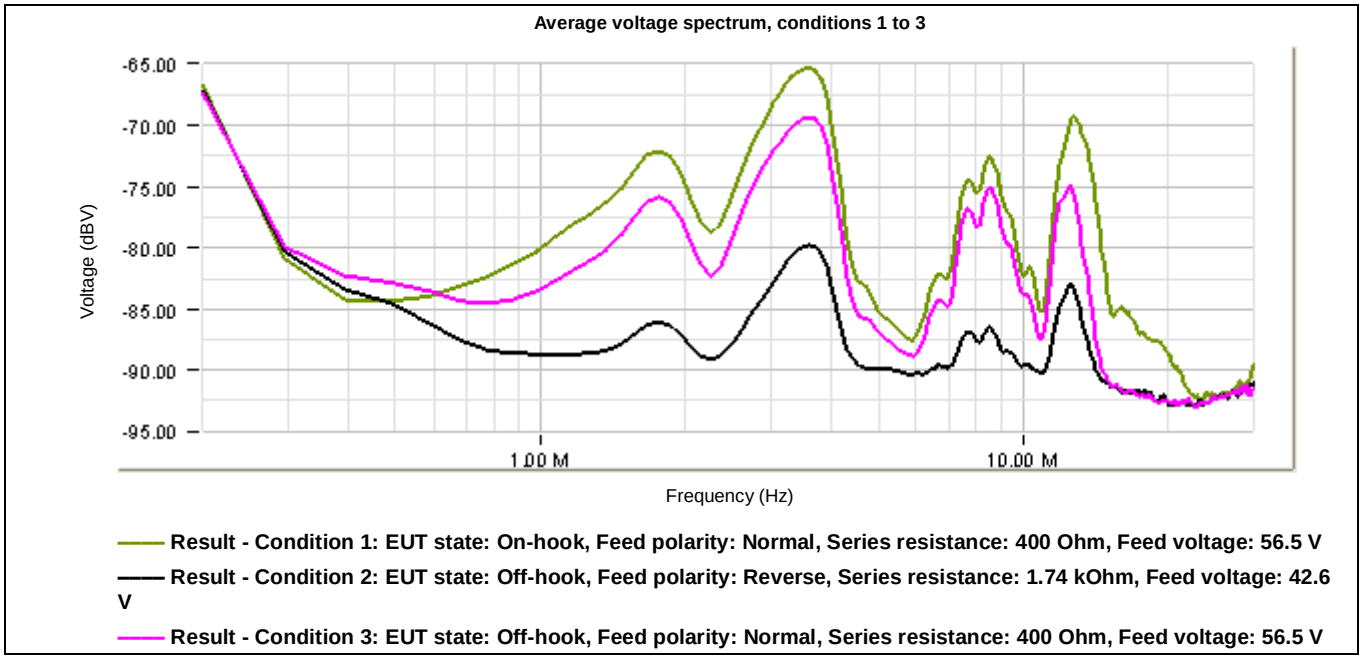
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Filter**
270.00 kHz	30.00 MHz	Acquisition time = 10 us, Overall meas. time = 20 s	135 Ohm	250kHz high pass filter



Max voltage

Voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-51.04 dBV	-15 dBV	Pass

Test specification:	5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz		
Test purpose:	To verify that metallic rms voltage averaged over 2 us at 270 kHz - 30 MHz frequency range does not exceed -15 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:19:43 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Voltage	Limit	Verdict
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-63.30 dBV	-15 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-54.80 dBV	-15 dBV	Pass

Test specification:	5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz		
Test purpose:	To verify that metallic rms voltage averaged over 2 us at 270 kHz - 30 MHz frequency range does not exceed -15 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:43:37 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

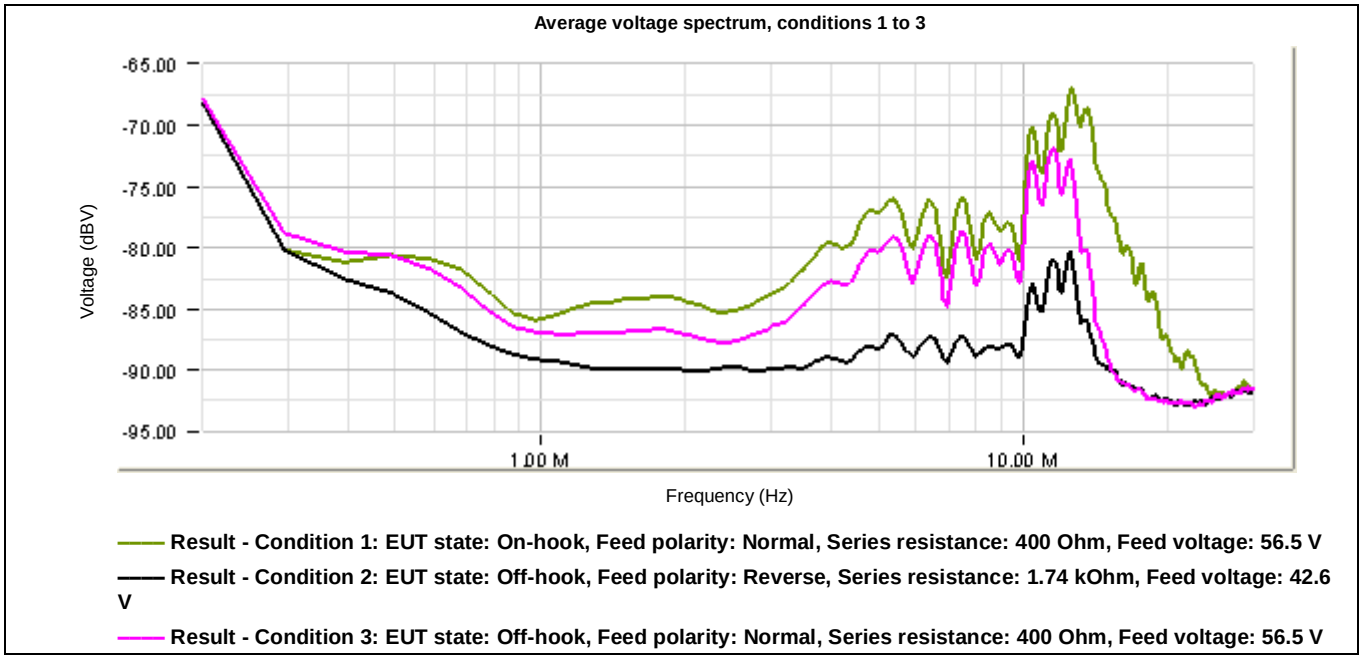
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Filter**
270.00 kHz	30.00 MHz	Acquisition time = 10 us, Overall meas. time = 20 s	135 Ohm	250kHz high pass filter



Max voltage

Voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-50.38 dBV	-15 dBV	Pass

Test specification:	5.1.8.2 / 3.4.6 (3) Metallic voltage 270 kHz - 30 MHz		
Test purpose:	To verify that metallic rms voltage averaged over 2 us at 270 kHz - 30 MHz frequency range does not exceed -15 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:43:37 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

	Voltage	Limit	Verdict
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V			**Pass**
	-62.81 dBV	-15 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V			**Pass**
	-56.09 dBV	-15 dBV	Pass

Test specification:	5.1.8.3 / 3.3.2.2 Longitudinal voltage 8 kHz - 12 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 8 - 12 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 11:59:42 AM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

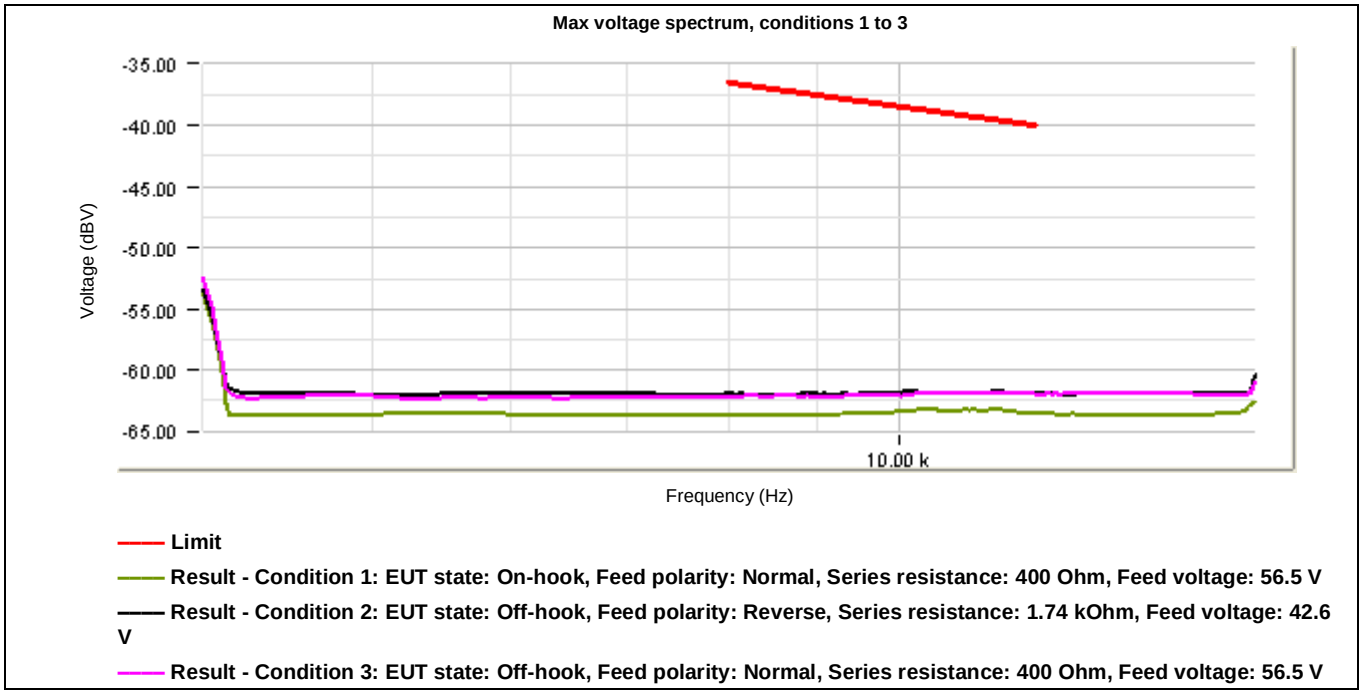
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
4.00 kHz	16.00 kHz	8 kHz	Resolution bandwidth = 100.00 Hz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	300 Ohm Metallic / 500 Ohm Longitudinal



Test specification:	5.1.8.3 / 3.3.2.2 Longitudinal voltage 8 kHz - 12 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 8 - 12 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:27:19 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

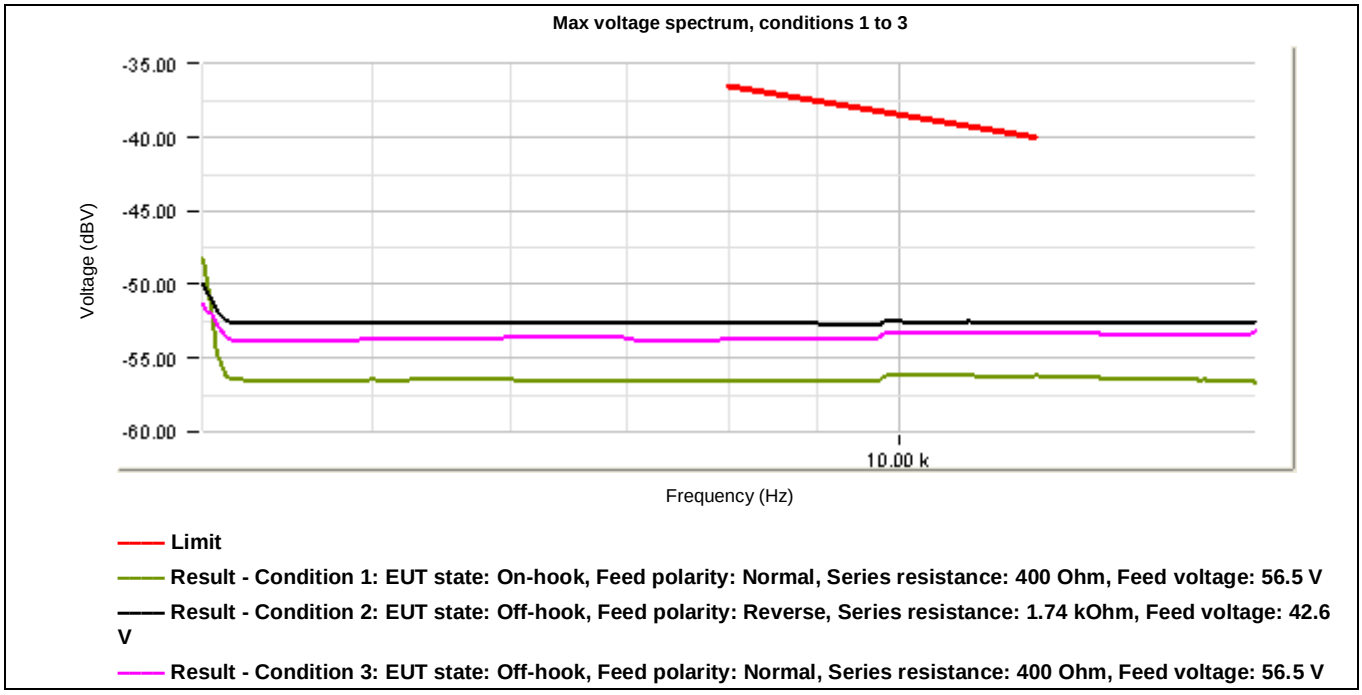
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
4.00 kHz	16.00 kHz	8 kHz	Resolution bandwidth = 100.00 Hz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	300 Ohm Metallic / 500 Ohm Longitudinal



Test specification:	5.1.8.3 / 3.3.2.2 Longitudinal voltage 8 kHz - 12 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 8 - 12 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:21:30 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

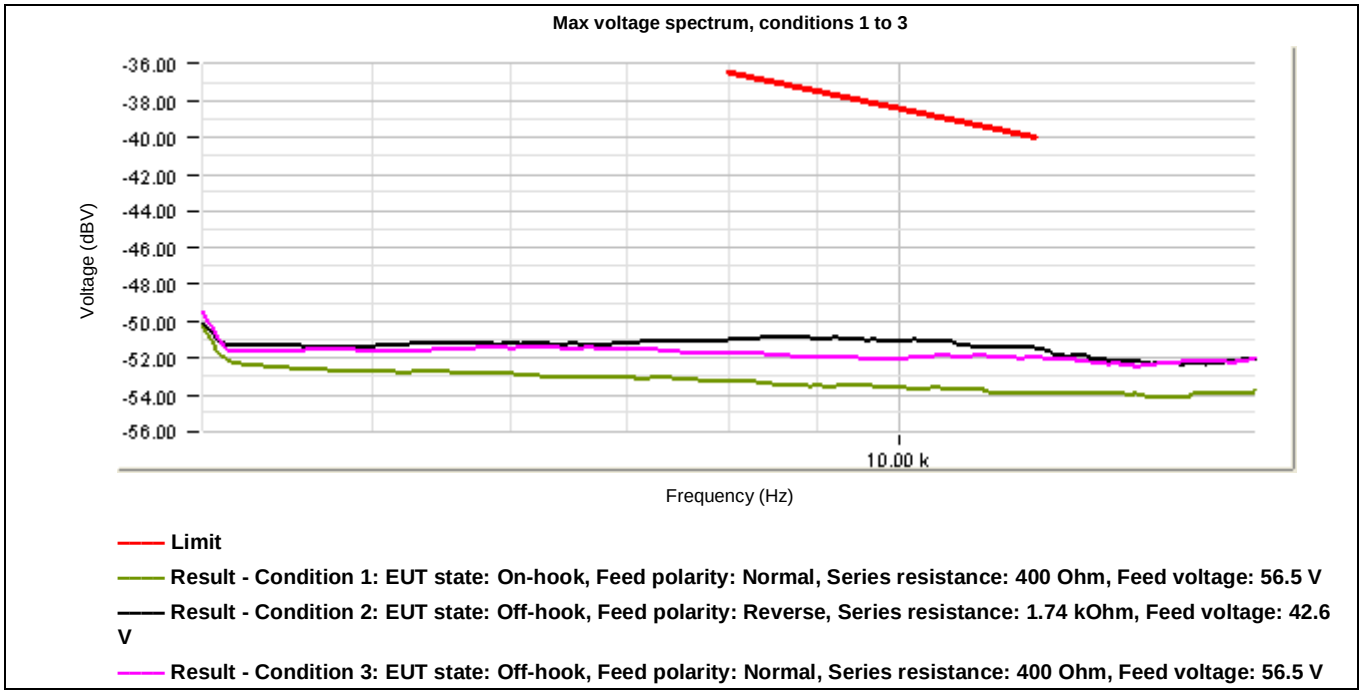
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
4.00 kHz	16.00 kHz	8 kHz	Resolution bandwidth = 100.00 Hz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	300 Ohm Metallic / 500 Ohm Longitudinal



Test specification:	5.1.8.3 / 3.3.2.2 Longitudinal voltage 8 kHz - 12 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 8 - 12 kHz frequency range does not exceed the test limit. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:45:37 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

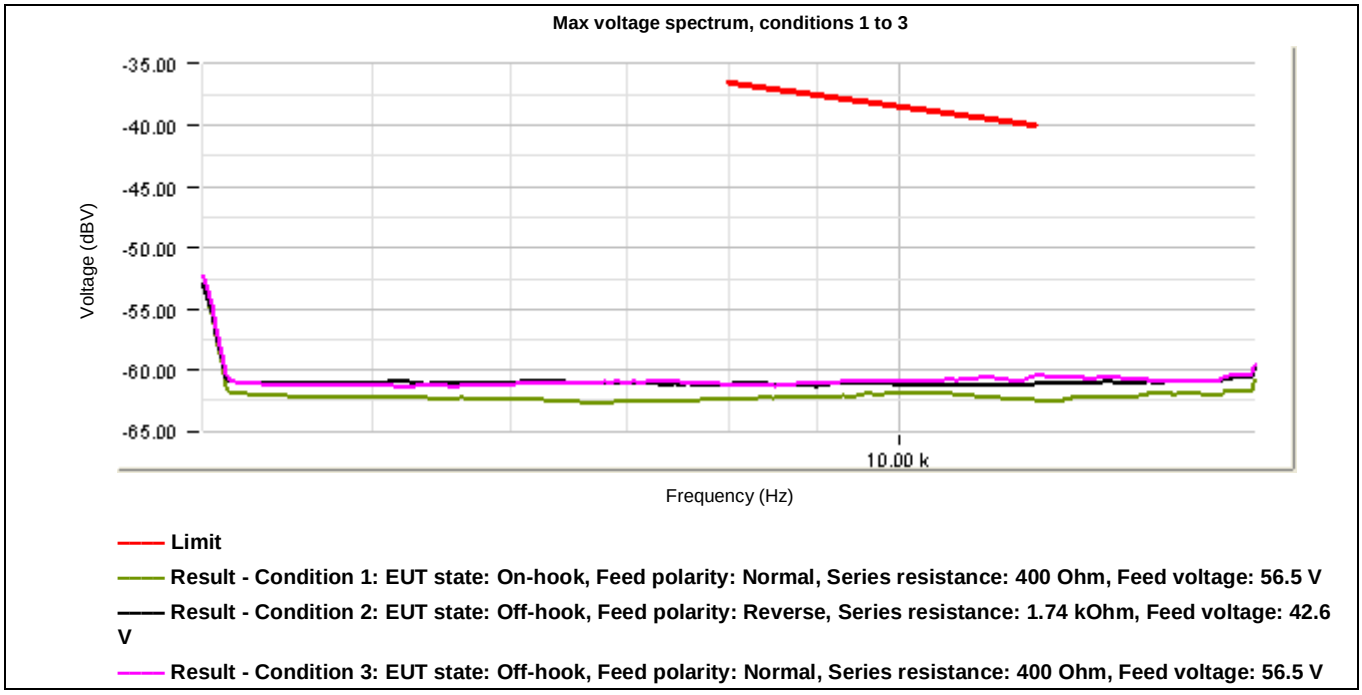
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**RMS bandwidth**	**Acquisition settings**	**Termination**
4.00 kHz	16.00 kHz	8 kHz	Resolution bandwidth = 100.00 Hz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	300 Ohm Metallic / 500 Ohm Longitudinal



Test specification:	5.1.8.3 / 3.3.2.2 Longitudinal voltage 12 kHz - 270 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 12 - 270 kHz frequency range does not exceed the test limit.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:01:34 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

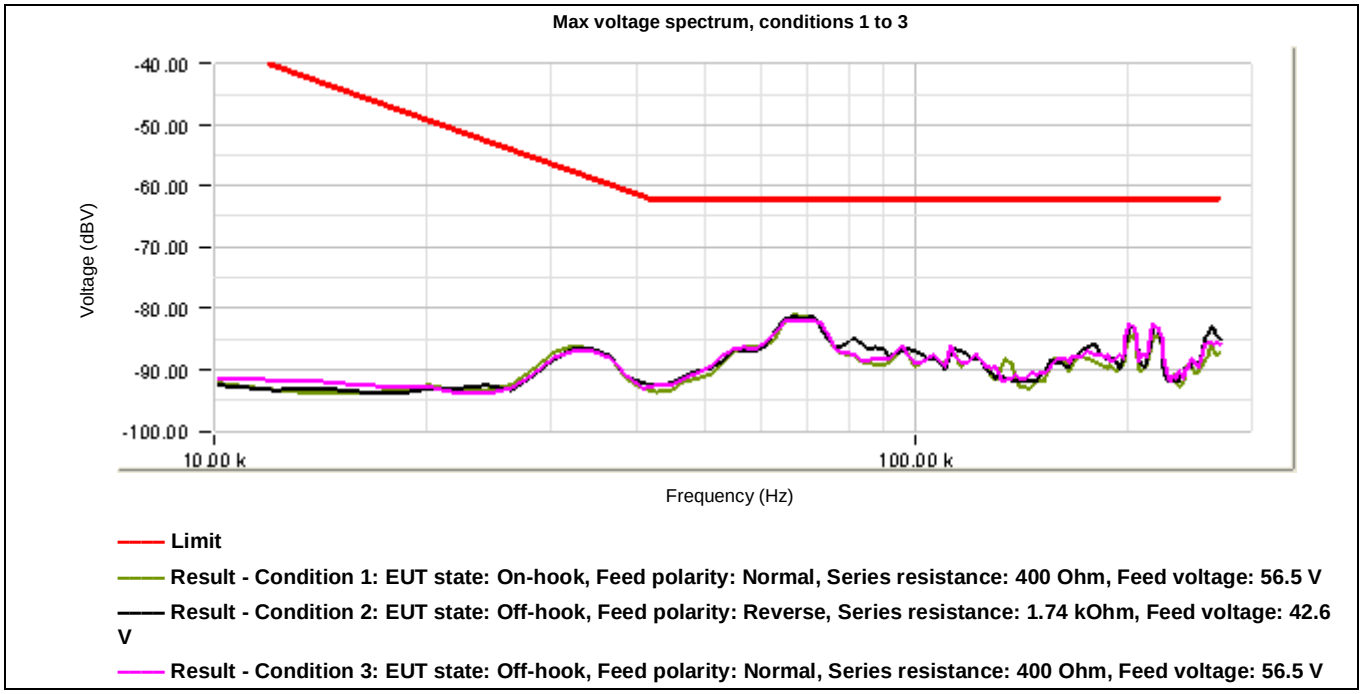
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Acoustic test setup	Test head

Test ranges

Frequency			
Start	**Stop**	**Acquisition settings**	**Termination**
12.00 kHz	270.00 kHz	Resolution bandwidth = 8.00 kHz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	135 Ohm Metallic / 90 Ohm Longitudinal



Test specification:	5.1.8.3 / 3.3.2.2 Longitudinal voltage 12 kHz - 270 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 12 - 270 kHz frequency range does not exceed the test limit.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:29:14 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

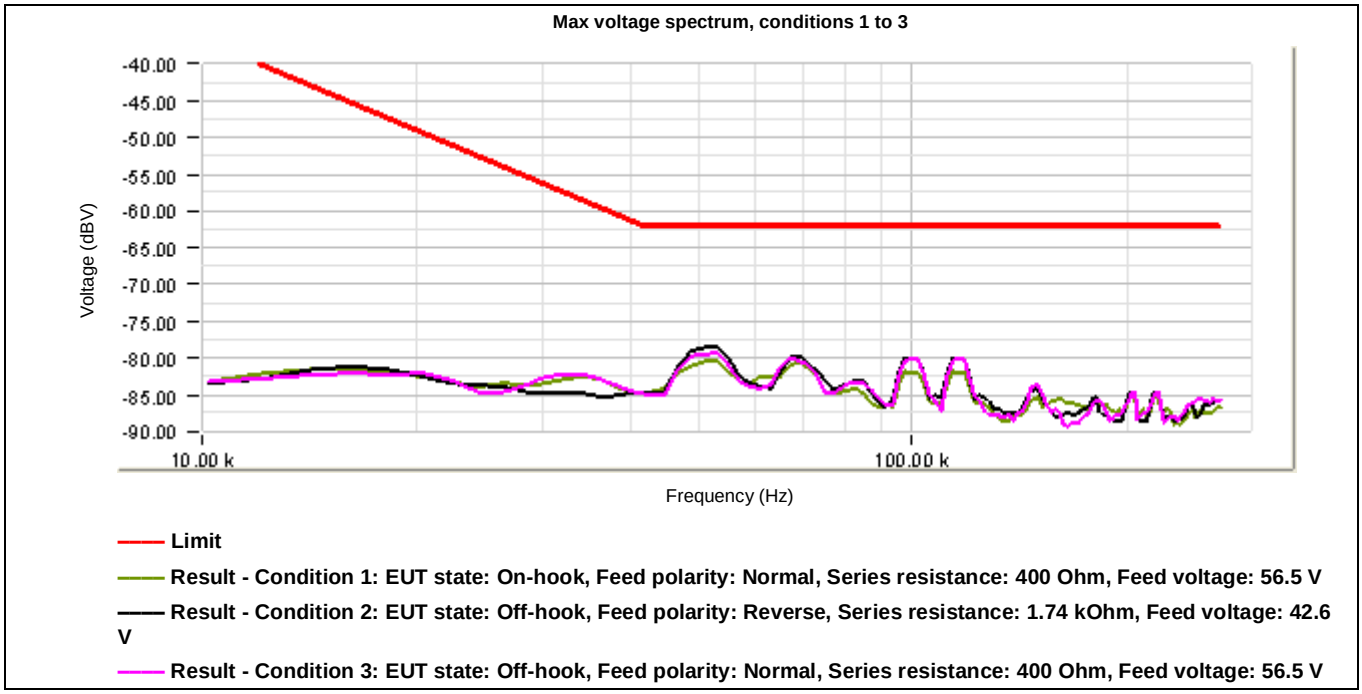
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Acoustic test setup	Test head

Test ranges

Frequency			
Start	**Stop**	**Acquisition settings**	**Termination**
12.00 kHz	270.00 kHz	Resolution bandwidth = 8.00 kHz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	135 Ohm Metallic / 90 Ohm Longitudinal



Test specification:	5.1.8.3 / 3.3.2.2 Longitudinal voltage 12 kHz - 270 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 12 - 270 kHz frequency range does not exceed the test limit.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:23:32 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

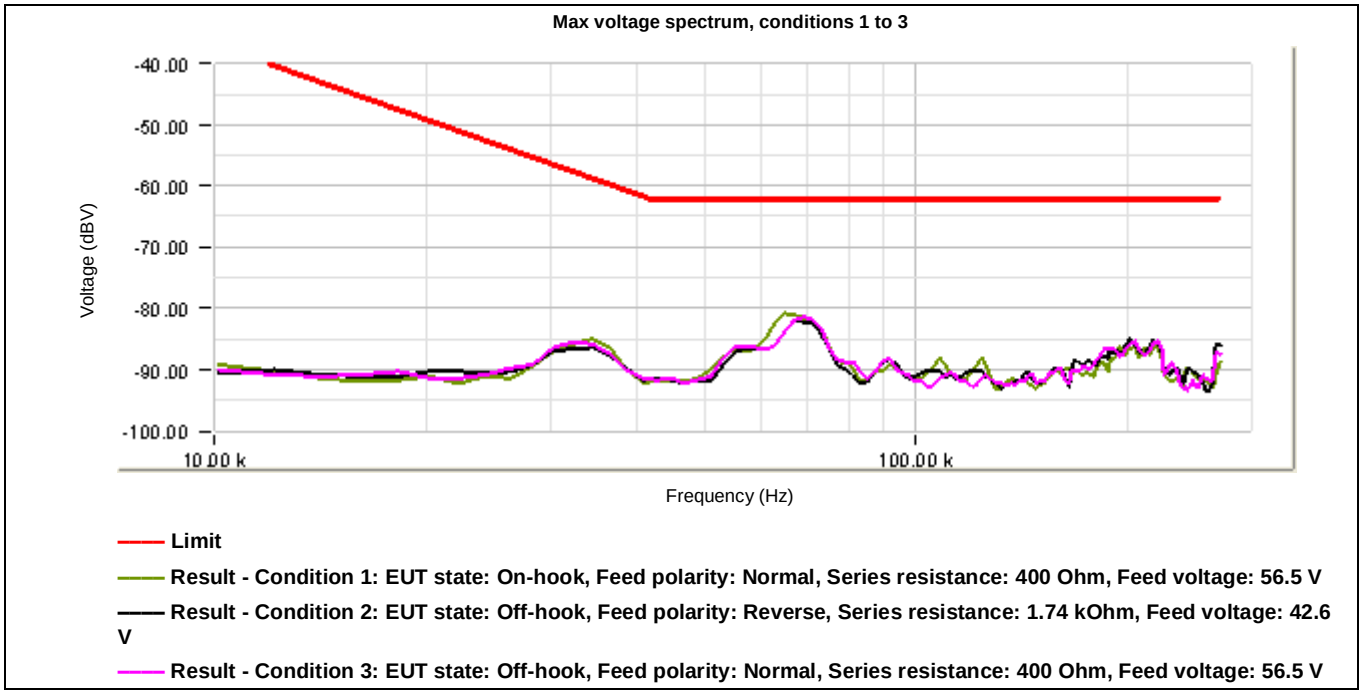
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Acoustic test setup	Test head

Test ranges

Frequency			
Start	**Stop**	**Acquisition settings**	**Termination**
12.00 kHz	270.00 kHz	Resolution bandwidth = 8.00 kHz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	135 Ohm Metallic / 90 Ohm Longitudinal



Test specification:	5.1.8.3 / 3.3.2.2 Longitudinal voltage 12 kHz - 270 kHz		
Test purpose:	To verify that longitudinal rms voltage averaged over 100 ms in all of the possible 8-kHz bands within the 12 - 270 kHz frequency range does not exceed the test limit.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:47:36 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

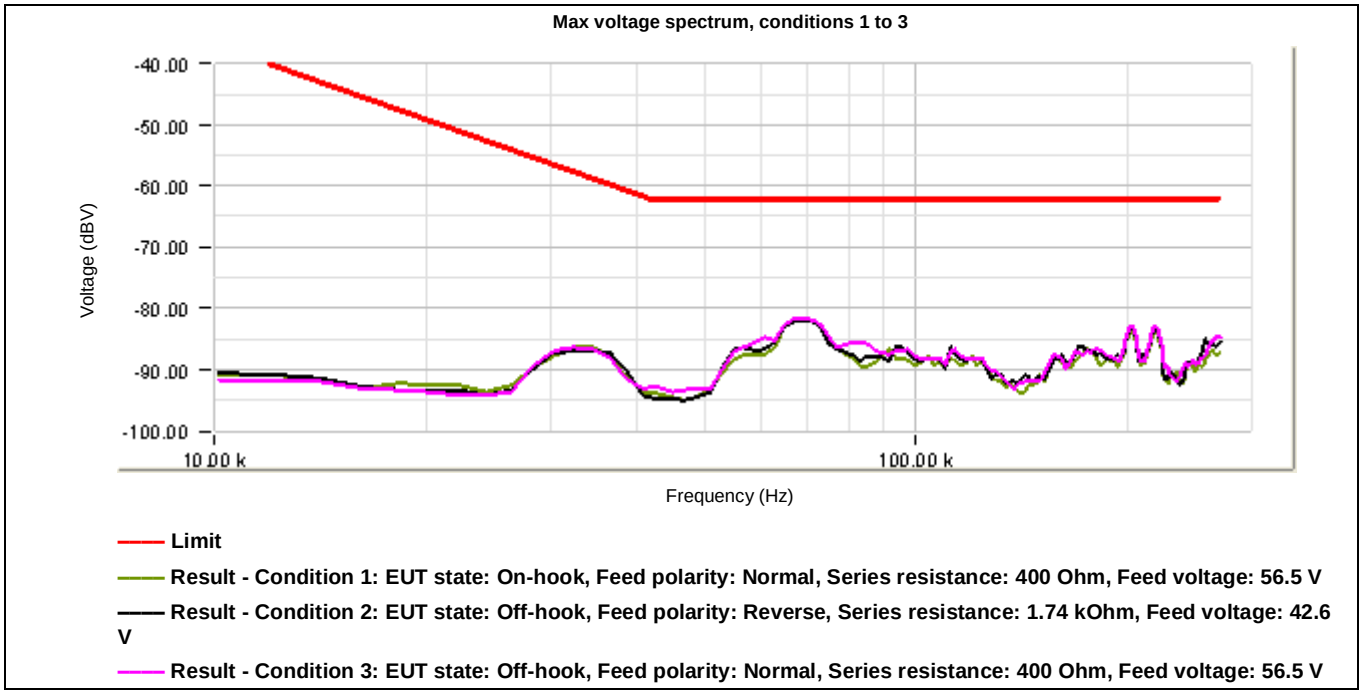
Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Acoustic test setup	Test head

Test ranges

Frequency			
Start	**Stop**	**Acquisition settings**	**Termination**
12.00 kHz	270.00 kHz	Resolution bandwidth = 8.00 kHz, Averaging interval = 100.00 ms, Overall meas. time = 20 s	135 Ohm Metallic / 90 Ohm Longitudinal



Test specification:	5.1.8.4 / 3.3.2.3 Longitudinal voltage 270 kHz - 6 MHz		
Test purpose:	To verify that longitudinal rms voltage in the 270 KHz - 6 MHz frequency range does not exceed -30 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:04:26 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Filter**
270.00 kHz	6.00 MHz	Acquisition time = 100 us, Overall meas. time = 20 s	135 Ohm Metallic / 90 Ohm Longitudinal	250kHz high pass filter

Max voltage

Voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-57.01 dBV	-30 dBV	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-55.45 dBV	-30 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-54.75 dBV	-30 dBV	Pass

Test specification:	5.1.8.4 / 3.3.2.3 Longitudinal voltage 270 kHz - 6 MHz		
Test purpose:	To verify that longitudinal rms voltage in the 270 KHz - 6 MHz frequency range does not exceed -30 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:31:27 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Filter**
270.00 kHz	6.00 MHz	Acquisition time = 100 us, Overall meas. time = 20 s	135 Ohm Metallic / 90 Ohm Longitudinal	250kHz high pass filter

Max voltage

Voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-61.16 dBV	-30 dBV	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-59.09 dBV	-30 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-59.25 dBV	-30 dBV	Pass

Test specification:	5.1.8.4 / 3.3.2.3 Longitudinal voltage 270 kHz - 6 MHz		
Test purpose:	To verify that longitudinal rms voltage in the 270 KHz - 6 MHz frequency range does not exceed -30 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:25:16 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Filter**
270.00 kHz	6.00 MHz	Acquisition time = 100 us, Overall meas. time = 20 s	135 Ohm Metallic / 90 Ohm Longitudinal	250kHz high pass filter

Max voltage

	Voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V			**Pass**
	-49.43 dBV	-30 dBV	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V			**Pass**
	-48.02 dBV	-30 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V			**Pass**
	-48.44 dBV	-30 dBV	Pass

Test specification:	5.1.8.4 / 3.3.2.3 Longitudinal voltage 270 kHz - 6 MHz		
Test purpose:	To verify that longitudinal rms voltage in the 270 KHz - 6 MHz frequency range does not exceed -30 dBV. The EUT should be tested in on-hook and all possible off-hook states.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:49:26 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

Signal power level (20 Hz - 300 kHz)	±0.1 dB
Signal power level (300 kHz - 30 MHz)	±2.52 dB
Peak to peak voltage (frequency 10 Hz - 5 kHz)	±0.22%

General parameters

Parameter	Value
Stimulus signal	D:\TCA\sounds\IEEE_269-2010_Male_mono_48_kHz.wav
Acoustic test setup	Test head

Test ranges

Frequency				
Start	**Stop**	**Acquisition settings**	**Termination**	**Filter**
270.00 kHz	6.00 MHz	Acquisition time = 100 us, Overall meas. time = 20 s	135 Ohm Metallic / 90 Ohm Longitudinal	250kHz high pass filter

Max voltage

Voltage	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-55.43 dBV	-30 dBV	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V		**Pass**
-54.27 dBV	-30 dBV	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V		**Pass**
-54.16 dBV	-30 dBV	Pass

Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:07:53 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

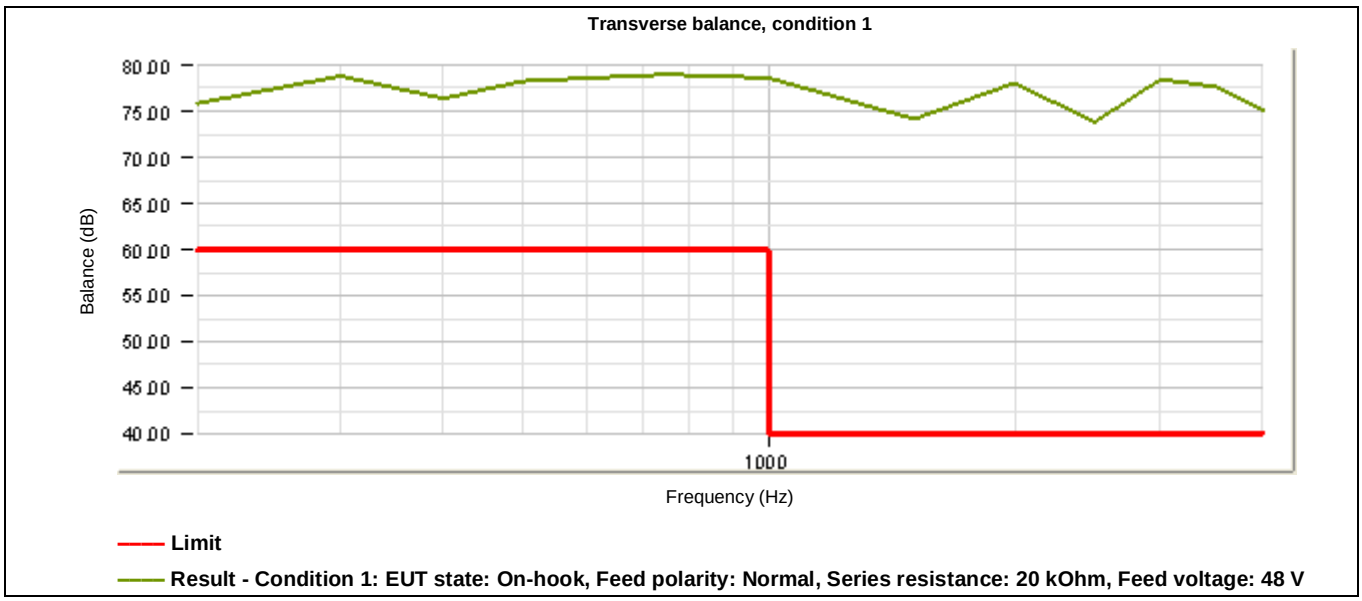
Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

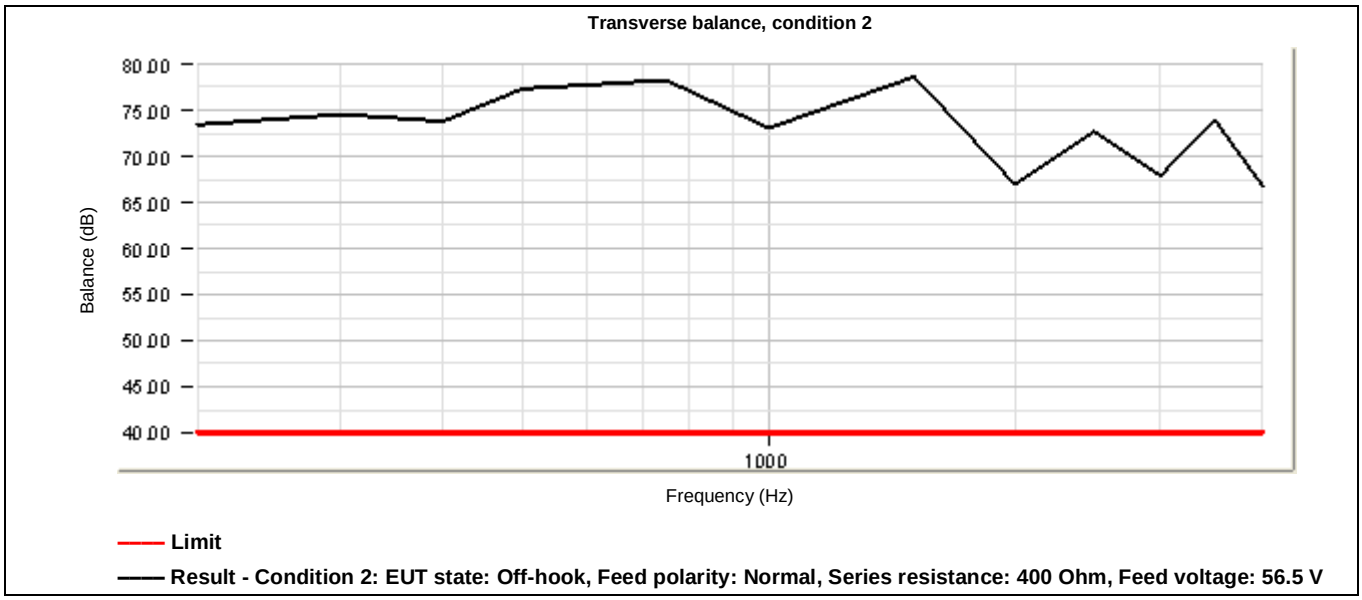
Balance (0 to 50 dB)	±0.84 dB
Balance (50 to 70 dB)	±1.89 dB

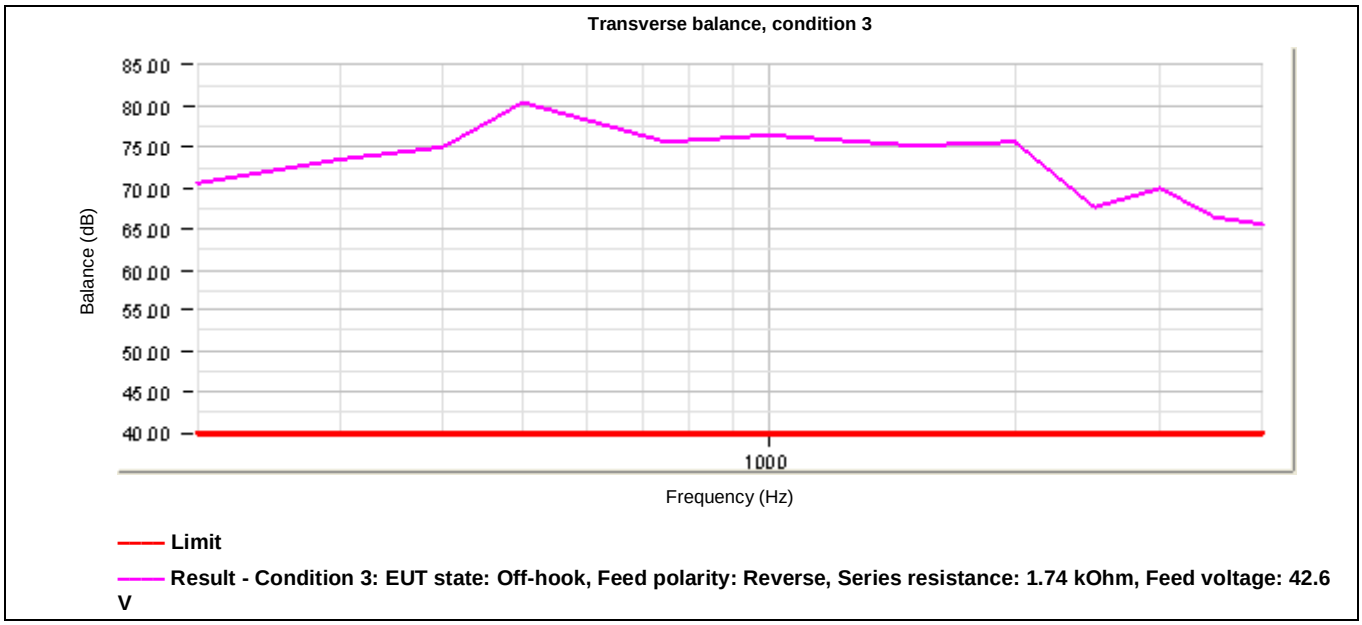
General parameters

Parameter	Value
Stimulus level	775 mV



Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:07:53 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			





Transverse balance

Frequency	Balance	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 20 kOhm, Feed voltage: 48 V			**Pass**
200 Hz	75.82 dB	60 dB	Pass
300 Hz	78.94 dB	60 dB	Pass
400 Hz	76.51 dB	60 dB	Pass

Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:07:53 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. No USB			

Frequency	Balance	Limit	Verdict
500 Hz	78.30 dB	60 dB	Pass
750 Hz	79.14 dB	60 dB	Pass
1000 Hz	78.62 dB	60 dB	Pass
1500 Hz	74.21 dB	40 dB	Pass
2000 Hz	78.20 dB	40 dB	Pass
2500 Hz	73.85 dB	40 dB	Pass
3000 Hz	78.60 dB	40 dB	Pass
3500 Hz	77.68 dB	40 dB	Pass
4000 Hz	75.18 dB	40 dB	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V			**Pass**
200 Hz	73.54 dB	40 dB	Pass
300 Hz	74.56 dB	40 dB	Pass
400 Hz	73.91 dB	40 dB	Pass
500 Hz	77.36 dB	40 dB	Pass
750 Hz	78.38 dB	40 dB	Pass
1000 Hz	73.13 dB	40 dB	Pass
1500 Hz	78.62 dB	40 dB	Pass
2000 Hz	66.93 dB	40 dB	Pass
2500 Hz	72.78 dB	40 dB	Pass
3000 Hz	67.92 dB	40 dB	Pass
3500 Hz	74.12 dB	40 dB	Pass
4000 Hz	66.72 dB	40 dB	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V			**Pass**
200 Hz	70.68 dB	40 dB	Pass
300 Hz	73.59 dB	40 dB	Pass
400 Hz	75.04 dB	40 dB	Pass
500 Hz	80.32 dB	40 dB	Pass
750 Hz	75.50 dB	40 dB	Pass
1000 Hz	76.49 dB	40 dB	Pass
1500 Hz	75.08 dB	40 dB	Pass
2000 Hz	75.56 dB	40 dB	Pass
2500 Hz	67.73 dB	40 dB	Pass
3000 Hz	69.96 dB	40 dB	Pass
3500 Hz	66.40 dB	40 dB	Pass
4000 Hz	65.52 dB	40 dB	Pass

Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:12:31 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

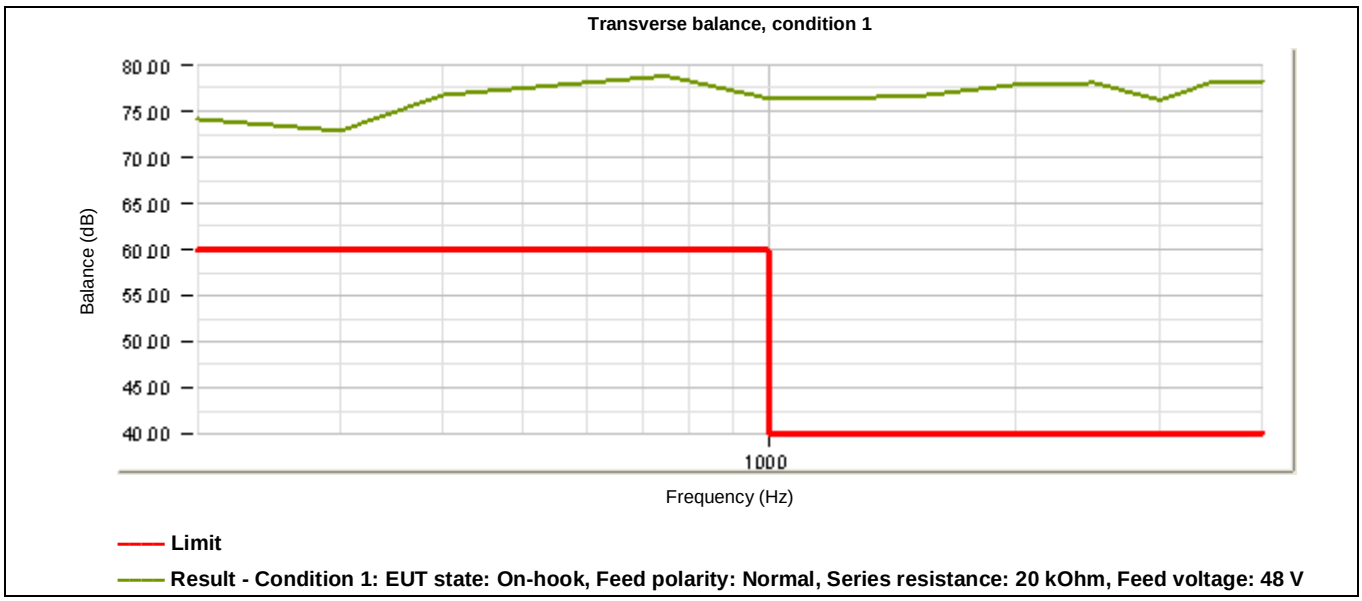
Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

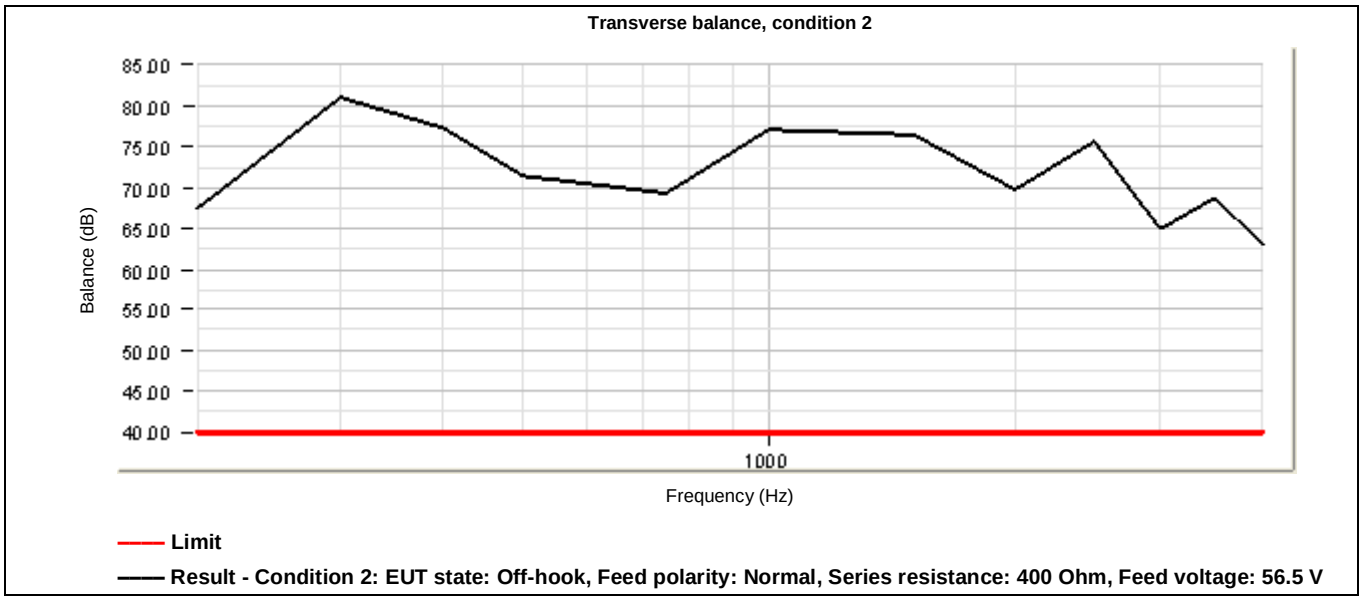
Balance (0 to 50 dB)	±0.84 dB
Balance (50 to 70 dB)	±1.89 dB

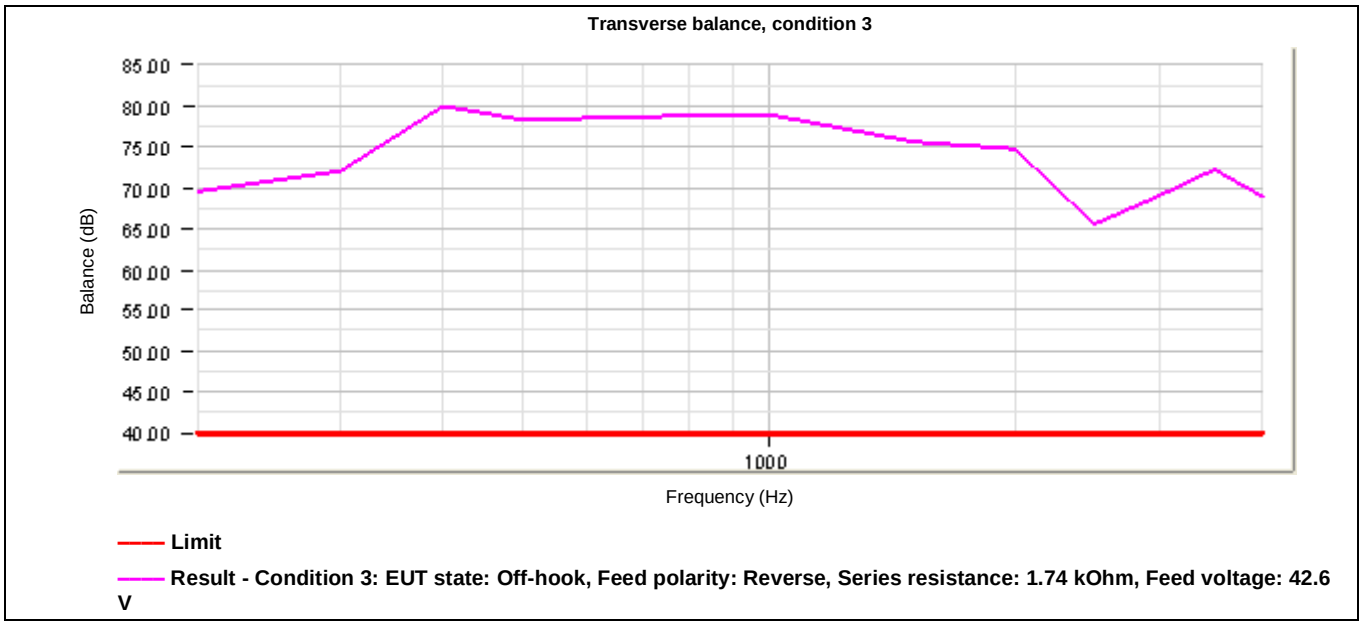
General parameters

Parameter	Value
Stimulus level	775 mV



Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:12:31 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			





Transverse balance

Frequency	Balance	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 20 kOhm, Feed voltage: 48 V			**Pass**
200 Hz	74.18 dB	60 dB	Pass
300 Hz	72.94 dB	60 dB	Pass
400 Hz	76.74 dB	60 dB	Pass

Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 12:12:31 PM		
Temperature: 23.0 °C	**Air Pressure:** 100.4 kPa	**Relative Humidity:** 50.2 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: B.E.S. USB connected and grounded			

Frequency	Balance	Limit	Verdict
500 Hz	77.66 dB	60 dB	Pass
750 Hz	78.91 dB	60 dB	Pass
1000 Hz	76.42 dB	60 dB	Pass
1500 Hz	76.72 dB	40 dB	Pass
2000 Hz	77.99 dB	40 dB	Pass
2500 Hz	78.14 dB	40 dB	Pass
3000 Hz	76.28 dB	40 dB	Pass
3500 Hz	78.25 dB	40 dB	Pass
4000 Hz	78.31 dB	40 dB	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V			**Pass**
200 Hz	67.49 dB	40 dB	Pass
300 Hz	81.05 dB	40 dB	Pass
400 Hz	77.20 dB	40 dB	Pass
500 Hz	71.35 dB	40 dB	Pass
750 Hz	69.23 dB	40 dB	Pass
1000 Hz	77.14 dB	40 dB	Pass
1500 Hz	76.40 dB	40 dB	Pass
2000 Hz	69.80 dB	40 dB	Pass
2500 Hz	75.59 dB	40 dB	Pass
3000 Hz	64.95 dB	40 dB	Pass
3500 Hz	68.68 dB	40 dB	Pass
4000 Hz	63.09 dB	40 dB	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V			**Pass**
200 Hz	69.62 dB	40 dB	Pass
300 Hz	72.06 dB	40 dB	Pass
400 Hz	80.06 dB	40 dB	Pass
500 Hz	78.27 dB	40 dB	Pass
750 Hz	78.78 dB	40 dB	Pass
1000 Hz	78.92 dB	40 dB	Pass
1500 Hz	75.68 dB	40 dB	Pass
2000 Hz	74.83 dB	40 dB	Pass
2500 Hz	65.64 dB	40 dB	Pass
3000 Hz	69.10 dB	40 dB	Pass
3500 Hz	72.16 dB	40 dB	Pass
4000 Hz	68.99 dB	40 dB	Pass

Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:28:27 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

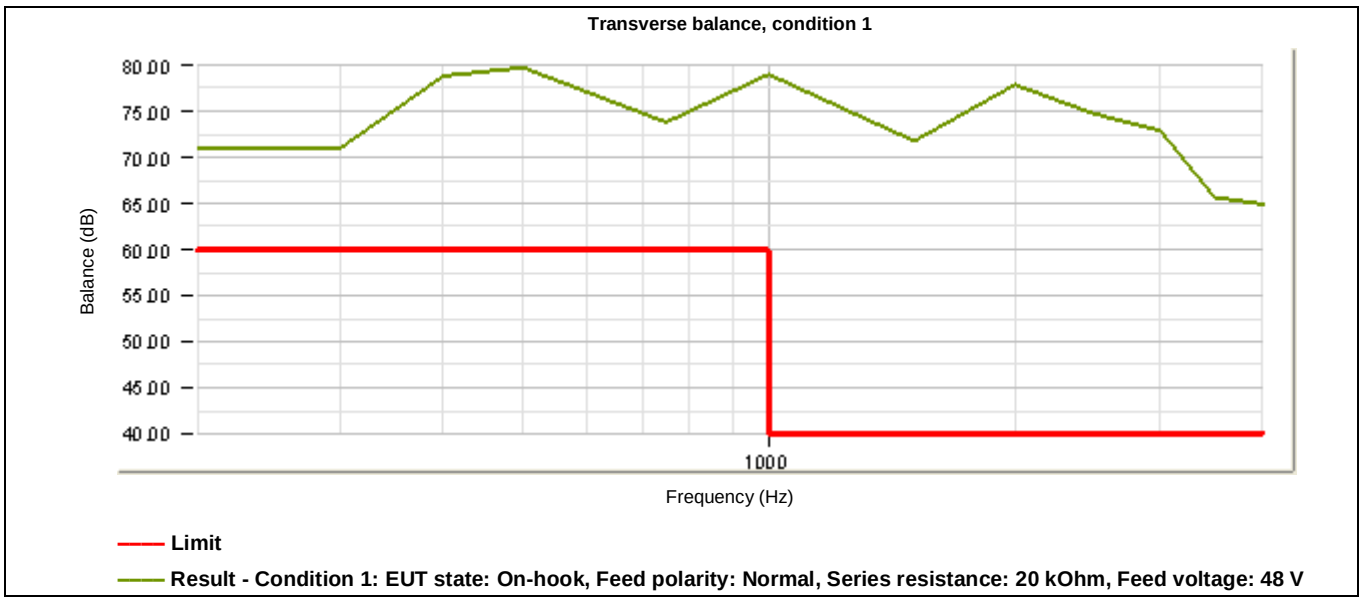
Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

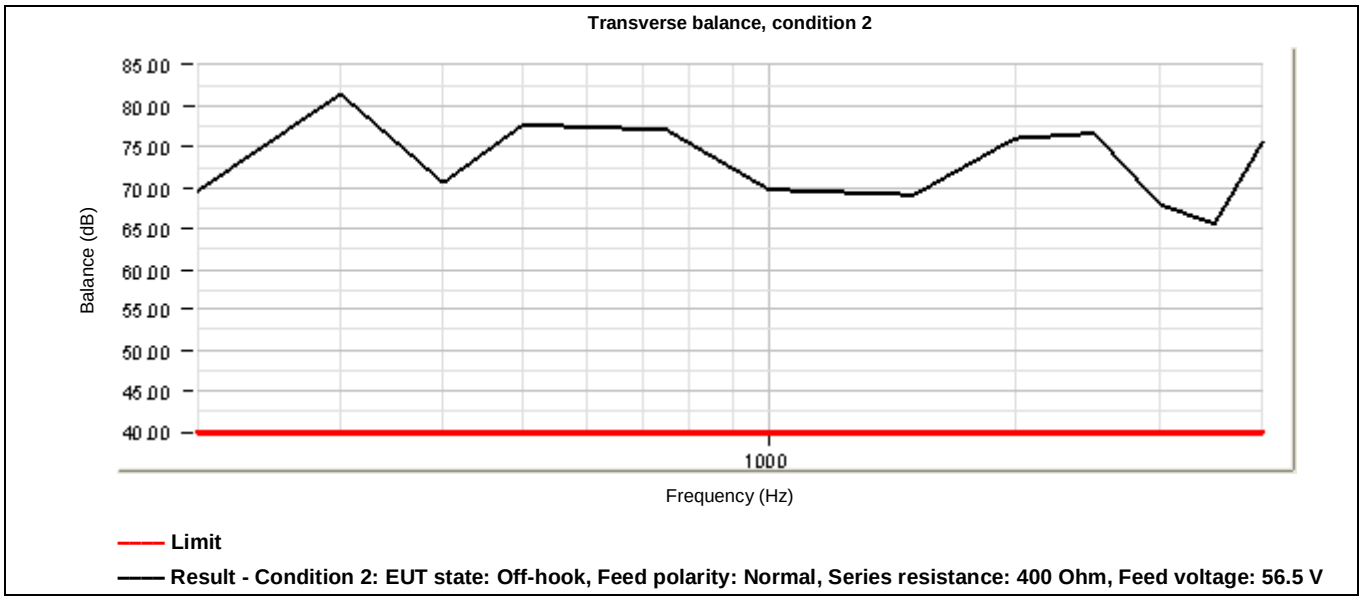
Balance (0 to 50 dB)	±0.84 dB
Balance (50 to 70 dB)	±1.89 dB

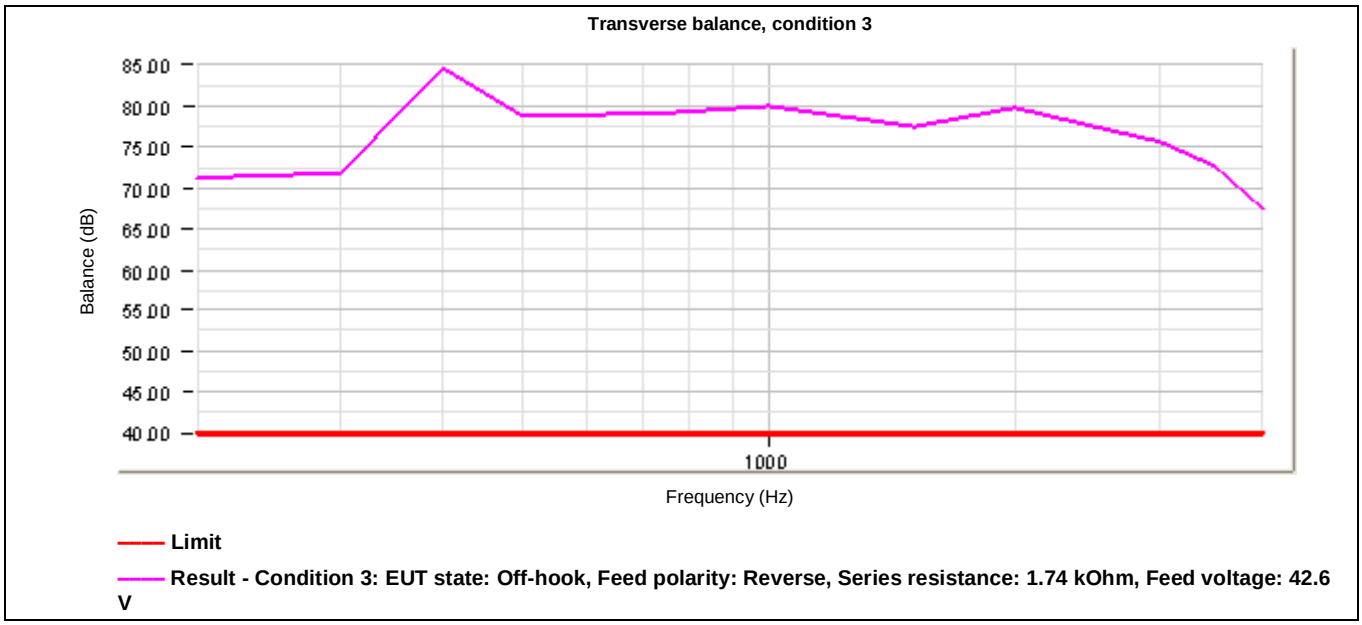
General parameters

Parameter	Value
Stimulus level	775 mV



Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:28:27 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			





Transverse balance

Frequency	Balance	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 20 kOhm, Feed voltage: 48 V			**Pass**
200 Hz	71.08 dB	60 dB	Pass
300 Hz	71.05 dB	60 dB	Pass
400 Hz	78.91 dB	60 dB	Pass

Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:28:27 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. USB connected			

Frequency	Balance	Limit	Verdict
500 Hz	79.76 dB	60 dB	Pass
750 Hz	73.94 dB	60 dB	Pass
1000 Hz	79.10 dB	60 dB	Pass
1500 Hz	71.79 dB	40 dB	Pass
2000 Hz	77.86 dB	40 dB	Pass
2500 Hz	74.75 dB	40 dB	Pass
3000 Hz	72.88 dB	40 dB	Pass
3500 Hz	65.62 dB	40 dB	Pass
4000 Hz	64.95 dB	40 dB	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V			**Pass**
200 Hz	69.56 dB	40 dB	Pass
300 Hz	81.55 dB	40 dB	Pass
400 Hz	70.50 dB	40 dB	Pass
500 Hz	77.79 dB	40 dB	Pass
750 Hz	77.16 dB	40 dB	Pass
1000 Hz	69.79 dB	40 dB	Pass
1500 Hz	69.08 dB	40 dB	Pass
2000 Hz	75.95 dB	40 dB	Pass
2500 Hz	76.71 dB	40 dB	Pass
3000 Hz	67.84 dB	40 dB	Pass
3500 Hz	65.54 dB	40 dB	Pass
4000 Hz	75.56 dB	40 dB	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V			**Pass**
200 Hz	71.27 dB	40 dB	Pass
300 Hz	71.88 dB	40 dB	Pass
400 Hz	84.65 dB	40 dB	Pass
500 Hz	78.76 dB	40 dB	Pass
750 Hz	79.14 dB	40 dB	Pass
1000 Hz	79.95 dB	40 dB	Pass
1500 Hz	77.54 dB	40 dB	Pass
2000 Hz	79.77 dB	40 dB	Pass
2500 Hz	77.50 dB	40 dB	Pass
3000 Hz	75.61 dB	40 dB	Pass
3500 Hz	72.64 dB	40 dB	Pass
4000 Hz	67.36 dB	40 dB	Pass

Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:34:10 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

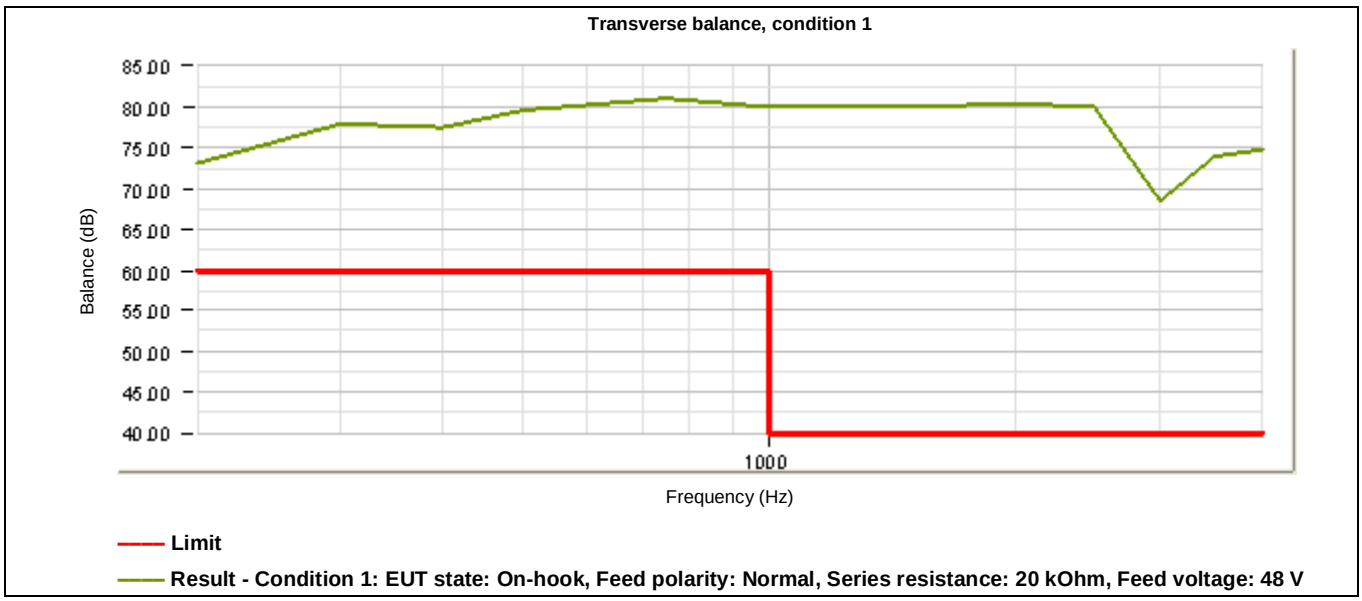
Measurement uncertainty

Expanded uncertainty, k=2 (95% confidence):

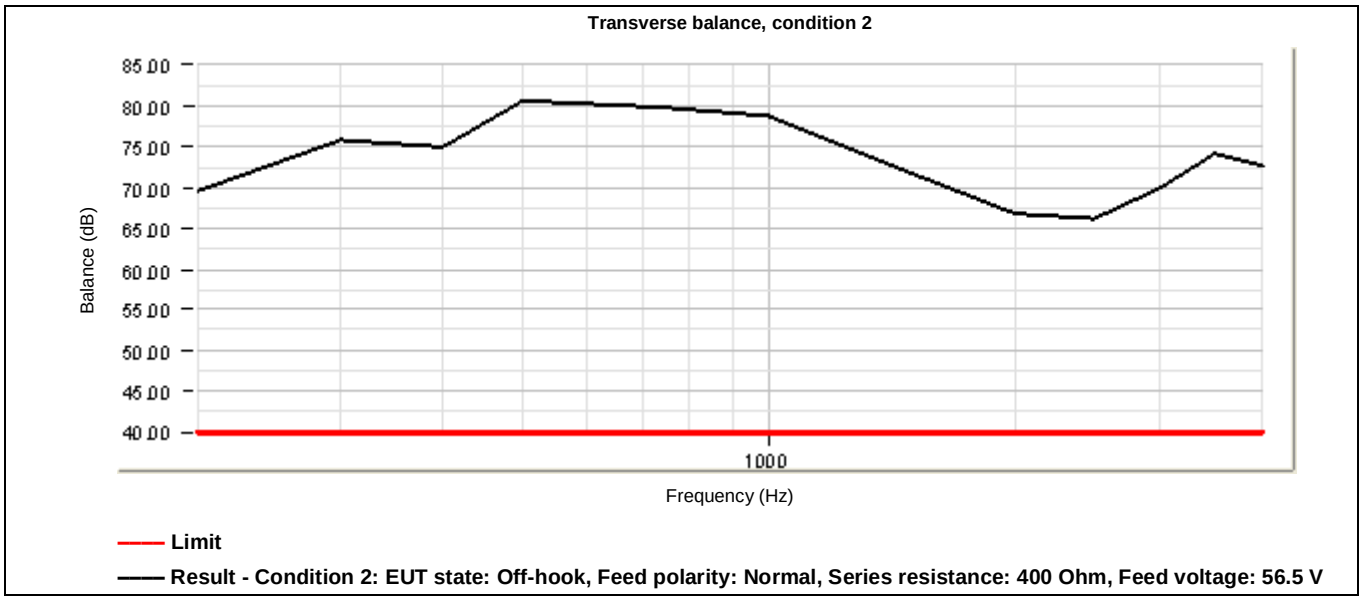
Balance (0 to 50 dB)	±0.84 dB
Balance (50 to 70 dB)	±1.89 dB

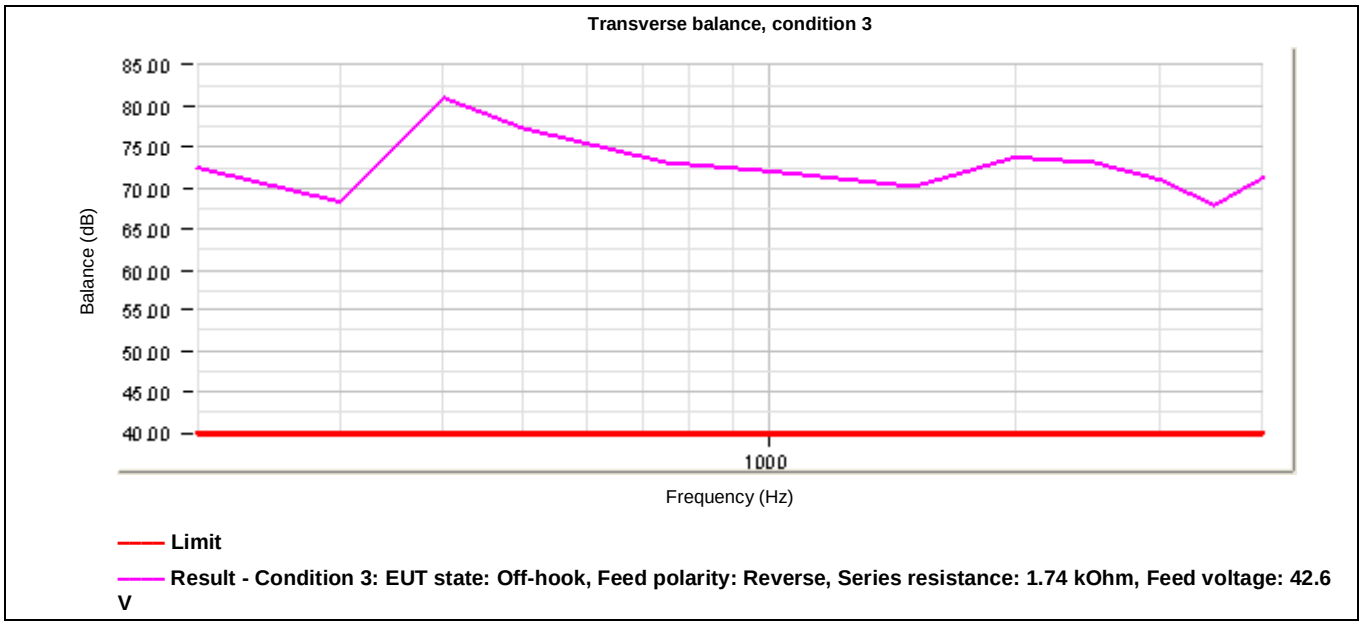
General parameters

Parameter	Value
Stimulus level	775 mV



Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:34:10 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			





Transverse balance

Frequency	Balance	Limit	Verdict
Condition 1: EUT state: On-hook, Feed polarity: Normal, Series resistance: 20 kOhm, Feed voltage: 48 V			**Pass**
200 Hz	73.15 dB	60 dB	Pass
300 Hz	77.87 dB	60 dB	Pass
400 Hz	77.42 dB	60 dB	Pass

Test specification:	5.1.10 / 3.6 Transverse balance for analog voiceband equipment (LS)		
Test purpose:	The minimum transverse balance in the off-hook state shall be 40 dB in 200 Hz - 4 kHz frequency range. In the on-hook state it shall be 60 dB in 200 Hz - 1 kHz range and 40 dB in 1 - 4 kHz.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/6/2017 4:34:10 PM		
Temperature: 23.9 °C	**Air Pressure:** 100.2 kPa	**Relative Humidity:** 49.9 %	**Mains Power Supply:** 120Vac @ 60 Hz
Remarks: A.E.S. no USB			

Frequency	Balance	Limit	Verdict
500 Hz	79.60 dB	60 dB	Pass
750 Hz	81.15 dB	60 dB	Pass
1000 Hz	79.91 dB	60 dB	Pass
1500 Hz	80.09 dB	40 dB	Pass
2000 Hz	80.36 dB	40 dB	Pass
2500 Hz	80.08 dB	40 dB	Pass
3000 Hz	68.51 dB	40 dB	Pass
3500 Hz	74.00 dB	40 dB	Pass
4000 Hz	74.74 dB	40 dB	Pass
Condition 2: EUT state: Off-hook, Feed polarity: Normal, Series resistance: 400 Ohm, Feed voltage: 56.5 V			**Pass**
200 Hz	69.58 dB	40 dB	Pass
300 Hz	75.91 dB	40 dB	Pass
400 Hz	74.88 dB	40 dB	Pass
500 Hz	80.64 dB	40 dB	Pass
750 Hz	79.83 dB	40 dB	Pass
1000 Hz	78.77 dB	40 dB	Pass
1500 Hz	71.65 dB	40 dB	Pass
2000 Hz	66.85 dB	40 dB	Pass
2500 Hz	66.29 dB	40 dB	Pass
3000 Hz	70.03 dB	40 dB	Pass
3500 Hz	74.21 dB	40 dB	Pass
4000 Hz	72.66 dB	40 dB	Pass
Condition 3: EUT state: Off-hook, Feed polarity: Reverse, Series resistance: 1.74 kOhm, Feed voltage: 42.6 V			**Pass**
200 Hz	72.53 dB	40 dB	Pass
300 Hz	68.30 dB	40 dB	Pass
400 Hz	81.13 dB	40 dB	Pass
500 Hz	77.34 dB	40 dB	Pass
750 Hz	73.14 dB	40 dB	Pass
1000 Hz	72.06 dB	40 dB	Pass
1500 Hz	70.11 dB	40 dB	Pass
2000 Hz	73.81 dB	40 dB	Pass
2500 Hz	73.09 dB	40 dB	Pass
3000 Hz	71.06 dB	40 dB	Pass
3500 Hz	67.80 dB	40 dB	Pass
4000 Hz	71.11 dB	40 dB	Pass