MS Teams V4 Speakerphone Measurements

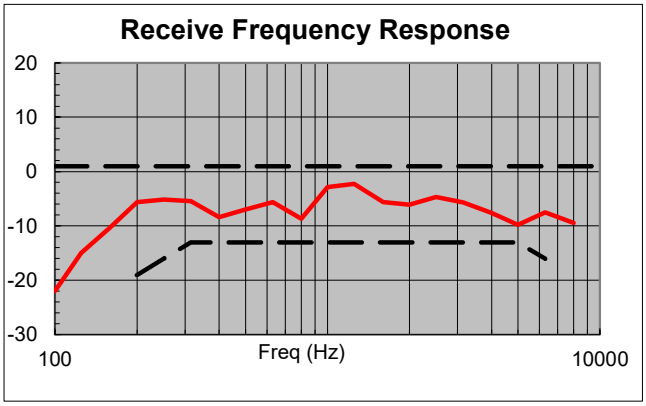
Device Under Test:	Example Group Conferencing Device (Amalgam)

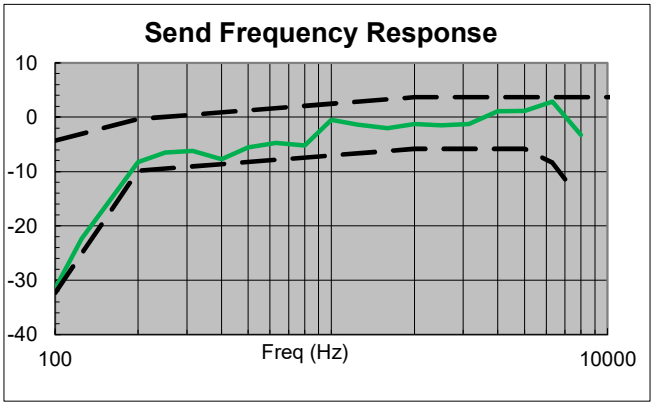
Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.

Test Date:	5/3/2023

Frequency Response

MS Teams V4	Conferencing 4.5m Test	Margin	Limits	Result	Reference
Section 4.1.10	Send Frequency Response (Standard)	0.81 dB	Floating Limits	PASS	Page 5
Section 4.1.10	Send Frequency Response (Premium)	-0.14 dB	Floating Limits	FAIL	Page 6
Section 4.2.7	Receive Frequency Response (Standard)	3.23 dB	Floating Limits	PASS	Page 12
Section 4.2.7	Receive Frequency Response (Premium)	2.23 dB	Floating Limits	PASS	Page 13





Output Level

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.1.4	Send Output Level Norm (Standard)	-15.67 dB	-8.0/-18.0	PASS	Page 5
Section 4.1.4	Send Output Level Norm (Premium)	-15.67 dB	-8.0/-15.0	FAIL	Page 6
Section 4.1.5	Send Output Level Quiet (Standard)	-18.37 dB	-31.00	PASS	Page 5
Section 4.1.5	Send Output Level Quiet (Premium)	-18.37 dB	-25.00	PASS	Page 6
Section 4.2.1	Receive Output Level (Standard)	73.61 dB	75.0/71.0	PASS	Page 12

Latency

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.1.2	Send Latency (Standard)	0.372 sec	0.2 sec	FAIL	
Section 4.1.2	Send Latency (Premium)	0.372 sec	0.2 sec	FAIL	
Section 4.2.3	Receive Latency (Standard)	0.1742 sec	0.2 sec	PASS	
Section 4.2.3	Receive Latency (Premium)	0.1742 sec	0.2 sec	PASS	

MS Teams V4 Speakerphone Measurements

Total Quality Loss (POLQA)

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.1.1	Send MOS - IEEE Male Speech (Std)	3.75	≥ 3.6	PASS	
Section 4.1.1	Send MOS - IEEE Male Speech (Prm)	3.75	≥ 3.8	FAIL	
Section 4.1.1	Send MOS - GL Male Speech (Std)	3.60	≥ 3.6	PASS	
Section 4.1.1	Send MOS - GL Male Speech (Prm)	3.60	≥ 3.8	FAIL	
Section 4.1.1	Send MOS - GL Female Speech (Std)	3.65	≥ 3.6	PASS	
Section 4.1.1	Send MOS - GL Female Speech (Prm)	3.65	≥ 3.8	FAIL	
Section 4.2.2	Receive MOS - IEEE Male Speech (Std)	4.10	≥ 3.7	PASS	
Section 4.2.2	Receive MOS - IEEE Male Speech (Prm)	4.10	≥ 3.9	PASS	
Section 4.2.2	Receive MOS - GL Male Speech (Std)	4.05	≥ 3.7	PASS	
Section 4.2.2	Receive MOS - GL Male Speech (Prm)	4.05	≥ 3.9	PASS	
Section 4.2.2	Receive MOS - GL Female Speech (Std)	3.85	≥ 3.7	PASS	
Section 4.2.2	Receive MOS - GL Female Speech (Prm)	3.85	≥ 3.9	FAIL	

Terminal Coupling Loss

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.3.1	TCL -12dBm0 male - Nom VC (Standard)	67.48 dB	50.00	PASS	Page 19
Section 4.3.1	TCL -12dBm0 male - Nom VC (Premium)	67.48 dB	56.00	PASS	Page 19
	TCL -20dBm0 male - Nom VC	59.82 dB	info only	Not Tested	Page 19
	TCL -26dBm0 male - Nom VC	54.18 dB	info only	Not Tested	Page 19
Section 4.3.1	TCL -12dBm0 female - Nom VC (Standard)	71.46 dB	50.0	PASS	Page 20
Section 4.3.1	TCL -12dBm0 female - Nom VC (Premium)	71.46 dB	56.0	PASS	Page 20
	TCL -20dBm0 female - Nom VC	63.49 dB	info only	Not Tested	Page 20
	TCL -26dBm0 female - Nom VC	58.35 dB	info only	Not Tested	Page 20

Terminal Coupling Loss (Raw Mode)

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.3.5	TCL -12dBm0 male - Nom VC (Standard)			Separate Report	
Section 4.3.5	TCL -12dBm0 male - Nom VC (Premium)			Separate Report	
	TCL -20dBm0 male - Nom VC			Separate Report	
	TCL -26dBm0 male - Nom VC			Separate Report	
Section 4.3.5	TCL -12dBm0 female - Nom VC (Standard)			Separate Report	
Section 4.3.5	TCL -12dBm0 female - Nom VC (Premium)			Separate Report	
	TCL -20dBm0 female - Nom VC			Separate Report	
	TCL -26dBm0 female - Nom VC			Separate Report	

INDY ACOUSTIC RESEARCH

MS Teams V4 Speakerphone Measurements

EQUEST MOS

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.3.2	MOS - Male Speech1 - Nom VC (Std)	4.45	≥ 4.0	PASS	Page 21
Section 4.3.2	MOS - Male Speech1 - Nom VC (Prm)	4.45	≥ 4.2	PASS	Page 21
Section 4.3.2	MOS - Female Speech2 - Nom VC (Std)	3.71	≥ 4.0	FAIL	Page 21
Section 4.3.2	MOS - Female Speech2 - Nom VC (Prm)	3.71	≥ 4.2	FAIL	Page 21
Section 4.3.2	MOS - Male Speech3 - Nom VC (Std)	4.39	≥ 4.0	PASS	Page 21
Section 4.3.2	MOS - Male Speech3 - Nom VC (Prm)	4.39	≥ 4.2	PASS	Page 21
Section 4.3.2	MOS - Male Speech4 - Nom VC (Std)	4.37	≥ 4.0	PASS	Page 21
Section 4.3.2	MOS - Male Speech4 - Nom VC (Prm)	4.37	≥ 4.2	PASS	Page 21
Section 4.3.2	MOS - Female Speech5 - Nom VC (Std)	3.74	≥ 4.0	FAIL	Page 21
Section 4.3.2	MOS - Female Speech5 - Nom VC (Prm)	3.74	≥ 4.2	FAIL	Page 21
Section 4.3.2	MOS - Female Speech6 - Nom VC (Std)	3.53	≥ 4.0	FAIL	Page 21
Section 4.3.2	MOS - Female Speech6 - Nom VC (Prm)	3.53	≥ 4.2	FAIL	Page 21
Section 4.3.8	MOS - Male Speech1 - Max VC (Std)		≥ 3.5	No Device Volume Control	
Section 4.3.8	MOS - Male Speech1 - Max VC (Prm)		≥ 3.7	No Device Volume Control	
Section 4.3.8	MOS - Female Speech2 - Max VC (Std)		≥ 3.5	No Device Volume Control	
Section 4.3.8	MOS - Female Speech2 - Max VC (Prm)		≥ 3.7	No Device Volume Control	
Section 4.3.8	MOS - Male Speech3 - Max VC (Std)		≥ 3.5	No Device Volume Control	
Section 4.3.8	MOS - Male Speech3 - Max VC (Prm)		≥ 3.7	No Device Volume Control	
Section 4.3.8	MOS - Male Speech4 - Max VC (Std)		≥ 3.5	No Device Volume Control	
Section 4.3.8	MOS - Male Speech4 - Max VC (Prm)		≥ 3.7	No Device Volume Control	
Section 4.3.8	MOS - Female Speech5 - Max VC (Std)		≥ 3.5	No Device Volume Control	
Section 4.3.8	MOS - Female Speech5 - Max VC (Prm)		≥ 3.7	No Device Volume Control	
Section 4.3.8	MOS - Female Speech6 - Max VC (Std)		≥ 3.5	No Device Volume Control	
Section 4.3.8	MOS - Female Speech6 - Max VC (Prm)		≥ 3.7	No Device Volume Control	

Echo Control Characteristics

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.3.3	Category F - ST Segment 1 - Nom VC	0.7 %	< 5.0	PASS	
Section 4.3.3	Category F - ST Segment 2 - Nom VC	2.1 %	< 5.0	PASS	
Section 4.3.3	Category F - DT Segment 1 - Nom VC	0 %	< 5.0	PASS	
Section 4.3.3	Category F - DT Segment 2 - Nom VC	0 %	< 5.0	PASS	
Section 4.3.3	Category G - ST Segment 1 - Nom VC	9.4 %	< 5.0	FAIL	
Section 4.3.3	Category G - ST Segment 2 - Nom VC	27.8 %	< 5.0	FAIL	
Section 4.3.3	Category G - DT Segment 1 - Nom VC	0 %	< 5.0	PASS	
Section 4.3.3	Category G - DT Segment 2 - Nom VC	0 %	< 5.0	PASS	
Section 4.3.9	Category F - ST Segment 1 - Max VC	%	< 8.0	No Device Volume Control	
Section 4.3.9	Category F - ST Segment 2 - Max VC	%	< 8.0	No Device Volume Control	
Section 4.3.9	Category F - DT Segment 1 - Max VC	%	< 8.0	No Device Volume Control	
Section 4.3.9	Category F - DT Segment 2 - Max VC	%	< 8.0	No Device Volume Control	
Section 4.3.9	Category G - ST Segment 1 - Max VC	%	< 8.0	No Device Volume Control	
Section 4.3.9	Category G - ST Segment 2 - Max VC	%	< 8.0	No Device Volume Control	
Section 4.3.9	Category G - DT Segment 1 - Max VC	%	< 8.0	No Device Volume Control	
Section 4.3.9	Category G - DT Segment 2 - Max VC	%	< 8.0	No Device Volume Control	

MS Teams V4 Speakerphone Measurements

Doubletalk Send Attenuation

Page 4

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.3.4	Attenuation - Segment 1 - Nom VC (Std)	1.1 dB	≤ 15.0	PASS	Page 26
Section 4.3.4	Attenuation - Segment 1 - Nom VC (Prm)	1.1 dB	≤ 12.0	PASS	Page 26
Section 4.3.4	Attenuation - Segment 2 - Nom VC (Std)	58.8 dB	≤ 15.0	FAIL	Page 26
Section 4.3.4	Attenuation - Segment 2 - Nom VC (Prm)	58.8 dB	≤ 12.0	FAIL	Page 26
Section 4.3.4	Attenuation - Overall Ah - Nom VC (Std)	15.5 dB	≤ 15.0	FAIL	Page 26
Section 4.3.4	Attenuation - Overall Ah - Nom VC (Prm)	15.5 dB	≤ 12.0	FAIL	Page 26
Section 4.3.10	Attenuation - Segment 1 - Max VC (Std)	dB	≤ 28.0	No Device Volume Control	
Section 4.3.10	Attenuation - Segment 2 - Max VC (Std)	dB	≤ 28.0	No Device Volume Control	
Section 4.3.10	Attenuation - Overall Ah - Max VC (Std)	dB	≤ 28.0	No Device Volume Control	

Channel Noise

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.1.6	Send Idle Channel SpNR (Standard)				
Section 4.1.6	Send Idle Channel SpNR (Premium)				
Section 4.1.7	Send Active Channel SpNR (Standard)				
Section 4.1.7	Send Active Channel SpNR (Premium)				
Section 4.2.4	Receive Idle Channel (Standard)				
Section 4.2.4	Receive Idle Channel (Premium)				

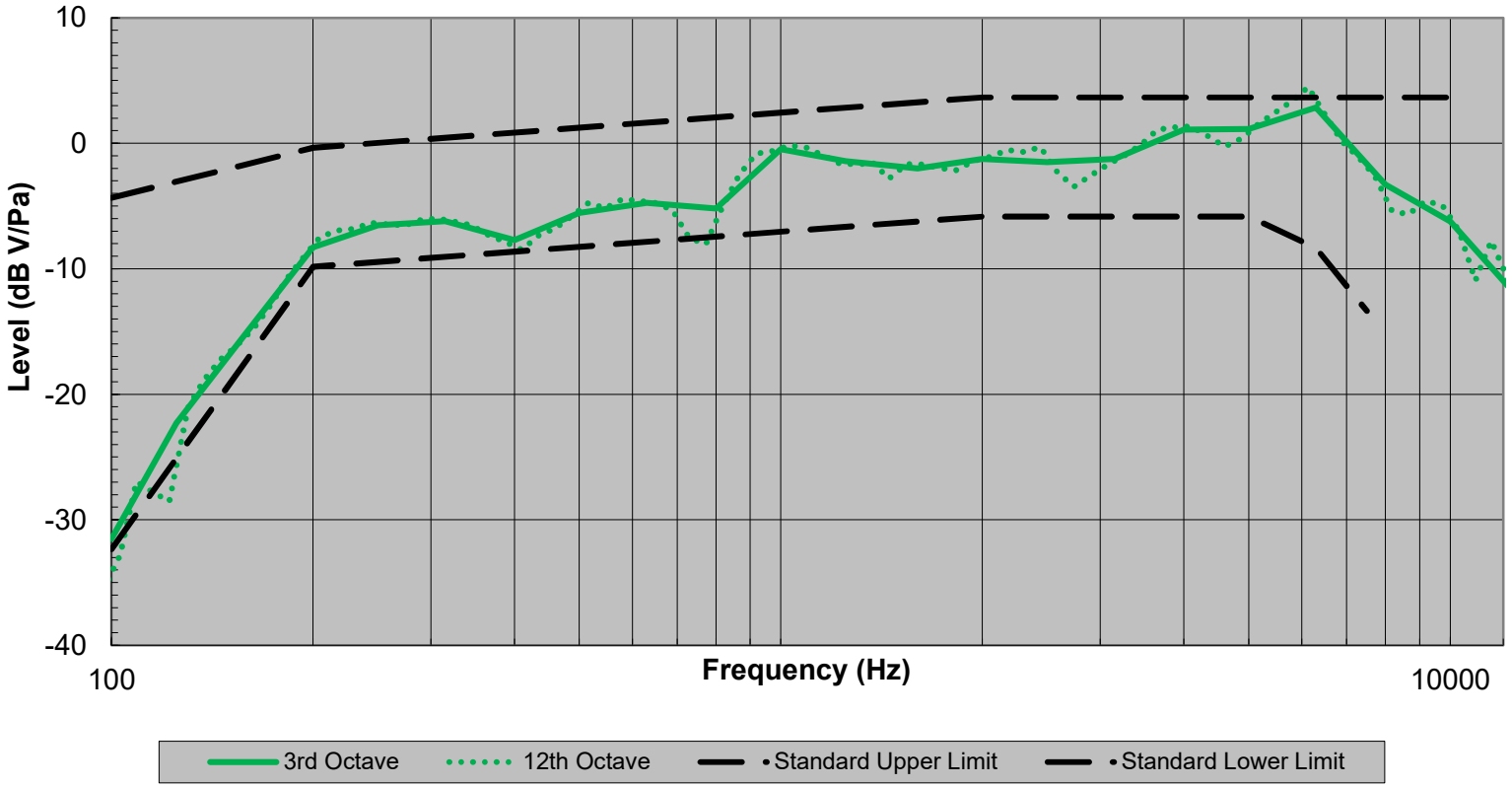
Single Frequency Interference

MS Teams V4	Conferencing 4.5m Test	Measured	Limits	Result	Reference
Section 4.1.8	Send Single Frequency Interference	-88.4 dB	-70.00	PASS	Page 7
Section 4.2.5	Receive Single Frequency Interference	17.2 dB	25.00	PASS	Page 14

Distortion and Noise

MS Teams V4	Conferencing 4.5m Test	Margin	Limits	Result	Reference
Section 4.1.9	Send Distortion and Noise (Standard)	dB	0.00	0.00	#REF!
Section 4.1.9	Send Distortion and Noise (Premium)	dB	0.00	0.00	#REF!
Section 4.2.6	Receive Distortion and Noise (Standard)	dB	0.00	0.00	#REF!
Section 4.2.6	Receive Distortion and Noise (Premium)	dB	0.00	0.00	#REF!

MS Teams V4 Conferencing Measurement
Send Frequency Response

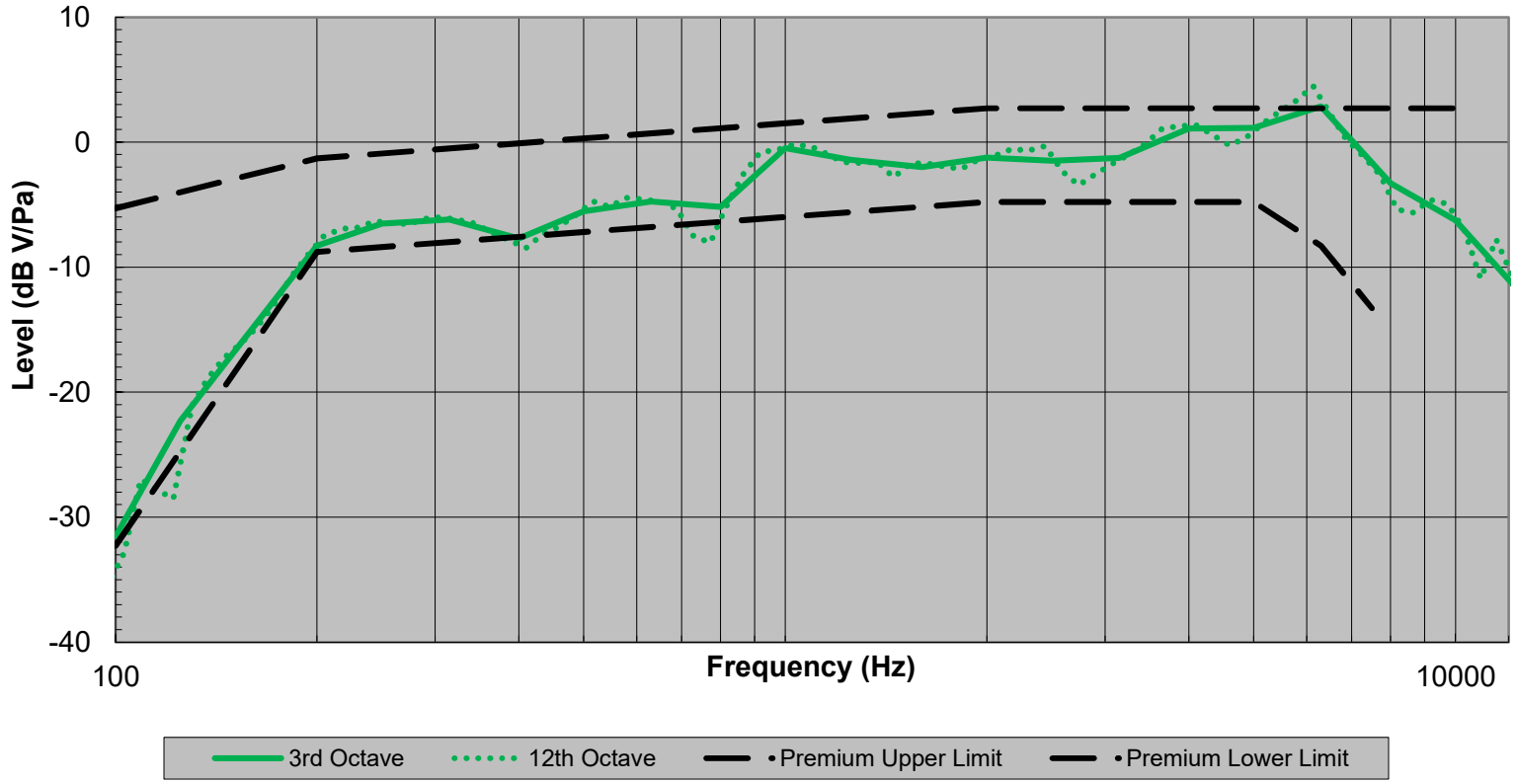


Conferencing 4.5m Test	Measured	Standard Limits	Result
Sect. 4.1.4 Output Level (Norm)	-15.67 dB	-8.0/-18.0	PASS
Sect. 4.1.5 Output Level (Quiet)	-18.37 dB	-31.00	PASS
Conferencing 4.5m Test	**Margin**	**Standard Limits**	**Result**
Sect. 4.1.10 Frequency Resp	0.81 dB	Floating Limits	PASS

Stimulus Level
-13 dBPa Normal
-23 dBPa Quiet
Test Date
5/3/2023 12:45

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.

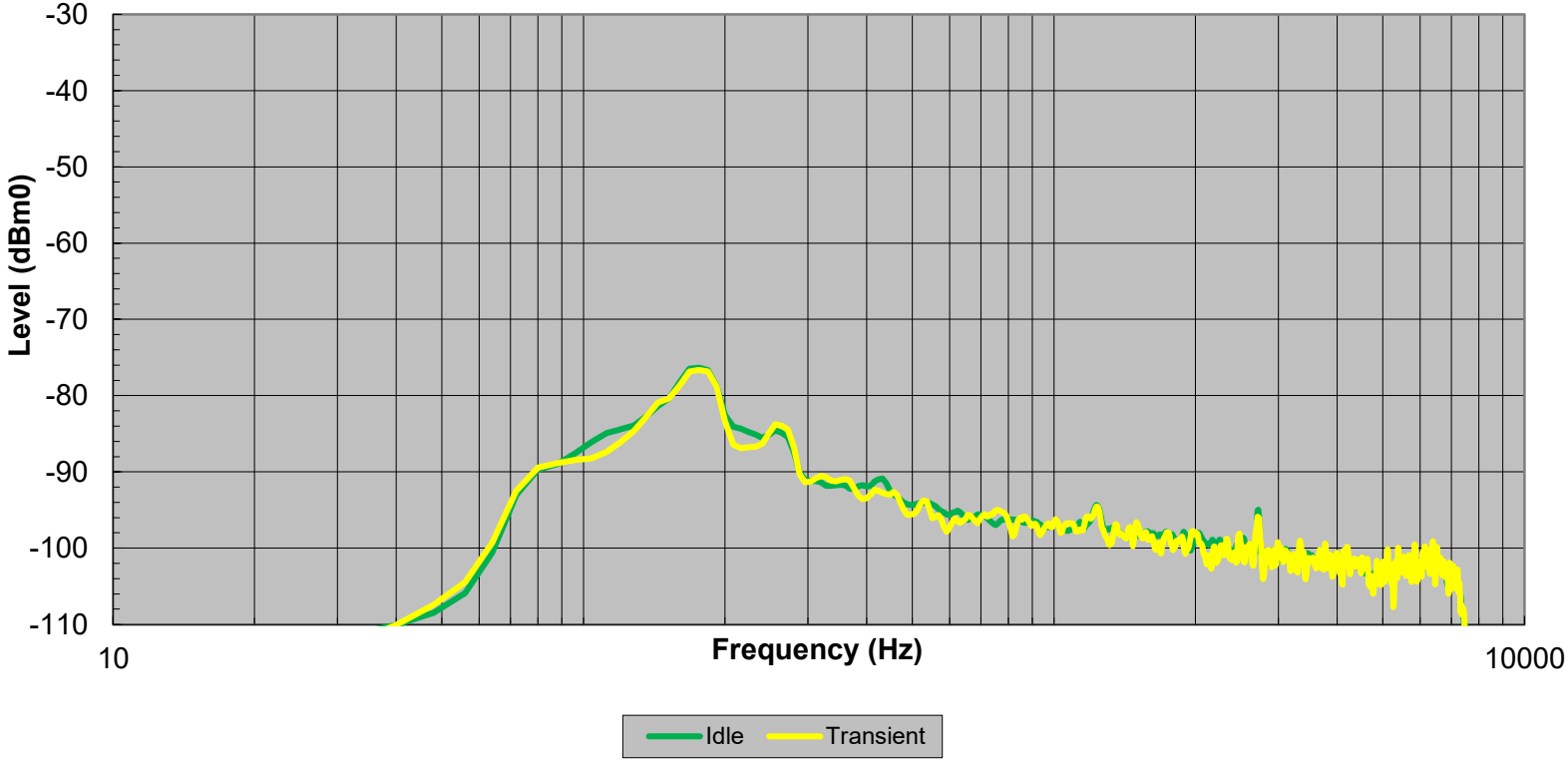
MS Teams V4 Conferencing Measurement
Send Frequency Response



Conferencing 4.5m Test	Measured	Premium Limits	Result
Sect. 4.1.4 Output Level (Norm)	-15.67 dB	-8.0/-15.0	FAIL
Sect. 4.1.5 Output Level (Quiet)	-18.37 dB	-25.00	PASS
Conferencing 4.5m Test	**Margin**	**Premium Limits**	**Result**
Sect. 4.1.10 Frequency Resp	-0.14 dB	Floating Limits	FAIL

Stimulus Level
-13 dBPa Normal
-23 dBPa Quiet
Test Date
5/3/2023 12:45

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.

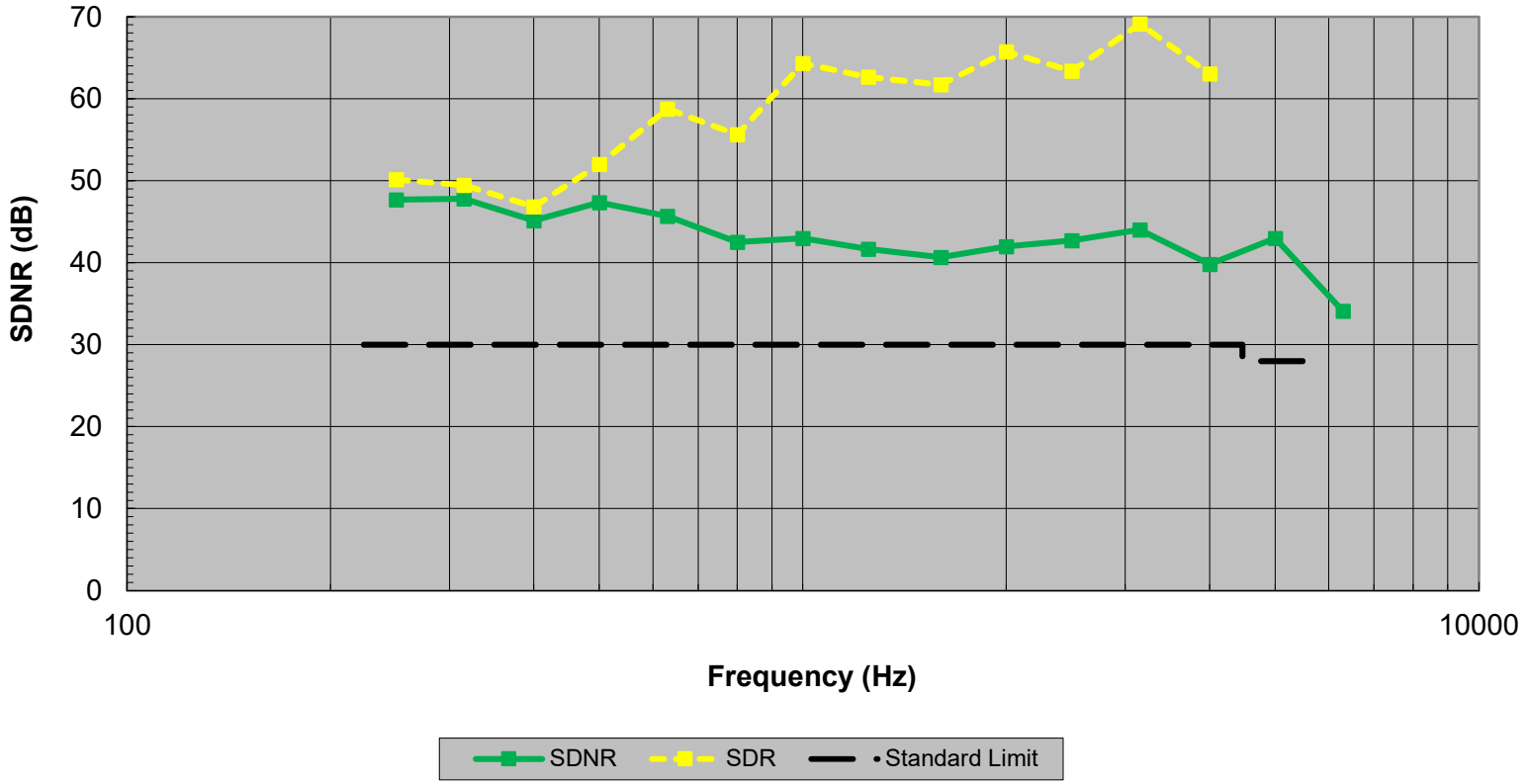


Test	Measured	Limits	Result
SPK Send Noise dBm0(A)	-75.4 dB	-63.0	PASS
SPK Send SFI dBm0(A)	-88.4 dB	-70.0	PASS
SPK Send SFI Quiet	13 dB	info only	
SPK Transient Send Noise dBm0(A	-75.6 dB	-63.00	PASS

Test Date
7/11/2023 14:22

Comments:	Measured on B&K 5128 HATS at chest pocket position.

MS Teams V4 Conferencing Measurement
Send Signal-To-Distortion & Noise Ratio vs Frequency



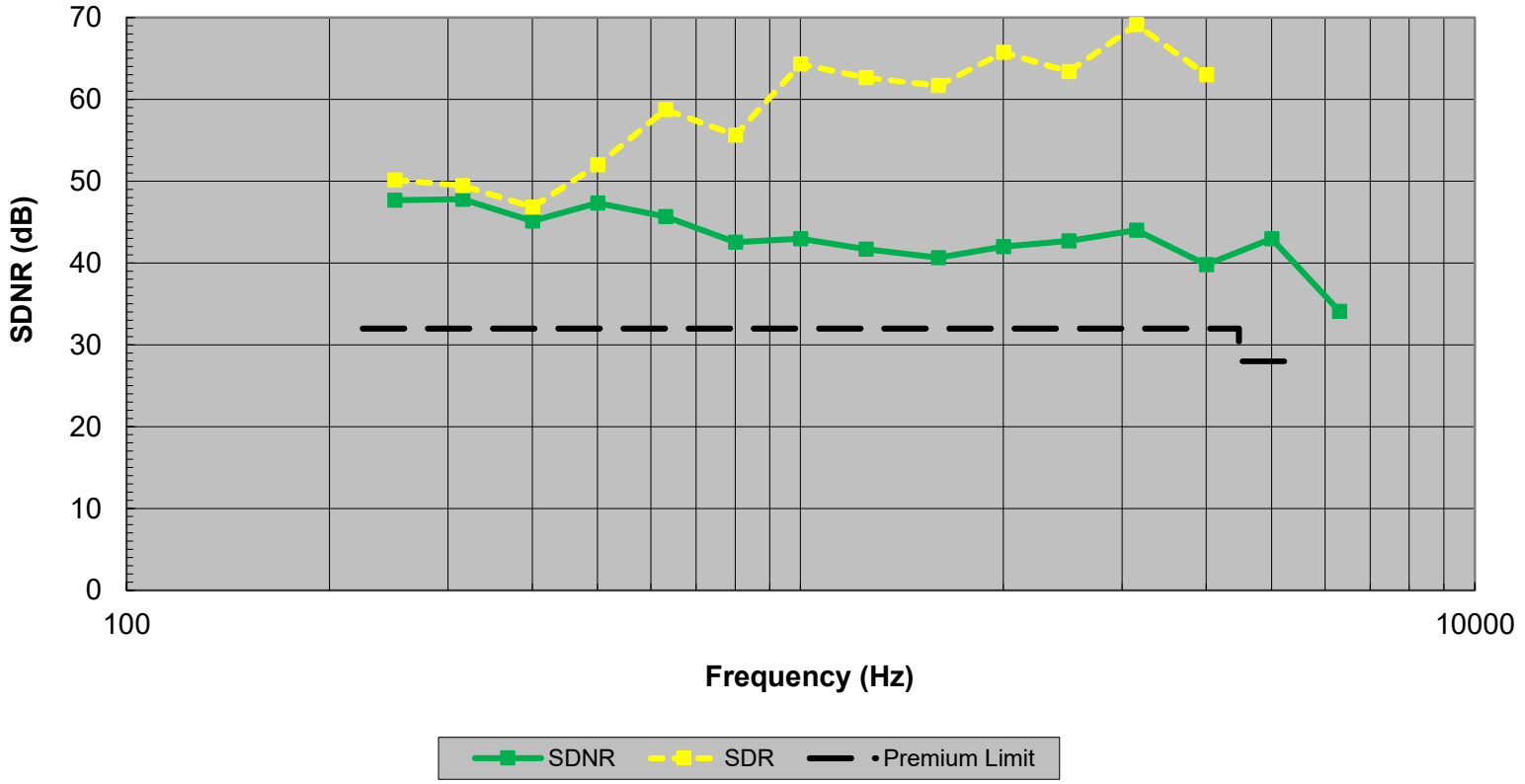
Conferencing 4.5m Test	Margin	Standard Limits	Result	Test Date
Sect. 4.1.9 Distortion and Noise	9.8 dB	Absolute Limits	PASS	3/23/2023 17:33

Note: SDNR includes noise and distortion products.
Note: SDR includes only 2nd and 3rd harmonic distortion.

Stimulus level	-5 dBPa
Sentence conditioning	-5 dBPa
Short conditioning	-5 dBPa

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Windows input-output max volume settings.

MS Teams V4 Conferencing Measurement
Send Signal-To-Distortion & Noise Ratio vs Frequency

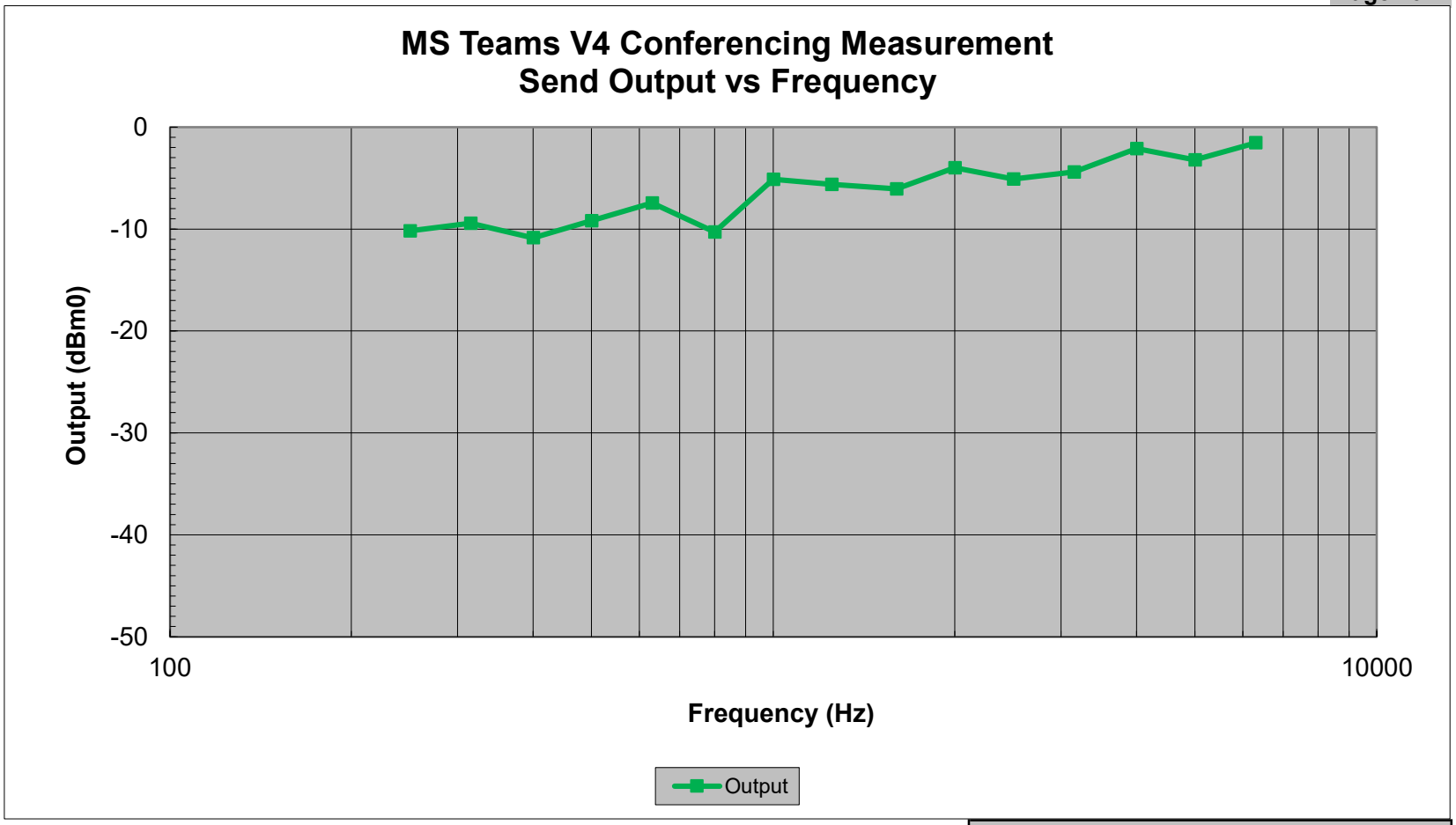


Conferencing 4.5m Test	Margin	Premium Limits	Result	Test Date
Sect. 4.1.9 Distortion and Noise	7.8 dB	Absolute Limits	PASS	3/23/2023 17:33

Note: SDNR includes noise and distortion products.
Note: SDR includes only 2nd and 3rd harmonic distortion.

Stimulus level	-5 dBPa
Sentence conditioning	-5 dBPa
Short conditioning	-5 dBPa

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Windows input-output max volume settings.

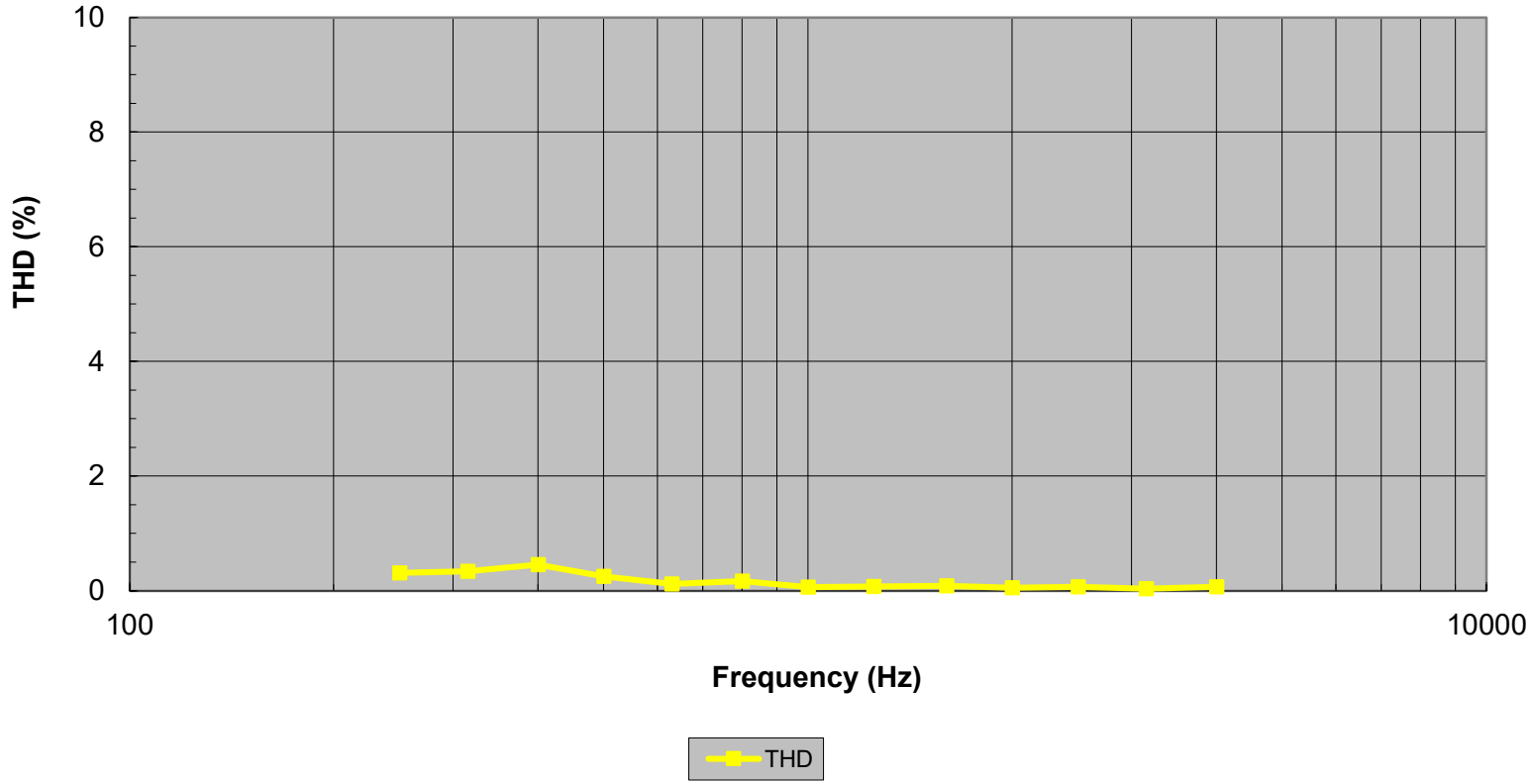


Test Date
3/23/2023 17:33

Stimulus level	-5 dBPa
Sentence conditioning	-5 dBPa
Short conditioning	-5 dBPa

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Windows input-output max volume settings.

MS Teams V4 Conferencing Measurement
Send THD (comprised of 2nd & 3rd Harmonics)



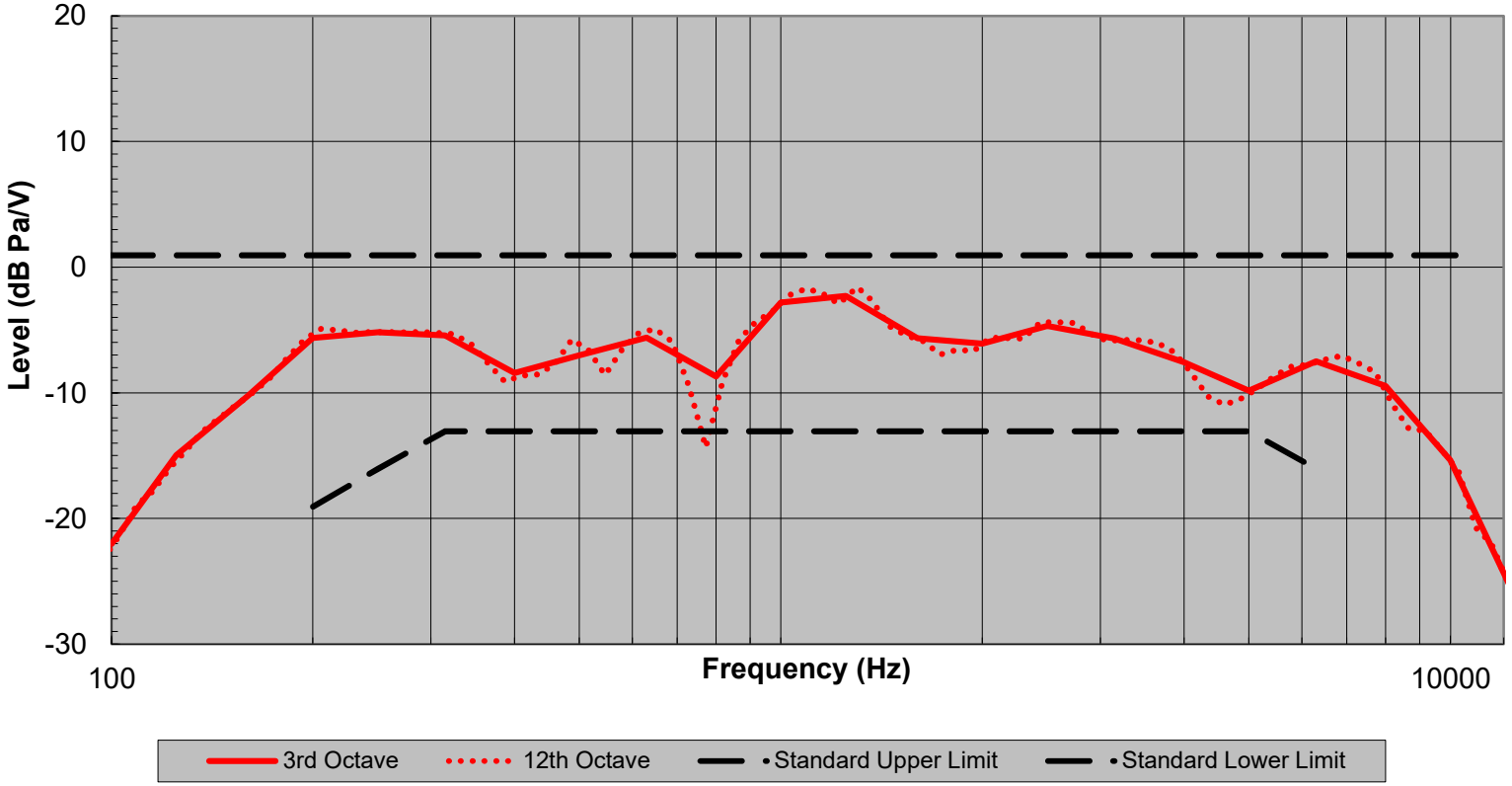
Test Date
3/23/2023 17:33

Note: THD includes only 2nd and 3rd harmonic distortion.

Stimulus level	-5 dBPa
Sentence conditioning	-5 dBPa
Short conditioning	-5 dBPa

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Windows input-output max volume settings.

MS Teams V4 Conferencing Measurement
Receive Frequency Response



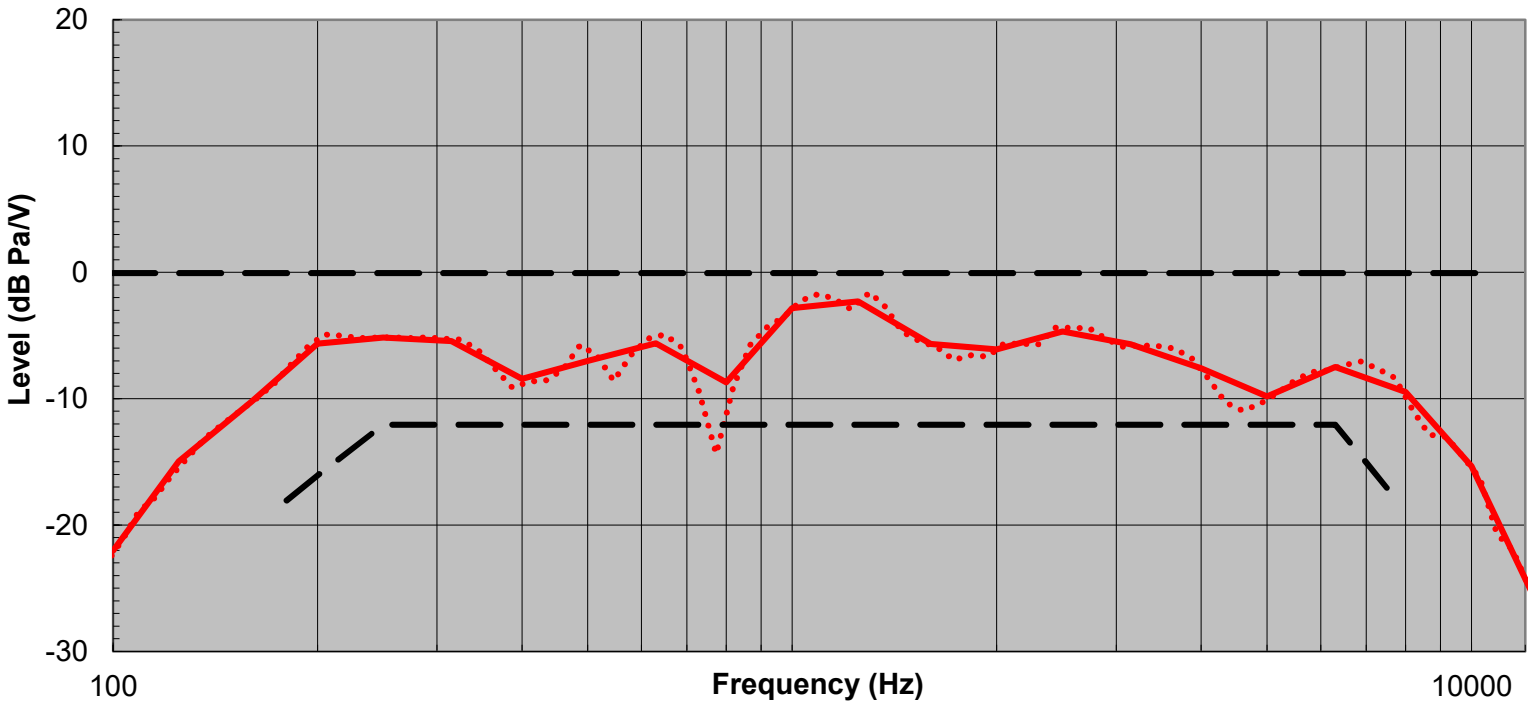
Conferencing 4.5m Test	Measured	Limits	Result
Sect. 4.2.1 Output Level	73.61 dB	75.0/71.0	PASS

Stimulus Level
-12 dBm0

Conferencing 4.5m Test	Margin	Standard Limits	Result
Sect. 4.2.7 Frequency Resp	3.23 dB	Floating Limits	PASS

Test Date
5/3/2023 12:36

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.



Conferencing 4.5m Test	Measured	Limits	Result
Sect. 4.2.1 Output Level	73.61 dB	75.0/71.0	PASS

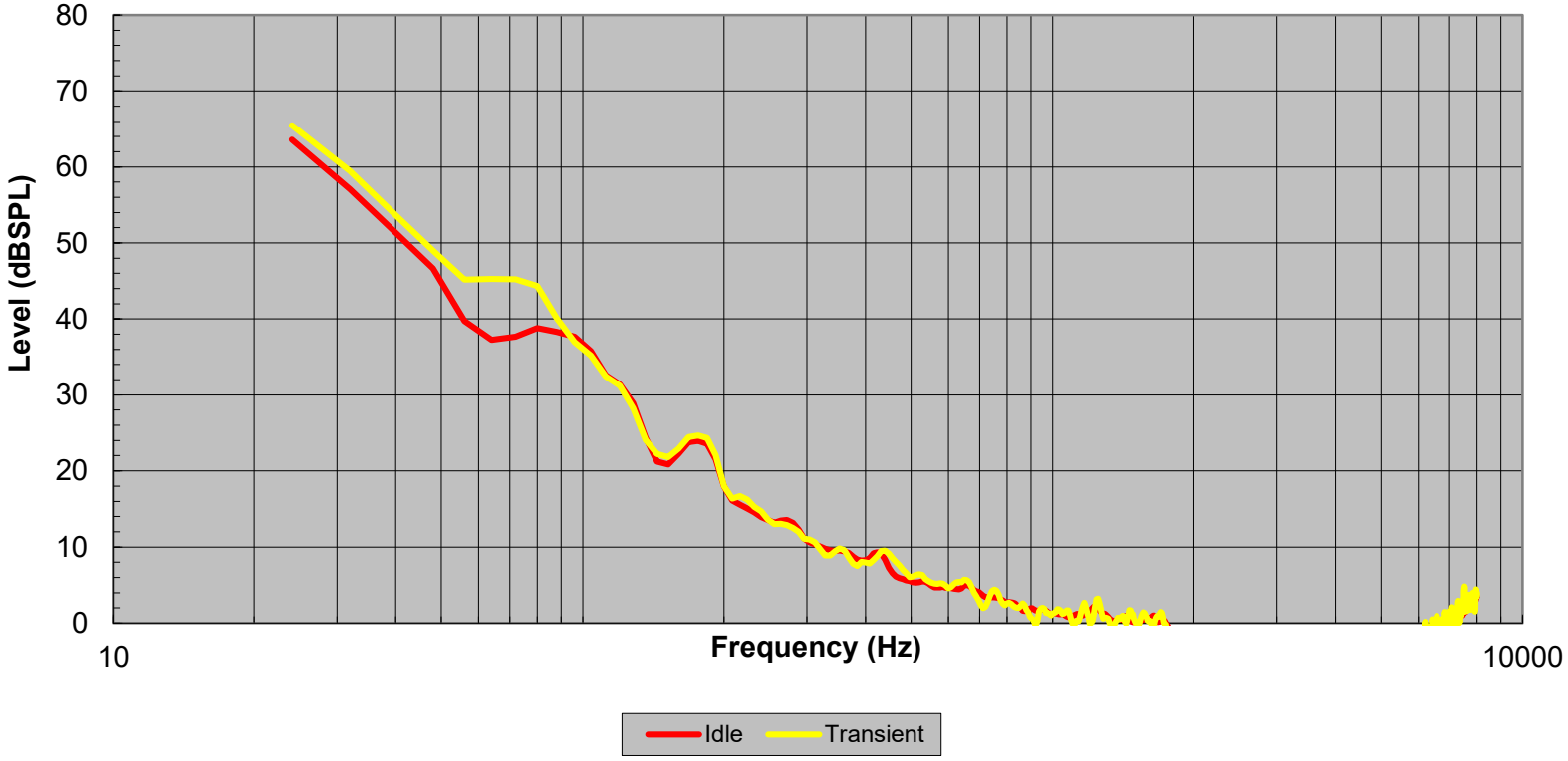
Stimulus Level
-12 dBm0

Conferencing 4.5m Test	Margin	Premium Limits	Result
Sect. 4.2.7 Frequency Resp	2.23 dB	Floating Limits	PASS

Test Date
5/3/2023 12:36

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.

TIA-920.120-B Speakerphone Measurement
Receive Noise Spectrum (unweighted)

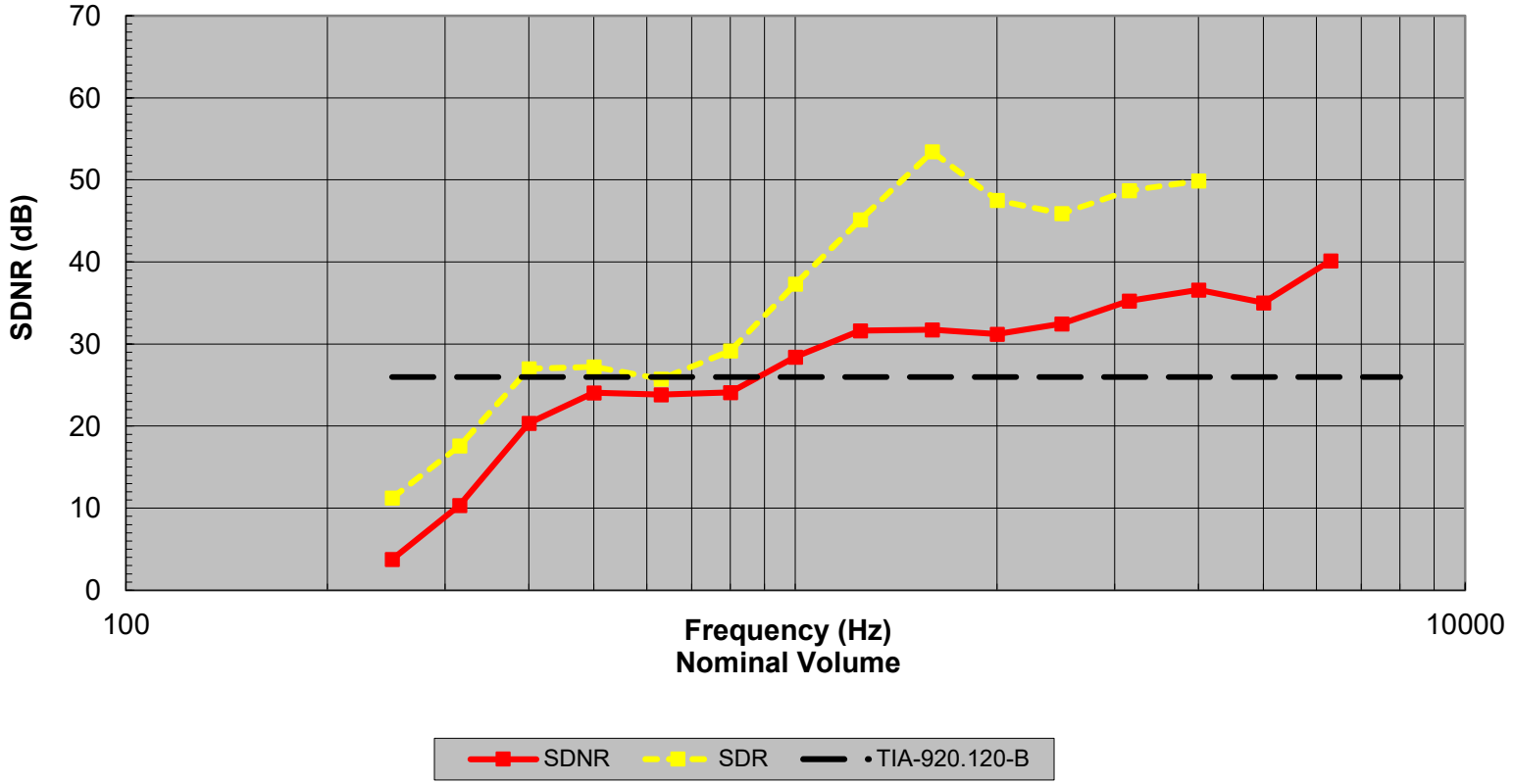


Test	Measured	Limits	Result
SPK Recv Noise dB(A)	24.2 dB	34.0	PASS
SPK Transient Recv Noise dB(A)	24.3 dB	39.00	PASS
SPK Recv SFI dB(A)	17.2 dB	25.0	PASS
SPK Recv SFI Quiet	7.1 dB	10.0	FAIL

Test Date
7/11/2023 14:36

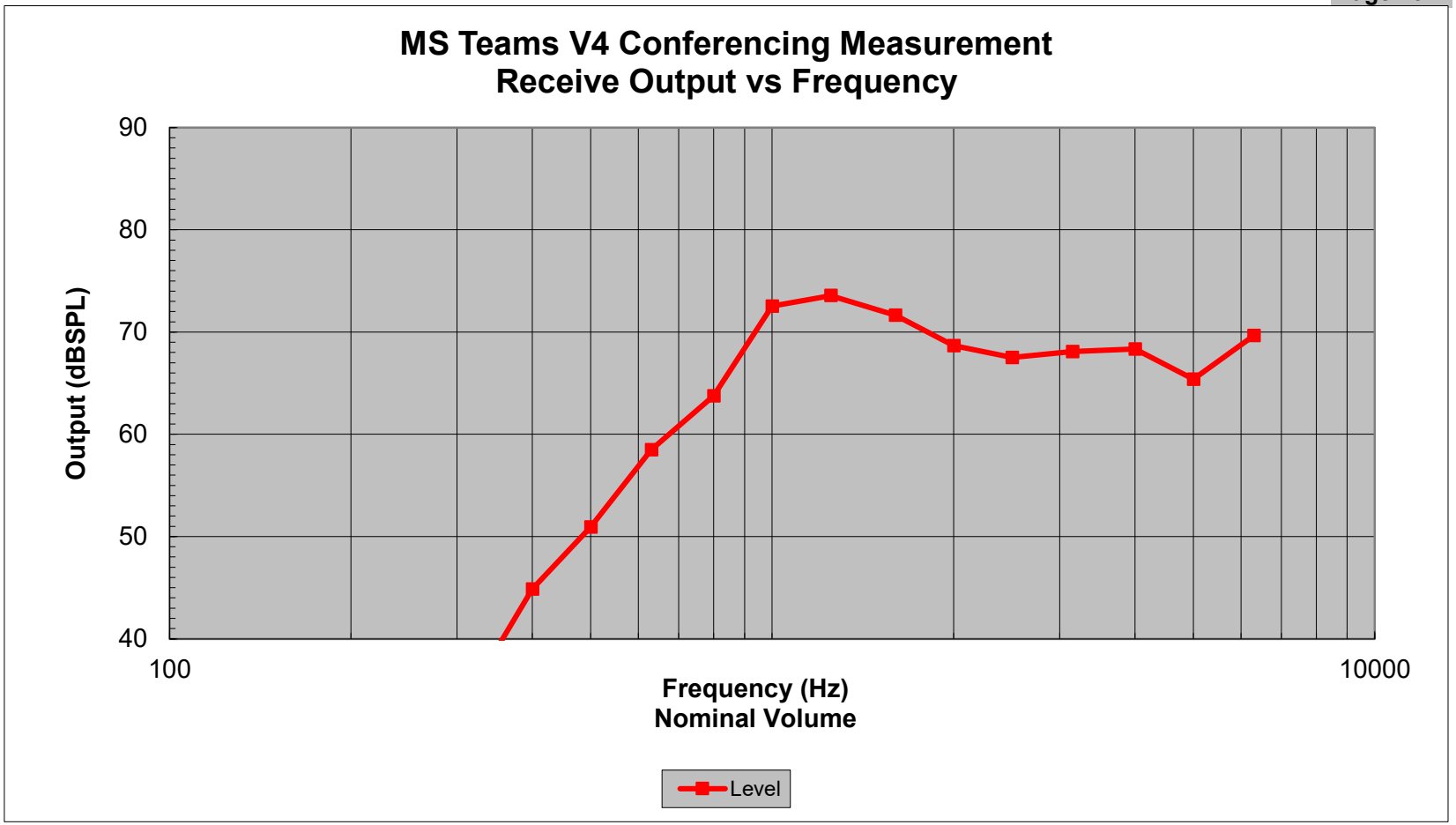
Comments:	Measured on B&K 5128 HATS at chest pocket position.

MS Teams V4 Conferencing Measurement
Receive Signal-To-Distortion & Noise Ratio vs Frequency



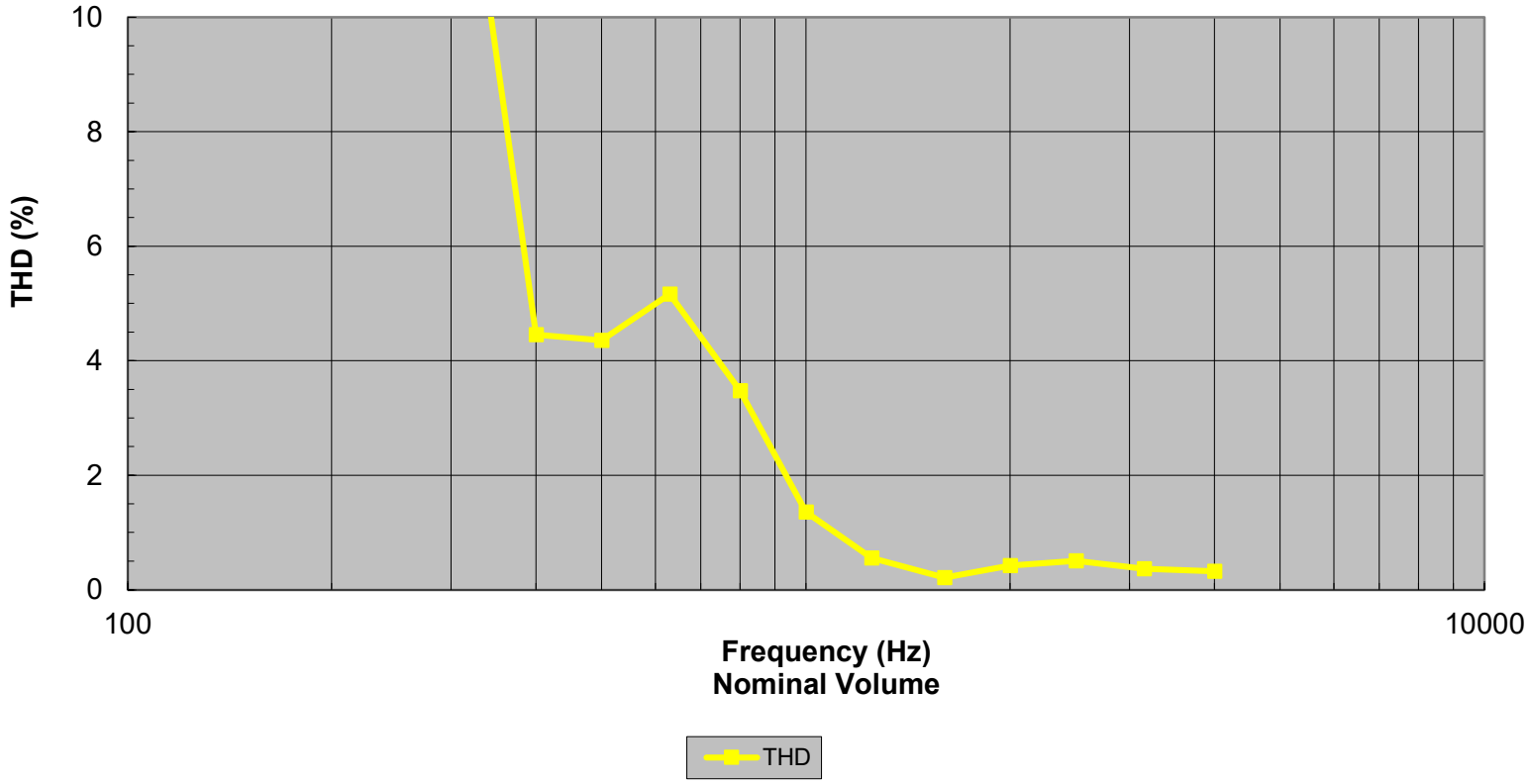
Test	Margin	Limits	Result	Test Date	
SPKRecvPNSDNRNomVC	-22.2 dB	Absolute Limits	FAIL	7/11/2023 14:49	
				Stimulus level	-10 dBPa
Note: SDNR includes noise and distortion products.				Sentence conditioning	-20 dBPa
SDR includes only 2nd and 3rd harmonic distortion.				Short conditioning	-20 dBPa

Comments:	Measured on B&K 5128 HATS at chest pocket position.



Test Date	
7/11/2023 14:49	
Stimulus level	-10 dBPa
Sentence conditioning	-20 dBPa
Short conditioning	-20 dBPa

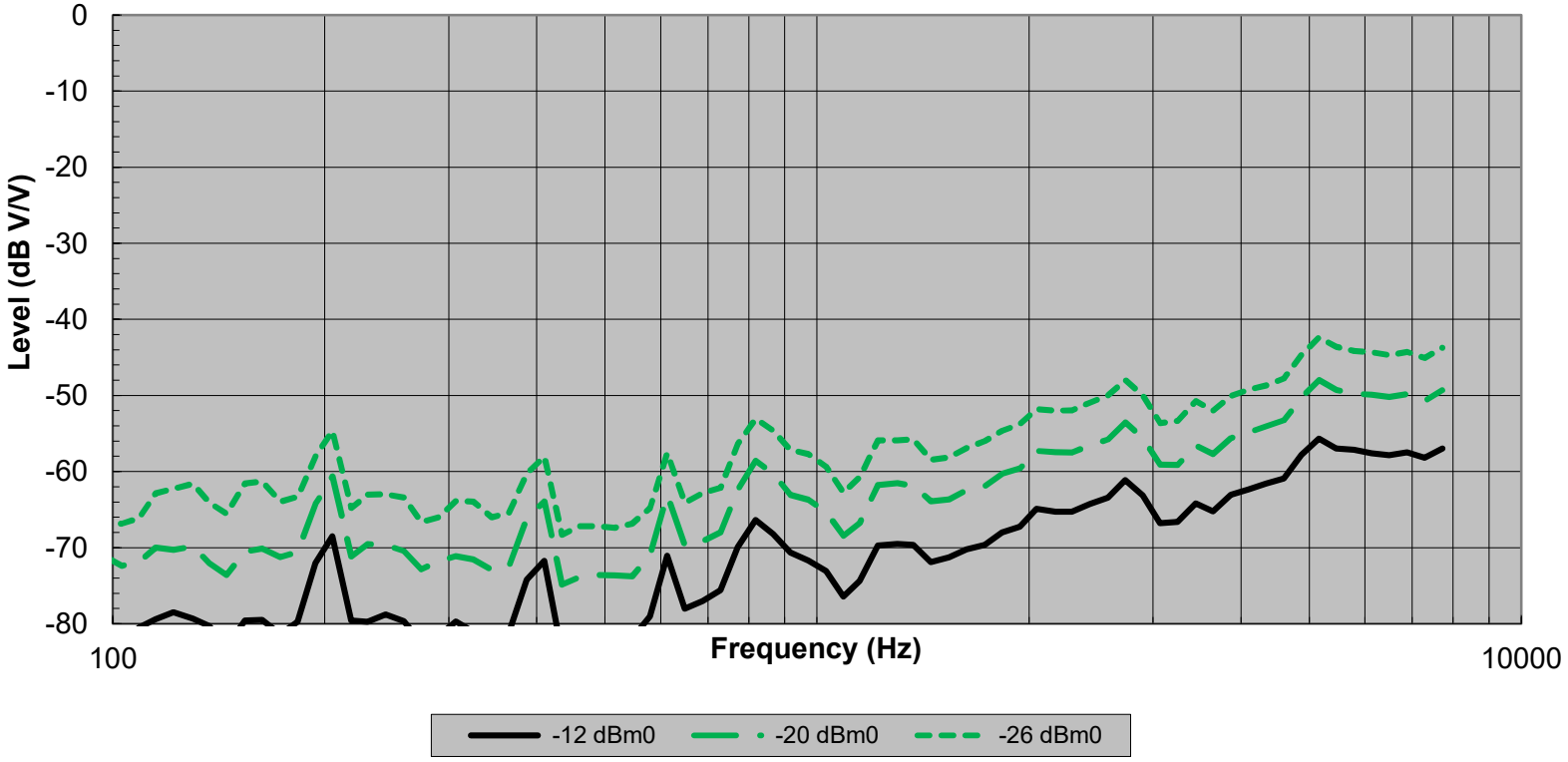
Comments:	Measured on B&K 5128 HATS at chest pocket position.



Test Date	
7/11/2023 14:49	
Stimulus level	-10 dBPa
Sentence conditioning	-20 dBPa
Short conditioning	-20 dBPa

Comments:	Measured on B&K 5128 HATS at chest pocket position.

MS Teams V4 Conferencing Measurement
Echo Frequency Response - IEEE Male



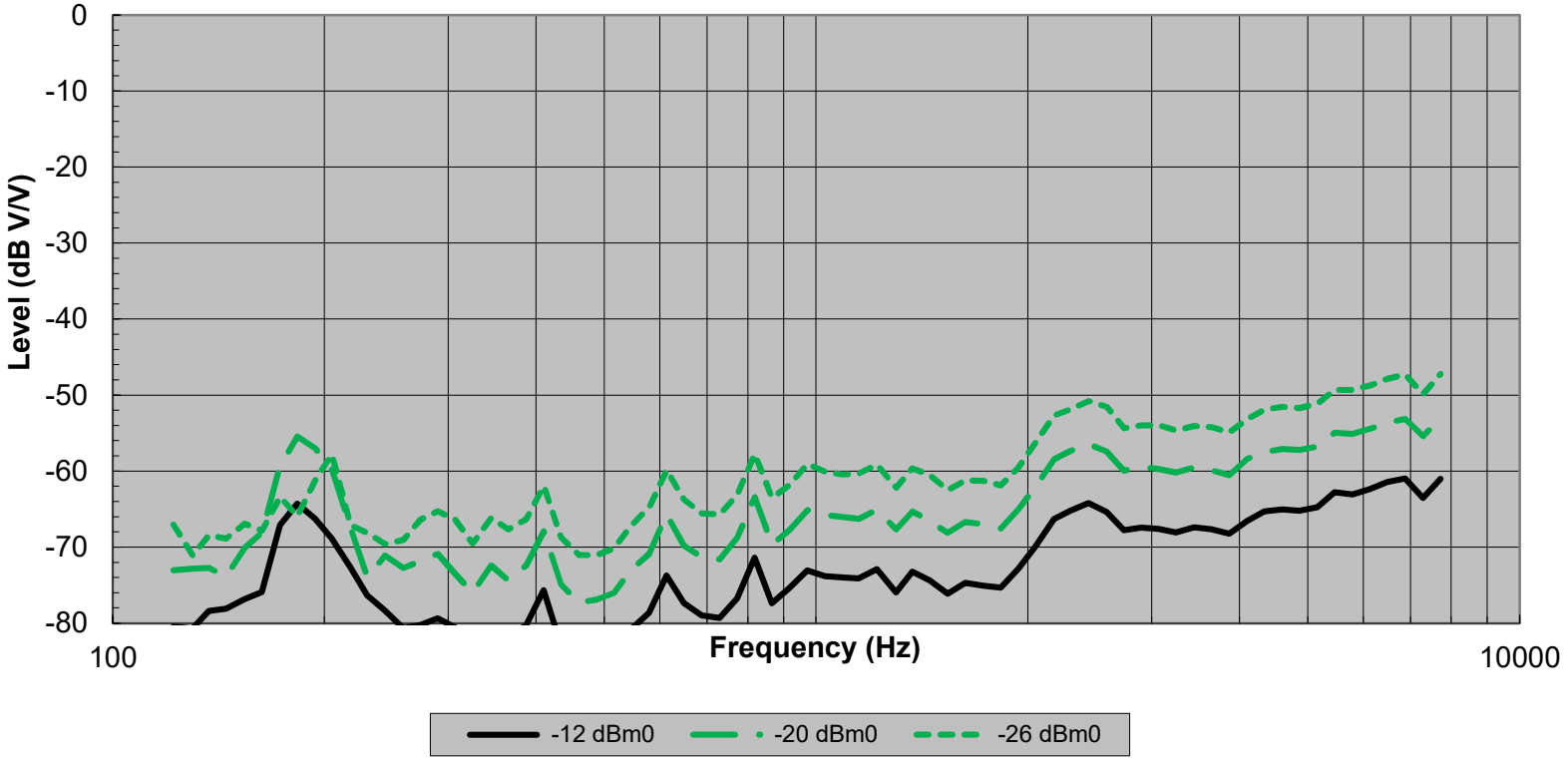
Conferencing 4.5m Test	Measured	Standard Limits	Result
Sect. 4.3.1 TCL -12dBm0 male	67.48 dB	50.00	PASS

Conferencing 4.5m Test	Measured	Premium Limits	Result
Sect. 4.3.1 TCL -12dBm0 male	67.48 dB	56.00	PASS
Sect. 4.3.1 TCL -20dBm0 male	59.82 dB	info only	
Sect. 4.3.1 TCL -26dBm0 male	54.18 dB	info only	

Test Date
5/3/2023 12:53

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.

MS Teams V4 Conferencing Measurement
Echo Frequency Response - IEEE Female



Conferencing 4.5m Test	Measured	Standard Limits	Result
Sect. 4.3.1 TCL -12dBm0 female	71.46 dB	50.0	PASS

Conferencing 4.5m Test	Measured	Premium Limits	Result
Sect. 4.3.1 TCL -12dBm0 female	71.46 dB	56.0	PASS
Sect. 4.3.1 TCL -20dBm0 female	63.49 dB	info only	
Sect. 4.3.1 TCL -26dBm0 female	58.35 dB	info only	

Test Date
5/3/2023 12:53

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.

MS Teams V4 Speakerphone Measurement
EQUEST Echo - Nominal Volume

Section 4.3.2 EQUEST - Male1						
Echo Level (dB)	Delay ms	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
-74.26	N/A	4.45	≥ 4.0	PASS	≥ 4.2	PASS

Section 4.3.2 EQUEST - Female2						
Echo Level (dB)	Delay ms	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
-78.66	N/A	3.71	≥ 4.0	FAIL	≥ 4.2	FAIL

Section 4.3.2 EQUEST - Male3						
Echo Level (dB)	Delay ms	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
-76.99	N/A	4.39	≥ 4.0	PASS	≥ 4.2	PASS

Section 4.3.2 EQUEST - Male4						
Echo Level (dB)	Delay ms	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
-80.76	N/A	4.37	≥ 4.0	PASS	≥ 4.2	PASS

Section 4.3.2 EQUEST - Female5						
Echo Level (dB)	Delay ms	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
-80.74	N/A	3.74	≥ 4.0	FAIL	≥ 4.2	FAIL

Section 4.3.2 EQUEST - Female6						
Echo Level (dB)	Delay ms	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
-81.97	N/A	3.53	≥ 4.0	FAIL	≥ 4.2	FAIL

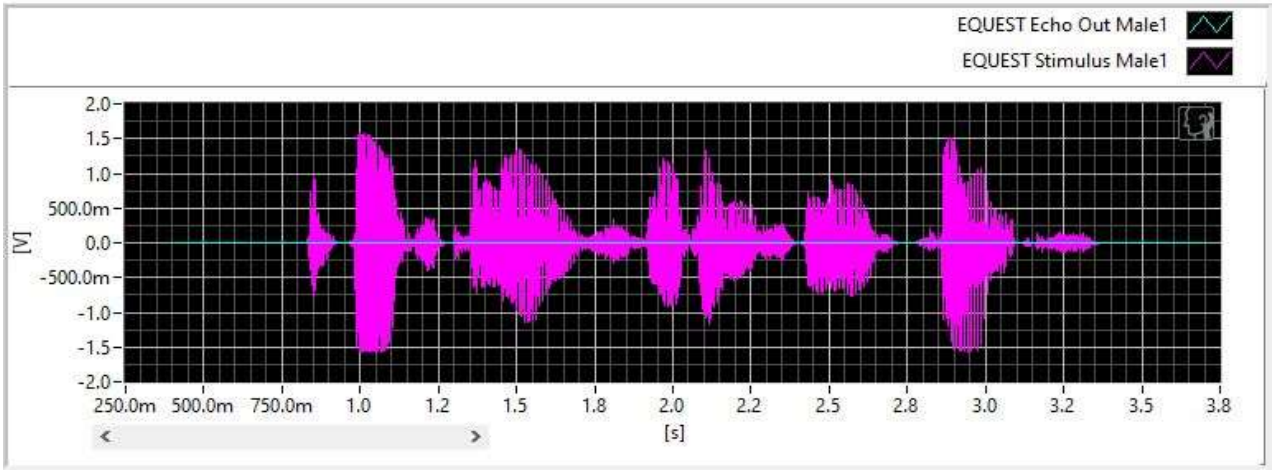
Comments	Test Date
Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On	5/3/2023 13:05

MS Teams V4 Speakerphone Measurement
EQUEST Echo - Nominal Volume

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	Test Date
		5/3/2023 13:05

MS Teams V4 Speakerphone Measurement
EQUEST Echo - Nominal Volume

EQUEST Male1

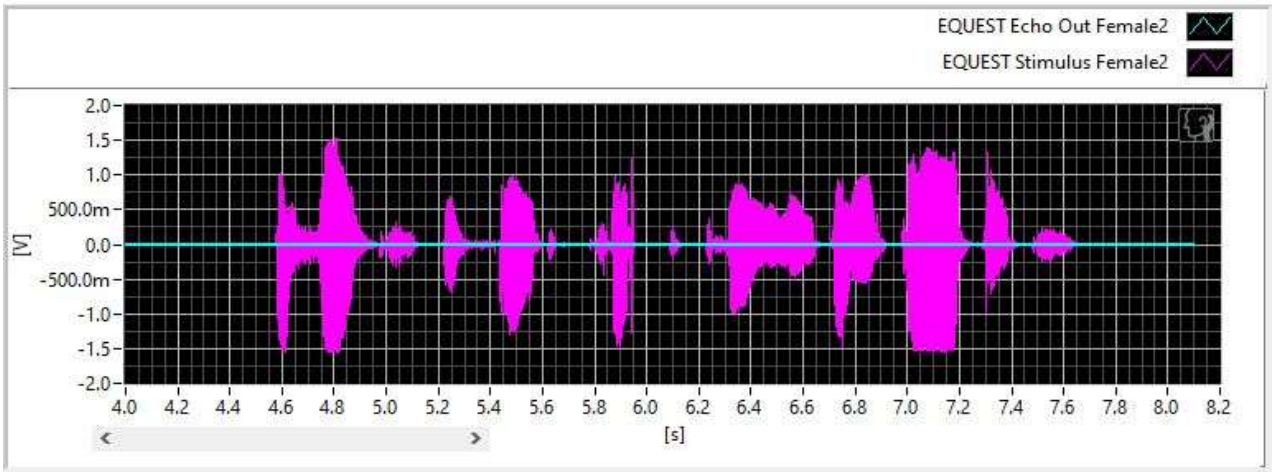


Conferencing 4.5m Test	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
Sect. 4.3.2	4.45	≥ 4.0	PASS	≥ 4.2	PASS

Echo Level (dB)	Delay ms
-74.26	N/A

Comments:	Test Date
Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	5/3/2023 13:05

EQUEST Female2



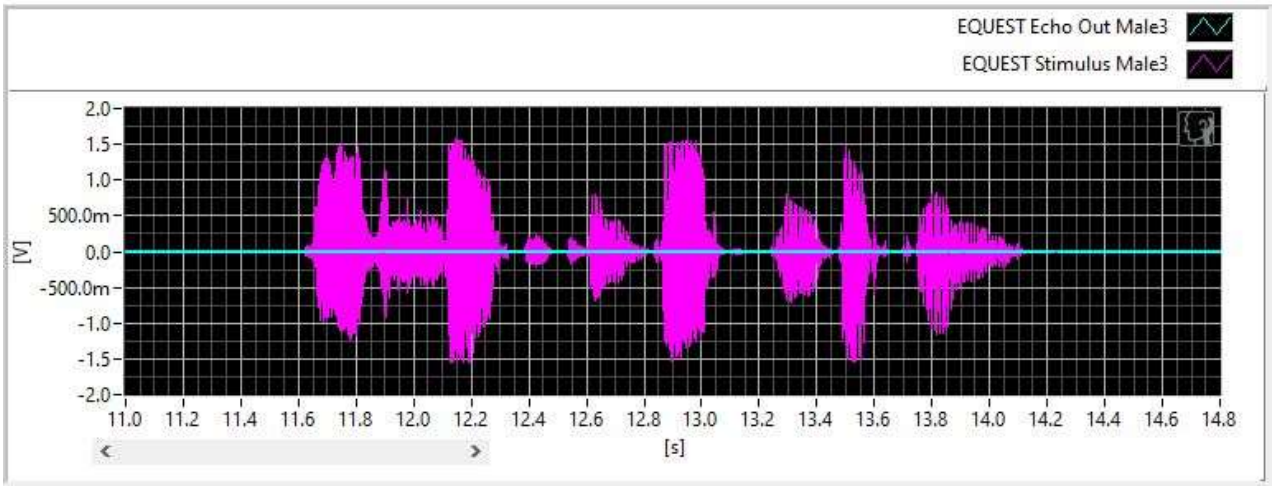
Conferencing 4.5m Test	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
Sect. 4.3.2	3.71	≥ 4.0	FAIL	≥ 4.2	FAIL

Echo Level (dB)	Delay ms
-78.66	N/A

Comments:	Test Date
Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	5/3/2023 13:05

MS Teams V4 Speakerphone Measurement
EQUEST Echo - Nominal Volume

EQUEST Male3

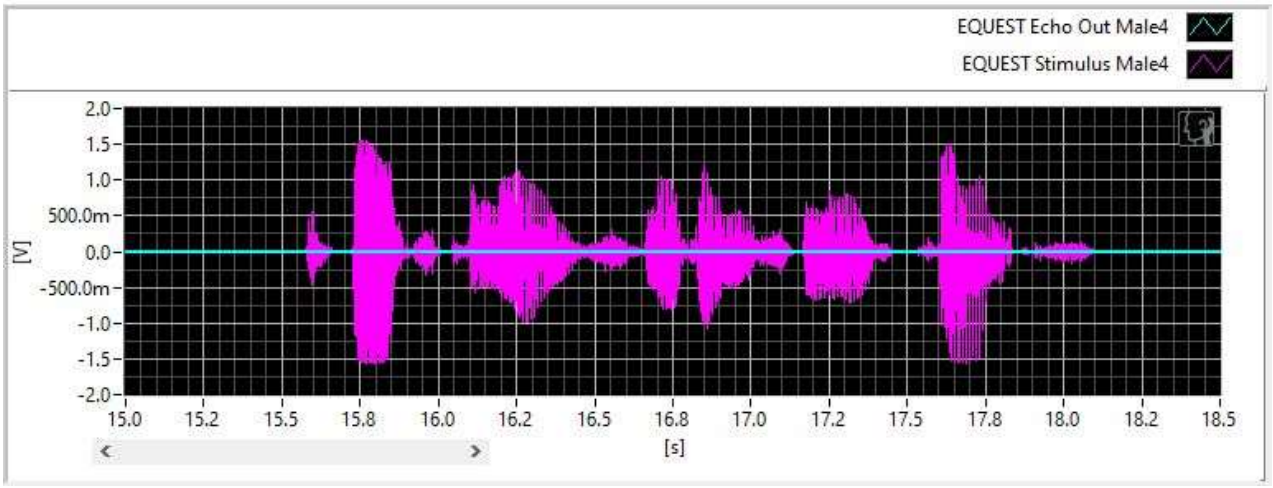


Conferencing 4.5m Test	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
Sect. 4.3.2	4.39	≥ 4.0	PASS	≥ 4.2	PASS

Echo Level (dB)	Delay ms
-76.99	N/A

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	Test Date
		5/3/2023 13:05

EQUEST Male4



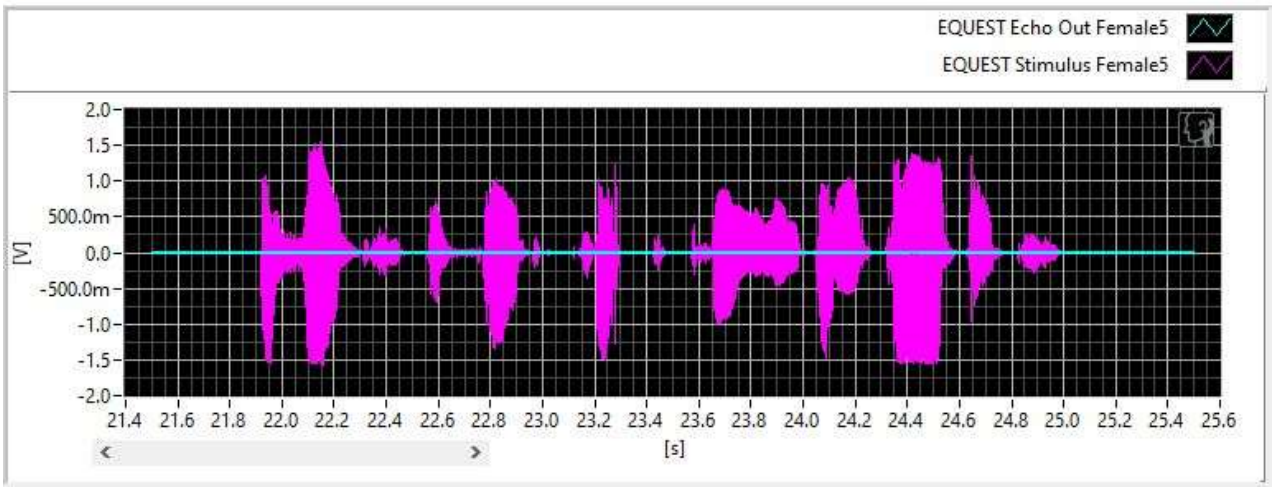
Conferencing 4.5m Test	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
Sect. 4.3.2	4.37	≥ 4.0	PASS	≥ 4.2	PASS

Echo Level (dB)	Delay ms
-80.76	N/A

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	Test Date
		5/3/2023 13:05

MS Teams V4 Speakerphone Measurement
EQUEST Echo - Nominal Volume

EQUEST Female5

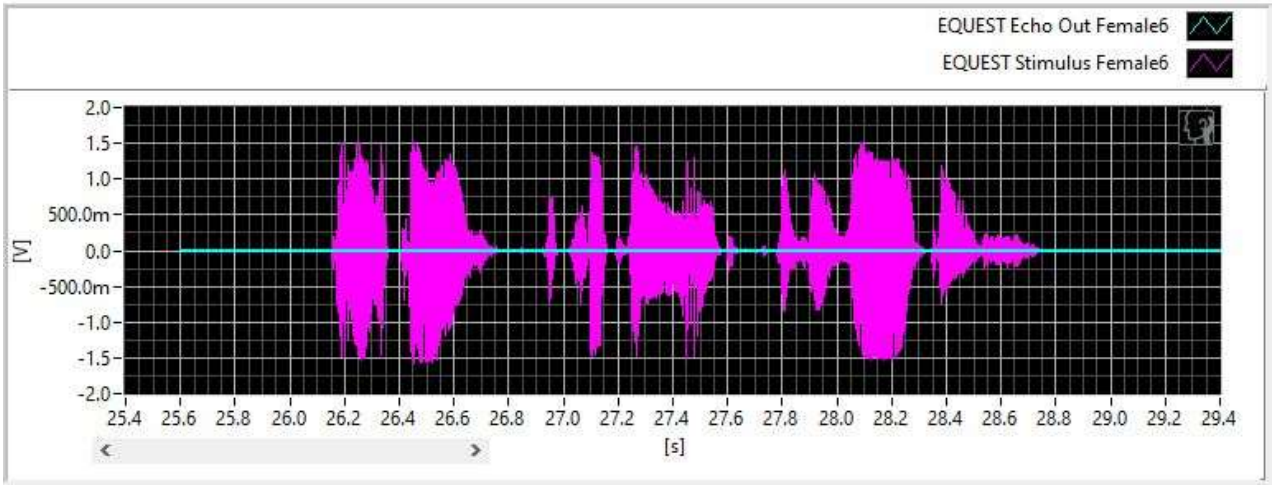


Conferencing 4.5m Test	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
Sect. 4.3.2	3.74	≥ 4.0	FAIL	≥ 4.2	FAIL

Echo Level (dB)	Delay ms
-80.74	N/A

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	Test Date
		5/3/2023 13:05

EQUEST Female6

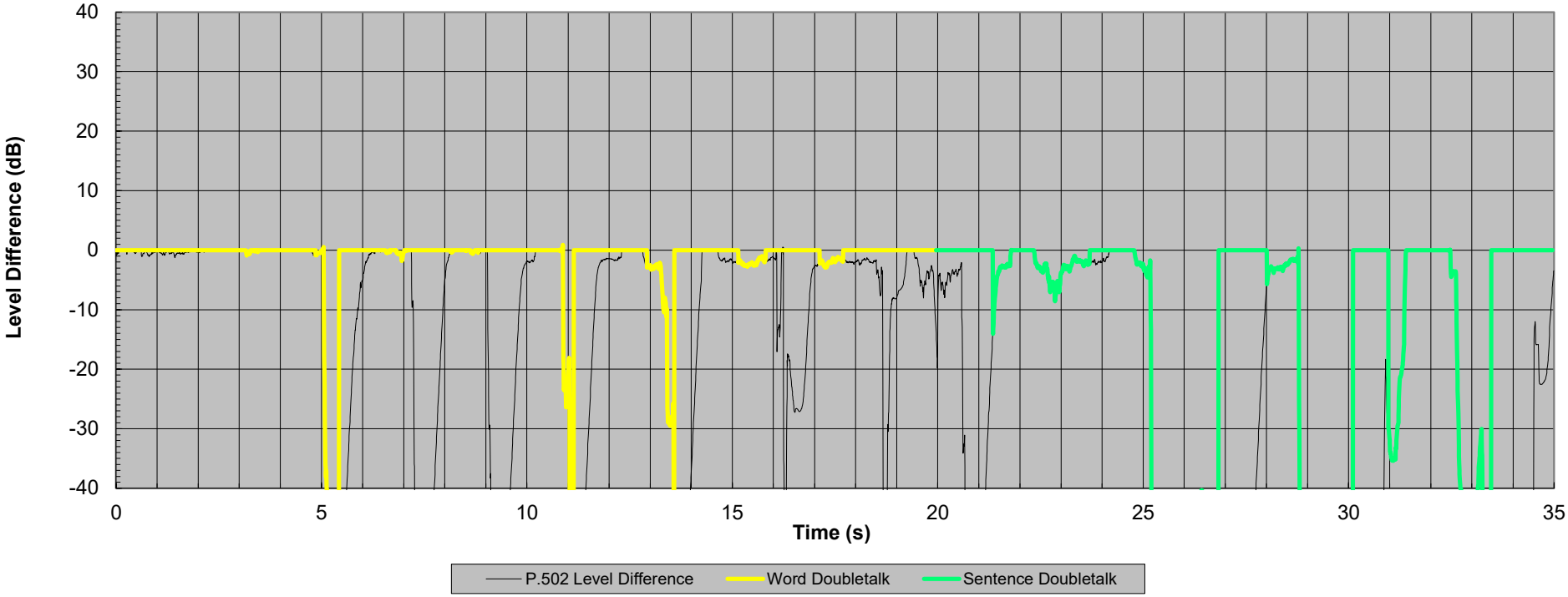


Conferencing 4.5m Test	Echo MOS	Standard Limits	MOS Result	Premium Limits	MOS Result
Sect. 4.3.2	3.53	≥ 4.0	FAIL	≥ 4.2	FAIL

Echo Level (dB)	Delay ms
-81.97	N/A

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	Test Date
		5/3/2023 13:05

ITU-T P.502 Send Doubletalk Analysis Using Speech Level Difference - Nominal Volume



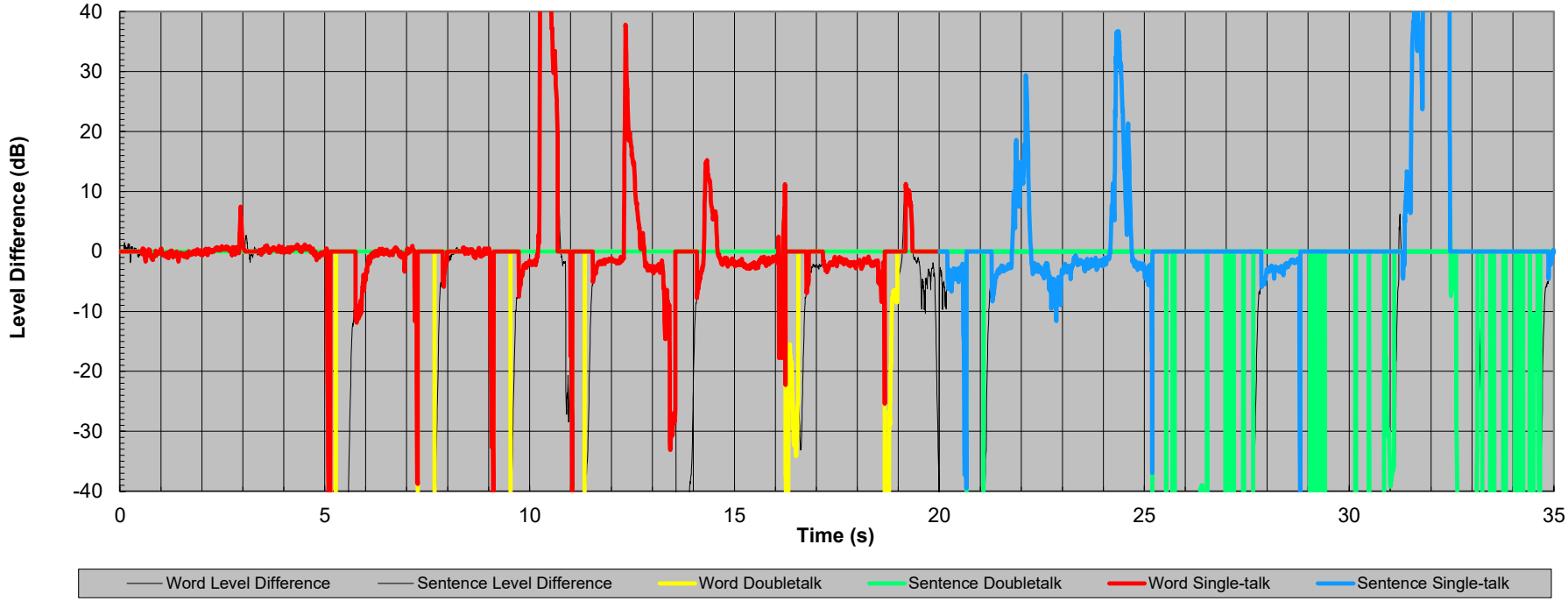
Overall Ah in dB	Duplex Classification
15.5	No Duplex (3)

Send Attenuation Range (Ah) in dB - Words									Send Attenuation Range in dB (Ah) - Sentences				
1	2	3	4	5	6	7	8	Median	1	2	3	4	Median
0.4	73.2	0.6	0.3	34.3	25.9	1.0	1.1	1.1	5.1	64.8	62.8	54.8	58.8

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	Send Test Level dBpa	-13.0	Highpass filter
		Recv Test Level dBm0	-15.0	On

Test Date	5/3/2023 13:14

ETSI TS 126 132 Send Acoustic Echo Control
Level Difference - Nominal Volume



	Words					Sentences				
	Doubletalk		Single-talk				Doubletalk		Single-talk	
Category	Activity %	Avg Level dB	Activity %	Avg Level dB		Category	Activity %	Avg Level dB	Activity %	Avg Level dB
A1	0.0	0.0	80.3	-0.8	Full duplex and full transparency	**A1**	7.1	-2.1	56.8	-2.3
A2	34.1	-8.3	7.1	-8.0	Full duplex with send level loss	**A2**	15.2	-8.7	12.0	-5.9
B	2.2	-37.6	0.6	-25.9	Very short clipping	**B**	7.1	-33.0	0.4	-26.7
C	11.0	-25.7	1.9	-29.1	Short clipping resulting in loss of syllables	**C**	27.3	-29.6	0.9	-32.8
D	52.7	-25.9	0.0	NaN	Clipping resulting in loss of words	**D**	42.4	-32.2	0.0	NaN
E	0.0	NaN	0.0	4.2	Very short residual echo	**E**	1.0	7.0	0.0	NaN
F	0.0	NaN	0.7	6.6	Echo bursts	**F**	0.0	NaN	2.1	11.5
G	0.0	NaN	9.4	24.2	Continuous echo	**G**	0.0	NaN	27.8	32.8

Comments:	Measured in anechoic chamber using wall baffle at 1 meter distance with mouth-mic axis 25 cm above device. MS Teams P-to-P call HiFi Mode MicAGC=On NS=Off ECC=Off using device mono channel.	**Send Test Level dBpa**	-13.0	**Test Date**
		Recv Test Level dBm0	-15.0	5/3/2023 13:14