Hermon Laboratories Ltd.
P.O.Box 23, Binyamina 3055001, Israel
Tel. +972-4-6288001
Fax. +972-4-6288277
E-mail: support@hermonlabs.com

TEST REPORT

ACCORDING TO:

CS-03, Part V, Issue 9, Amendment 3 **Approved: August 2021**

§ 68.316, 317 Hearing aid compatibility

Approved: Federal Register / Vol. 83, No. 40 / Wednesday, February 28, 2018 / Rules and Regulations

Requirements and Test Methods for Magnetic Output from Handset Telephones for Hearing Aid Coupling and for Receive Volume Control (TIA-4965)

FOR:

AudioCodes Ltd.

EQUIPMENT UNDER TEST:

IP Phone 425HD

This report is in conformity with ISO/ IEC 17025. The "A2LA Accredited" symbol endorsement applies only to the tests and calibrations that are listed in the scope of Hermon Laboratories accreditation. The test results relate only to the items tested. This test report shall not be reproduced in any form except in full with the written approval of Hermon Laboratories Ltd.

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1 Revision History Table

Revision History Table:					
Date	File No.	Prepared	Reviewed	Approved	Amendment Description
21-Apr-2025	AUDTEL_CS-03 P.5_FCC 68.316-317_56344_425HD_Rev.1.doc	E.Korsunsky, test engineer 	E.Roizman, test engineer 	G.Shleimovich, QA manager 	Corrected to CS-03, P.V, Issue 9, Amendmend 3 requirement
25-Mar-2025	AUDTEL_CS-03 P.5_FCC 68.316-317_56344_425HD.doc	E.Roizman, test engineer	E.Korsunsky, test engineer	G.Shleimovich, QA manager	Original report

2 Client information

Client name:	AudioCodes Ltd.
Address:	Ofra Haza 6, Naimi Park, Or Yehuda, 6032303, Israel
Telephone:	+972-3-976-4275
Fax:	+972-3-976-4040
E-mail:	Nir.Lieberman@audiocodes.com
Contact name:	Nir Lieberman

3 Equipment Under Test

Product name:	IP Phone 425HD
Product type:	IP Phone
Model(s):	425HD
Serial number:	AV00466510 REV.: P01
Receipt date	20-Feb-2025

4 Manufacturer information

Manufacturer name:	AudioCodes Ltd.
Address:	Ofra Haza 6, Naimi Park, Or Yehuda, 6032303, Israel
Telephone:	+972-3-976-4275
Fax:	+972-3-976-4040
E-Mail:	Nir.Lieberman@audiocodes.com
Contact name:	Nir Lieberman

5 Test project performance

Project ID:	56344-425HD
Location:	Hermon Laboratories Ltd. P.O.Box 23, Binyamina 3055001, Israel
Test started:	20-Feb-2025
Test completed:	21-Apr-2025
Test specification(s):	CS-03, Part V Issue 9, Amendment 3. Approved: August 2021
	§ 68.316, 317 Hearing aid compatibility
	Approved: Federal Register / Vol. 83, No. 40 / Wednesday, February 28, 2018 / Rules and Regulations
	Requirements and Test Methods for Magnetic Output from Handset Telephones for Hearing Aid Coupling and for Receive Volume Control (TIA-4965)
Test suite:	CS-03 P.5, FCC 68.316-317 (HAC)

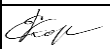
6 Test report summary

Testing was completed against all relevant requirements of the test standard. The results obtained indicate that the product under test complies in full with the requirements tested.

The test results relate only to the items tested.

A summary of the test status of the product under test with respect to each test requirement of the standard is provided in section 11 on page 10 of this report.

Detailed test results are presented in section 12 following page 11 of this report.

	Name and Title	**Date**	**Signature**
Tested by:	E.Roizman, test engineer	21-Apr-2025	
Reviewed by:	E.Korsunsky, test engineer	21-Apr-2025	
Approved by:	G.Shleimovich, QA manager	21-Apr-2025	

7 EUT description

The AudioCodes 425HD enhances communication with its features, ensuring a seamless conferencing experience. Equipped with a 3.5-inch color display, it supports multiple languages including English, Hebrew, Japanese, and more, making it ideal for diverse teams. The built-in echo cancellation technology ensures clear audio, while the robust VoIP protocol support includes options like SIP and SDP, ensuring compatibility with various network setups. Designed for convenience, the 425HD offers eight programmable buttons for quick access to frequently dialed numbers and functions. Features such as caller ID, call waiting, and call forwarding enhance its functionality for effective communication. The device supports Power over Ethernet, enabling flexibility in placing the unit, while its compatibility with Microsoft Teams further enhances usability in modern business environments.

8 Test laboratory description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, Radio, Safety, Environmental and Telecommunication testing facility.

Hermon Laboratories is recognized and accredited by the Federal Communications Commission (USA) for relevant parts of Code of Federal Regulations 47 (CFR 47), Test Firm Registration Number is 927748, Designation Number is IL1001; Recognized by Innovation, Science and Economic Development Canada for wireless and terminal testing (ISED), ISED #2186A, CAB identifier is IL1001; Certified by VCCI, Japan (the registration numbers for OATS are R-10808 for RE measurements below 1 GHz, G-20112 for RE measurements above 1 GHz, R-11082 for anechoic chamber for RE measurements below 1 GHz, G-10869 for RE measurements above 1 GHz, C-10845 for conducted emissions site and T-11606 for conducted emissions at telecommunication ports).

The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing, environmental simulation and calibration (for exact scope please refer to Certificate No. 839.01, 839.03 and 839.04).

Address: P.O. Box 23, Binyamina 3055001, Israel.
Telephone: +972 4628 8001
Fax: +972 4628 8277
e-mail: support@hermonlabs.com
website: www.hermonlabs.com

Person for contact: Mr. George Shleimovich, QA manager

9 Test equipment used

Description	Model	S/N	Hardware Rev.	Software Rev.	Calibration Date	Calibration Next
Telecom Conformance Analyzer	Hermon Laboratories TCA 4100	4103	A1	2.6.5, build 6010, 11-Nov-2023	05-Nov-2024	05-Nov-2026
HAC Phobe - Axial	CCL A-100	0205	-	-	11-Jan-2024	11-Jan-2026
HAC Phobe - Radial	CCL R-100	0205	-	-	11-Jan-2024	11-Jan-2026
B&K Telephone Test Head (Type 1)	T4602	1722495	-	-	06-Oct-2024	06-Oct-2025

10 Equipment photographs

Photograph 1

IP phone 425HD, general view



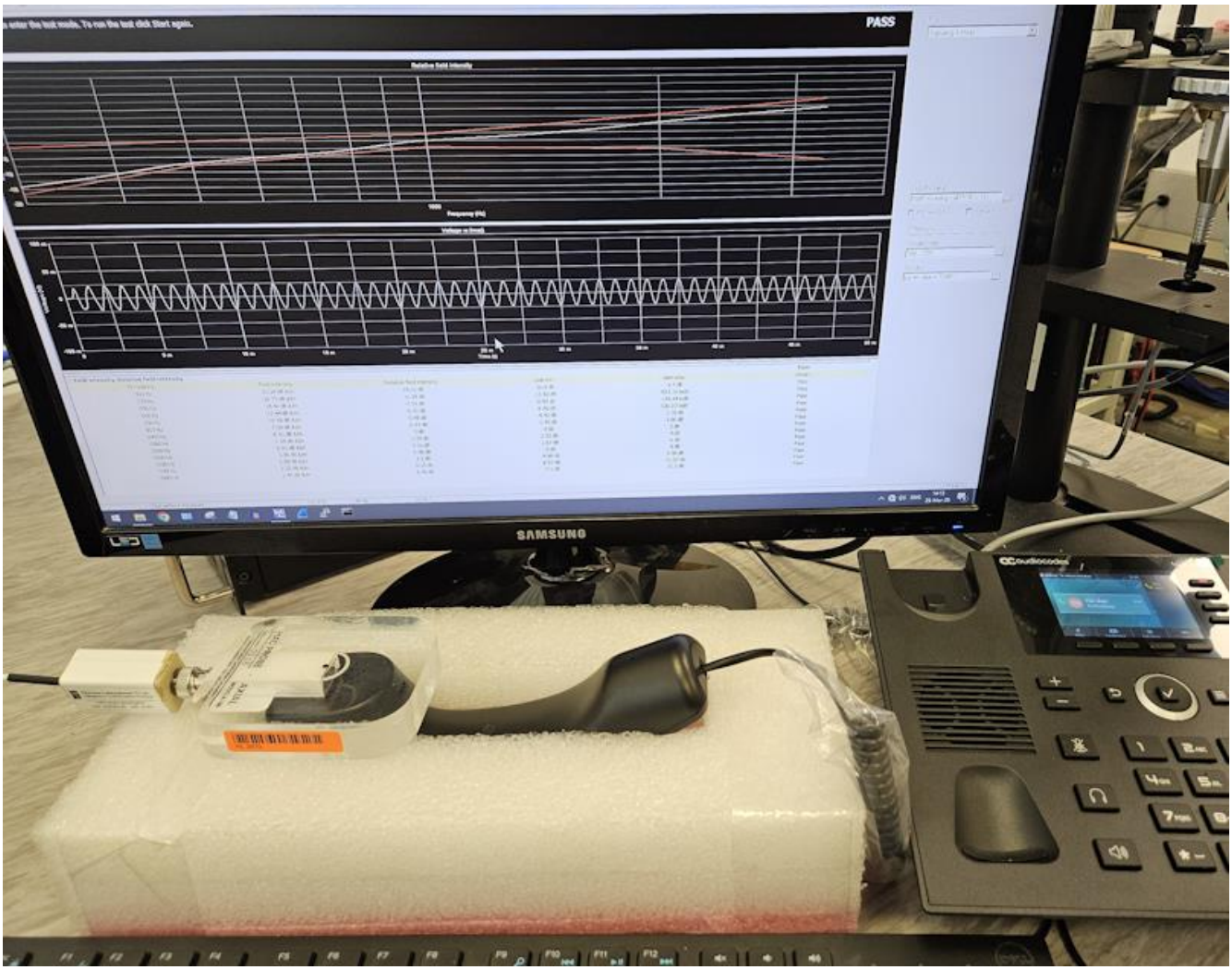
Photograph 2

IP phone 425HD, handset



Photograph 3

IP phone 425HD, Test setup for magnetic field measurement



11 Test results summary

Test	Status
CS-03 P.5, FCC 68.316-317 (HAC)	
Magnetic Output	
FCC P.68.316, CS-03 P.5 - Requirements for Digital (VoIP) telephones	
FCC 4, CS-03-P.5 - 8.2.2 (a-c) - Reference Input Level for 0 dBPa.	Pass
FCC 4.2, CS-03-P.5 - 8.1.1 - Axial field intensity (VoIP)	Pass
FCC 4.3, CS-03-P.5 - 8.1.2 - Radial field Intensity (VoIP)	Pass
FCC 4.4.1, CS-03-P.5 - 8.1.3 (a) - Magnetic field intensity frequency response (axial field intensity > -19 dB)(VoIP)	Pass
FCC 4.4.2, CS-03-P.5 - 8.1.3 (b) - Magnetic field intensity frequency response (axial field intensity (-19 to -22) dB)(VoIP)	Pass
§ 68.317 (h), CS-03-P.5 7.1 - Volume control measurement according to ANSI/TIA-4965-2012	
§ 68.317 (h), CS-03-P.5 9.1 - (4.4.1.1 ANSI/TIA-4965) Digital Terminals (NB)	Pass
§ 68.317 (h), CS-03-P.5 9.1 - (4.4.1.1 ANSI/TIA-4965) Digital Terminals (WB)	Pass
§ 68.317 (h), CS-03-P.5 9.1 - (4.4.1.2 ANSI/TIA-4965) Requirements for terminals with conversational gain exceed 24 dB.	Not required
CS-03 P.5 10. Test report requirements	Pass

12 Detailed test results

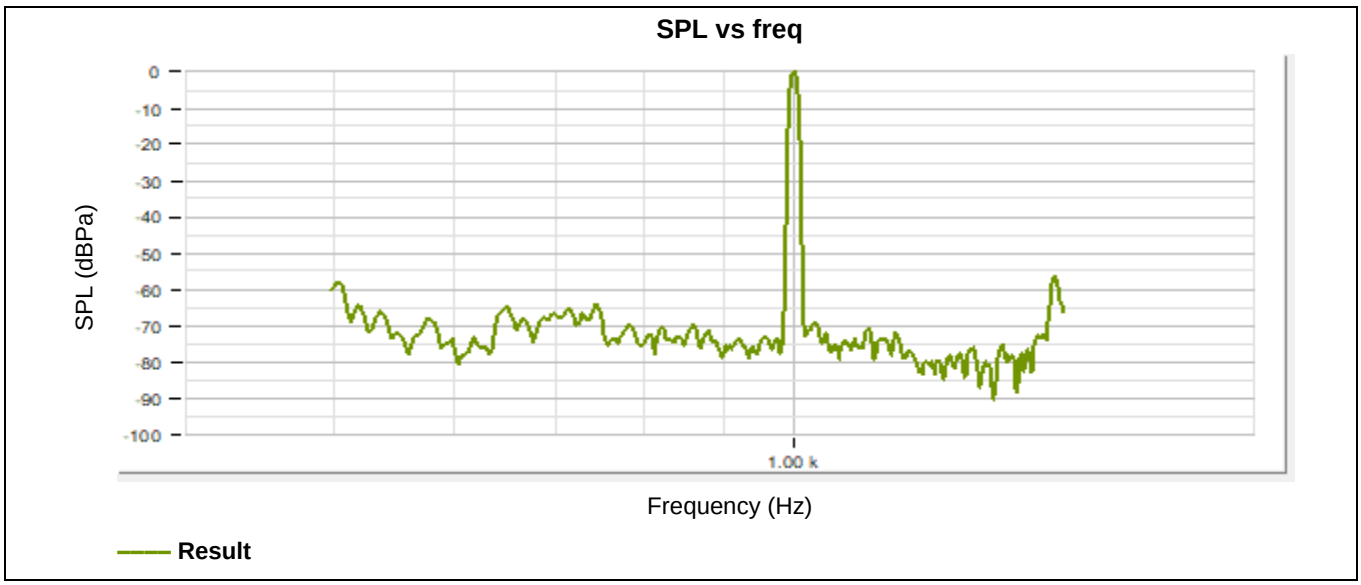
Test specification:	**FCC 4, CS-03-P.5 - 8.2.2 (a-c) - Reference Input Level for 0 dBPa.**		
Test purpose:	To determine the level of the 1 kHz sine-wave signal applied at the digital interface which corresponds to a 0 dBPa sound pressure at the acoustic output of the handset.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 13:56:56		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

Measurement uncertainty

Expanded Uncertainty, k=2 (95% confidence) ± 0.38 dB

General parameters

Parameter	Value
EUT state	HATS position, Nominal VC.
Microphone type	T4185_OES
Stimulus (units)	Stimulus level = 0dBPa



Reference level, Sound pressure

Reference level	SPL	Limit min	Limit max	Verdict
				Pass
-13.51 dBV	-0.10 dBPa	-0.2 dBPa	0.2 dBPa	Pass

Test specification:	**FCC 4.2, CS-03-P.5 - 8.1.1 - Axial field intensity (VoIP)**		
Test purpose:	To check that the axial component of the magnetic field directed along the measurement axis and located at the measurement plane shall be greater than -22 dB relative to 1 A/m.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 13:58:23		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

Measurement uncertainty

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

Signal level (200 Hz - 4 kHz) ±0.2 dB

General parameters

Parameter	Value
EUT state	Handset on the Axial HAC probe.
Stimulus level	-13.51 dBV
Stimulus frequency	1.00 kHz

Field intensity vs probe position

HAC Probe position	Field Intensity	Limit	Verdict
			Pass
Axial normal mode	-21.08 dB A/m	-22 dB A/m	Pass

Test specification:	**FCC 4.3, CS-03-P.5 - 8.1.2 - Radial field Intensity (VoIP)**		
Test purpose:	To check that the radial components of the magnetic field shall be greater than -27 dB relative to 1 ampere per metre (A/m) when measured at four points (90 degrees apart) and at a distance greater than or equal to 16 mm from the measurement axis (as selected in the axial field intensity measurement).		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 14:02:17		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

Measurement uncertainty

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

Signal level (200 Hz - 4 kHz) ±0.2 dB

General parameters

Parameter	Value
EUT state	Handset on the Radial HAC probe.
Stimulus level	-13.51 dBV
Stimulus frequency	1.00 kHz

Field intensity vs probe position

HAC Probe position	Field Intensity	Limit	Verdict
			Pass
Radial normal 0 deg.	-16.10 dB A/m	-27 dB A/m	Pass
Radial normal 90 deg.	-16.08 dB A/m	-27 dB A/m	Pass
Radial normal 180 deg.	-16.92 dB A/m	-27 dB A/m	Pass
Radial normal 270 deg.	-16.11 dB A/m	-27 dB A/m	Pass

Test specification:	**FCC 4.4.1, CS-03-P.5 - 8.1.3 (a) - Magnetic field intensity frequency response (axial field intensity > -19 dB)(VoIP)**		
Test purpose:	For receivers with an axial field intensity that is greater than -19 dB relative to 1 A/m the frequency response shall fall within the acceptable region.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 13:59:09		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

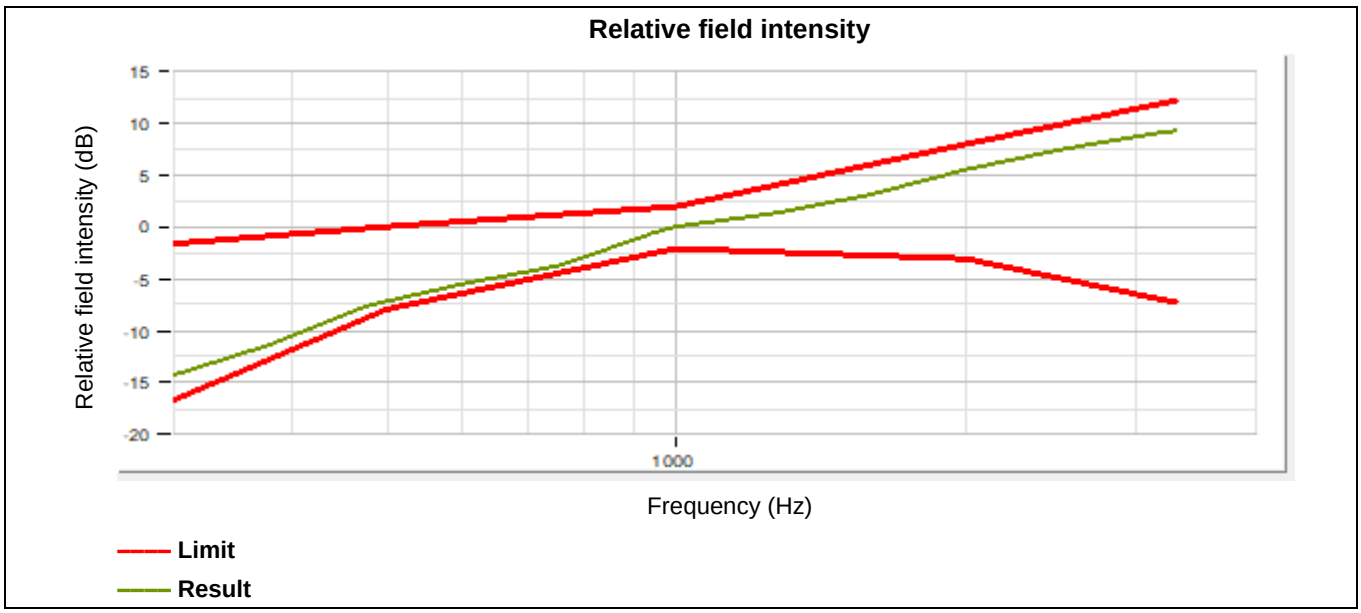
Measurement uncertainty

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

Signal level (200 Hz - 4 kHz) ±0.2 dB

General parameters

Parameter	Value
EUT state	Handset on the Axial HAC probe
Stimulus	Level value = -10dBV



Field intensity, Relative field intensity

Frequency	Field intensity	Relative field intensity	Limit min	Limit max	Verdict
					Pass
300 Hz	-21.24 dB A/m	-14.32 dB	-16.8 dB	-1.5 dB	Pass
378 Hz	-18.22 dB A/m	-11.29 dB	-12.82 dB	-821.36 mdB	Pass
476 Hz	-14.46 dB A/m	-7.54 dB	-8.85 dB	-144.44 mdB	Pass

Test specification:	**FCC 4.4.1, CS-03-P.5 - 8.1.3 (a) - Magnetic field intensity frequency response (axial field intensity > -19 dB)(VoIP)**		
Test purpose:	For receivers with an axial field intensity that is greater than -19 dB relative to 1 A/m the frequency response shall fall within the acceptable region.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 13:59:09		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

Frequency	Field intensity	Relative field intensity	Limit min	Limit max	Verdict
600 Hz	-12.44 dB A/m	-5.52 dB	-6.42 dB	526.07 mdB	Pass
756 Hz	-10.58 dB A/m	-3.66 dB	-4.42 dB	1.19 dB	Pass
953 Hz	-7.29 dB A/m	-0.37 dB	-2.42 dB	1.86 dB	Pass
1000 Hz	-6.92 dB A/m	0 dB	-2 dB	2 dB	Pass
1260 Hz	-5.55 dB A/m	1.37 dB	-2.33 dB	4 dB	Pass
1588 Hz	-3.81 dB A/m	3.11 dB	-2.67 dB	6 dB	Pass
2000 Hz	-1.36 dB A/m	5.56 dB	-3 dB	8 dB	Pass
2520 Hz	0.58 dB A/m	7.5 dB	-4.98 dB	9.98 dB	Pass
3176 Hz	2.23 dB A/m	9.15 dB	-6.97 dB	11.97 dB	Pass
3300 Hz	2.43 dB A/m	9.36 dB	-7.3 dB	12.3 dB	Pass

Test specification:	**FCC 4.4.2, CS-03-P.5 - 8.1.3 (b) - Magnetic field intensity frequency response (axial field intensity (-19 to -22) dB)(VoIP)**		
Test purpose:	For receivers with an axial field intensity that is less than -19 dB but greater than -22 dB relative to 1 A/m the frequency response shall fall within the acceptable region.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 13:59:41		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

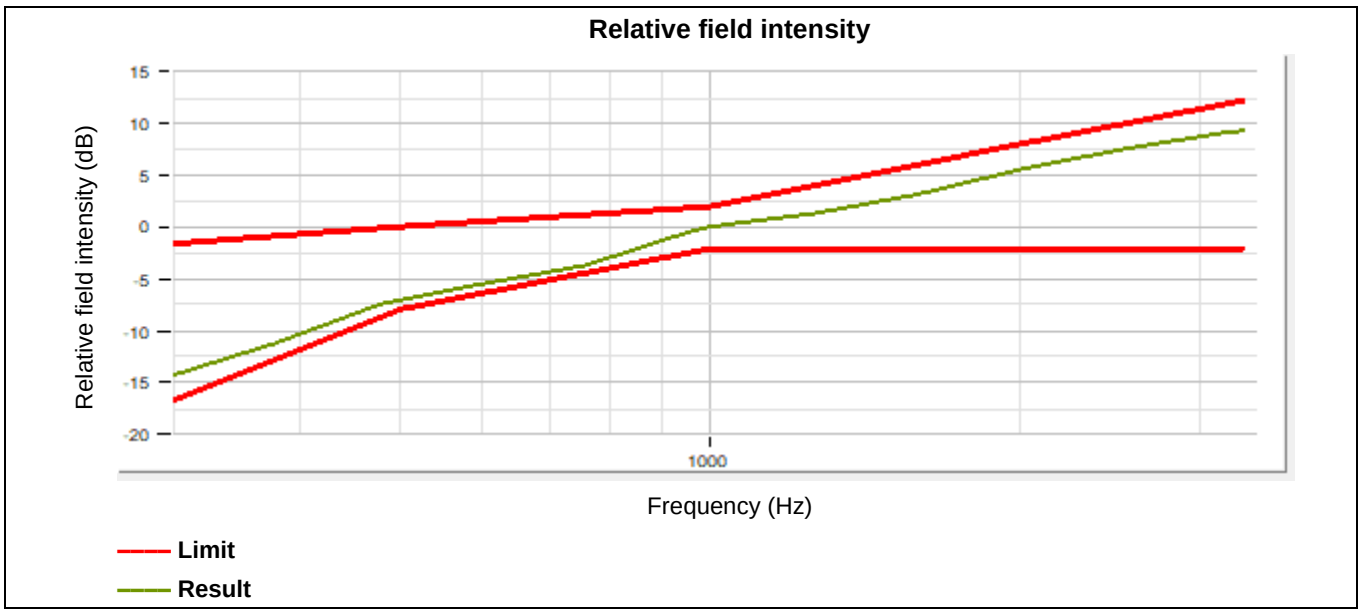
Measurement uncertainty

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

Signal level (200 Hz - 4 kHz) ±0.2 dB

General parameters

Parameter	Value
EUT state	Handset on the Axial HAC probe
Stimulus	Level value = -10dBV



Field intensity, Relative field intensity

Frequency	Field intensity	Relative field intensity	Limit min	Limit max	Verdict
					Pass
300 Hz	-21.19 dB A/m	-14.29 dB	-16.8 dB	-1.5 dB	Pass
378 Hz	-18.16 dB A/m	-11.26 dB	-12.82 dB	-821.36 mdB	Pass
476 Hz	-14.39 dB A/m	-7.49 dB	-8.85 dB	-144.44 mdB	Pass

Test specification:	**FCC 4.4.2, CS-03-P.5 - 8.1.3 (b) - Magnetic field intensity frequency response (axial field intensity (-19 to -22) dB)(VoIP)**		
Test purpose:	For receivers with an axial field intensity that is less than -19 dB but greater than -22 dB relative to 1 A/m the frequency response shall fall within the acceptable region.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 13:59:41		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

Frequency	Field intensity	Relative field intensity	Limit min	Limit max	Verdict
600 Hz	-12.41 dB A/m	-5.51 dB	-6.42 dB	526.07 mdB	Pass
756 Hz	-10.57 dB A/m	-3.67 dB	-4.42 dB	1.19 dB	Pass
953 Hz	-7.3 dB A/m	-0.39 dB	-2.42 dB	1.86 dB	Pass
1000 Hz	-6.9 dB A/m	0 dB	-2 dB	2 dB	Pass
1260 Hz	-5.55 dB A/m	1.36 dB	-2 dB	4 dB	Pass
1588 Hz	-3.8 dB A/m	3.1 dB	-2 dB	6 dB	Pass
2000 Hz	-1.34 dB A/m	5.56 dB	-2 dB	8 dB	Pass
2520 Hz	0.59 dB A/m	7.5 dB	-2 dB	9.98 dB	Pass
3176 Hz	2.24 dB A/m	9.15 dB	-2 dB	11.97 dB	Pass
3300 Hz	2.45 dB A/m	9.35 dB	-2 dB	12.3 dB	Pass

Test specification:	**§ 68.317 (h), CS-03-P.5 9.1 - (4.4.1.1 ANSI/TIA-4965) Digital Terminals (NB)**		
Test purpose:	To check that the terminal have at least one volume control setting that will produce a conversational gain of >= 18 dB without significant clipping of the test signal. If the Conversational Gain exceeds 24 dB for any volume control setting, the volume control shall be reset so that it produces a conversational gain < 24 dB when the terminal is caused to pass through a proper on-hook transition.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 14:03:41		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

Measurement uncertainty

Expanded Uncertainty, k=2 (95% confidence)

Conversational gain = ±0.23 dB

General parameters

Parameter	Value
EUT state	HATS position (force 10 N)
Stimulus	Level value = -20dBm0
Stimulus freq.	300...3350
DRP correction	DRP-FF

Conversational gain

Conversational gain	Limit min	Limit max	Verdict
			Pass
21.03 dB	18 dB	24 dB	Pass

Test specification:	**§ 68.317 (h), CS-03-P.5 9.1 - (4.4.1.1 ANSI/TIA-4965) Digital Terminals (WB)**		
Test purpose:	To check that the terminal have at least one volume control setting that will produce a conversational gain of >= 18 dB without significant clipping of the test signal. If the Conversational Gain exceeds 24 dB for any volume control setting, the volume control shall be reset so that it produces a conversational gain < 24 dB when the terminal is caused to pass through a proper on-hook transition.		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	25-Mar-25 14:05:24		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks: Tested without equalizer. f/w: uc_3.5.1.23			

Measurement uncertainty

Expanded Uncertainty, k=2 (95% confidence)

Conversational gain = ±0.23 dB

General parameters

Parameter	Value
EUT state	HATS position (force 10 N)
Stimulus	Level value = -20dBm0
Stimulus freq.	100...8000
DRP correction	DRP-FF

Conversational gain

Conversational gain	Limit min	Limit max	Verdict
			Pass
22.92 dB	18 dB	24 dB	Pass

Test specification:	**CS-03 P.5 10. Test report requirements**		
Test purpose:	Test report requirements		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	21-Apr-25 15:36:25		
Temperature: 22.8 °C	**Air Pressure:** 1011 hPa	**Relative Humidity:** 45 %	**Mains Power Supply:** 230 VAC, 50 Hz
Product name: IP Phone 425HD	**Product type:** IP Phone	**Product model:** 425HD	**Product serial:**
Remarks:			

10. Test report requirements

In addition to the reporting requirements set forth in annex D of Terminal Attachment Program Procedure DC-01, *Procedure for Declaration of Conformity and Registration of Terminal Equipment*, the test report shall include:

a) The handset position used during the testing (i.e. Standard Test Position (STP) or Recommended Test Position (RPT)). When the RPT is used, then the test report shall include:

Standard Test Position (STP)	STP was used during test		**Pass**
Recommended Test Position (RPT)	MECRP (Manufacturer-defined Ear Cap Reference Point) (Delta from actual ECRP)		NA
	Axis	Delta (mm)	
	y		
	x		
	Angle settings		NA
	Angle	Delta from standard angle (°)	
	A		
	B		
	C		
	Application force (N)	10	Pass

b) For digital and IP phones, the narrowband and wideband codec used during testing must be reported.

Narrowband codec	G.711
Wideband codec	G.722

END OF DOCUMENT