

## Measurement Protocol

Measurement Object	Microsoft Teams conferencing device 2.3m for NXP Conversa i.MX RT1170 software pack at 32kHz
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Project	Mockup NXP Conversa i.MX RT1170 Software Pack
Report Generation Date	2/22/2023 10:50 AM
Evaluation procedure	MS Teams certification procedure v5
Conversa parameter file	conversa_parameter_config_RT1170swp32k.src 2023/02/22 11:03:30
Responsible Person	Mathieu BAQUE



## Notes

- **PxxA measurements:** They should be done in an anechoic room as required by the Microsoft Teams test suit. The room used for these measures is an absorbent room but not a full anechoic room. **PxxA are grouped in the below table with a blue background.**
- **PxxR measurements:** They are done in a more reverberant room than the one expected by Microsoft Teams test suit. **PxxR are grouped in the below table with an orange background.**
- **P02A and P14A:** Tests latency fail due to the intern network latency.

- **P13A:** The test fails because it has been done in a non-anechoic room. A value is slightly under the threshold.
- **P16A:** A part of the test fails but should not be considered. Min.dist.(\*) shall not be taken into account if Calculated value (\*\*) is OK (MS Teams certification procedure).

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
P01A Send path - avg MOS-LQO - Shared Space	Ok	Calculated Value [MOS]	3.6	RT1170 SWP 32kHz 2.3m
P02A Send path - avg latency over E2E	Not Ok	Calculated Value [ms]	263.4	RT1170 SWP 32kHz 2.3m
P03A Send path: signal level with normal speech	Ok	Calculated Value	-16.2	RT1170 SWP 32kHz 2.3m
P04A Send path - signal level with quiet speech	Ok	Calculated Value	-22.9	RT1170 SWP 32kHz 2.3m
P05A Send path - idle channel SpNR	Ok	Calculated Value	55	RT1170 SWP 32kHz 2.3m
P06A Send path - active channel SpNR	Ok	Calculated Value	42	RT1170 SWP 32kHz 2.3m
P07A Single Frequency Interference SND	Ok	Min. dist. to tolerance scheme [dB], 301.8 Hz	0.17	RT1170 SWP 32kHz 2.3m
P08A Send path - distortion and noise	Ok			RT1170 SWP 32kHz 2.3m
P09A Send path- act. sens.- 2nd mask - Shared Space	Ok	Min. dist. to tolerance scheme [dB], 1.800 s	5.00	RT1170 SWP 32kHz 2.3m
P10A Send path: SpNR with maximum microphone gain	Ok	Calculated Value [dB]	47.2	RT1170 SWP 32kHz 2.3m
P11A Send path - freq. resp.- Shared Space Speakerphone	Ok	Min. dist. to tolerance scheme, 2000.0 Hz	2.73	RT1170 SWP 32kHz 2.3m
P18A Receive path - freq. resp. - Shared Space Sp.	Ok	Min. dist. to tolerance scheme [Pa/V], 6300.0 Hz	0.93	RT1170 SWP 32kHz 2.3m
P12A Receive path - output level - Shared - up to 2.3m	Ok	Level [dB[SPL]], 0	69.77	RT1170 SWP 32kHz 2.3m
P13A Receive path - avg MOS-LQO - Shared Space Sp.	Not Ok	Calculated Value [MOS]	3.45	RT1170 SWP 32kHz 2.3m
P14A Receive path - avg latency over E2E call	Not Ok	Calculated Value [ms]	252.75	RT1170 SWP 32kHz 2.3m
P15A Receive idle channel noise - Personal/Shared space	Ok	Level [dB[SPL]](A)	16.93	RT1170 SWP 32kHz 2.3m
P16A Single Frequency Interference RCV (*)	Not Ok	Min. dist. to tolerance scheme [dB], 6706.1 Hz	-0.48	RT1170 SWP 32kHz 2.3m
P16A Single Frequency Interference PEAK 24dB20uPa RCV (**)	Ok	Calculated Value [dB20uPa]	-1.20	RT1170 SWP 32kHz 2.3m
P17A Receive path - distortion and noise - Shared Space	Ok			RT1170 SWP 32kHz 2.3m
P19A Receive path - no extra gain for quiet signals	Ok	Calculated Value	0.03	RT1170 SWP 32kHz 2.3m
P20A Echo path - terminal coupling loss (TCL)	Ok	Calculated Value [dB]	62	RT1170 SWP 32kHz 2.3m
P21A Echo path - EQUEST nomvol - worst of 6	Ok	Calculated Value [MOS]	4.4	RT1170 SWP 32kHz 2.3m
P22A Echo path - echo dur alt. SND-RCV P1- ARnom - 2.3m	Ok	Min. dist. to tolerance scheme [dB], 39.633 s	11.99	RT1170 SWP 32kHz 2.3m

P22A Echo path - echo dur alt. SND-RCV P2- ARnom - 2.3m	Ok	Min. dist. to tolerance scheme [dB], 54.764 s	11.38	RT1170 SWP 32kHz 2.3m
P23A Echo path - SND attn. dur. DT - ARNom - 2.3m	Ok	Calculated Value [dB]	4.8	RT1170 SWP 32kHz 2.3m
P01R Send quality with ambient noise - avg S-MOS	Ok	Calculated Value [MOS (Avg)]	4.05	RT1170 SWP 32kHz 2.3m
P02R Send quality with ambient noise - avg N-MOS	Ok	Calculated Value [MOS (Avg)]	3.49	RT1170 SWP 32kHz 2.3m
P03R Send path - Average Alter. talker1&2 S-MOS	Ok	Calculated Value [MOS]	4.3	RT1170 SWP 32kHz 2.3m
P04R Send path - Average Alter. talker 1&2 - Level	Ok	Calculated Value [dB]	-16.5	RT1170 SWP 32kHz 2.3m
P05R Receive path: output level in reverber - upto 2.3m	Ok	Level [dB[SPL](C)], 0	70.11	RT1170 SWP 32kHz 2.3m
P06R Echo path - EQUEST nomvol - worst of 6	Ok	Calculated Value [MOS]	4.40	RT1170 SWP 32kHz 2.3m
P07R Echo Path- A-wt echo during alt. SND-RCV P1-Reverb	Ok	Min. dist. to tolerance scheme [dB], 35.660 s	6.01	RT1170 SWP 32kHz 2.3m
P07R Echo Path- A-wt echo during alt. SND-RCV P2-Reverb	Ok	Min. dist. to tolerance scheme [dB], 50.748 s	10.64	RT1170 SWP 32kHz 2.3m
P08R Echo path -AEC convergence test A-wt at call start	Ok	Min. dist. to tolerance scheme [dB], 11.355 s	0.25	RT1170 SWP 32kHz 2.3m

P01A Send path - avg MOS-LQO - Shared Space, Index: 1.....	6
P02A Send path - avg latency over E2E, Index: 1.....	6
P03A Send path: signal level with normal speech, Index: 1 .....	7
P04A Send path - signal level with quiet speech, Index: 1.....	7
P05A Send path - idle channel SpNR , Index: 1 .....	7
P06A Send path - active channel SpNR, Index: 1 .....	8
P07A Single Frequency Interference SND, Index: 1 .....	8
P08A Send path - distortion and noise, Index: 1.....	9
P09A Send path- act. sens.- 2nd mask - Shared Space, Index: 1 .....	10
P10A Send path: SpNR with maximum microphone gain , Index: 1 .....	10
P11A Send path - freq. resp.- Shared Space Speakerphone, Index: 1 .....	11
P18A Receive path - freq. resp. - Shared Space Sp., Index: 1 .....	12
P12A Receive path - output level - Shared - up to 2.3m, Index: 1 .....	12
P13A Receive path - avg MOS-LQO - Shared Space Sp., Index: 1 .....	12
P14A Receive path - avg latency over E2E call, Index: 1 .....	13
P15A Receive idle channel noise - Personal/Shared space, Index: 1.....	14
P16A Single Frequency Interference RCV , Index: 1 .....	14
P16A Single Frequency Interference PEAK 24dB20uPa RCV, Index: 1.....	15
P17A Receive path - distortion and noise - Shared Space, Index: 1 .....	15
P19A Receive path - no extra gain for quiet signals, Index: 1.....	16
P20A Echo path - terminal coupling loss (TCL) , Index: 1.....	16
P21A Echo path - EQUEST nomvol - worst of 6, Index: 1.....	17
P22A Echo path - echo dur alt. SND-RCV P1- ARnom - 2.3m, Index: 1 .....	18
P22A Echo path - echo dur alt. SND-RCV P2- ARnom - 2.3m, Index: 1 .....	19
P23A Echo path - SND attn. dur. DT - ARNom - 2.3m, Index: 1 .....	19
P01R Send quality with ambient noise - avg S-MOS, Index: 1 .....	20
P02R Send quality with ambient noise - avg N-MOS , Index: 1 .....	20
P03R Send path - Average Alter. talker1&2 S-MOS, Index: 1 .....	20
P04R Send path - Average Alter. talker 1&2 - Level, Index: 1.....	21
P05R Receive path: output level in reverber - upto 2.3m, Index: 1.....	21
P06R Echo path - EQUEST nomvol - worst of 6, Index: 3 .....	21
P07R Echo Path- A-wt echo during alt. SND-RCV P1-Reverb, Index: 3 .....	22
P07R Echo Path- A-wt echo during alt. SND-RCV P2-Reverb, Index: 3 .....	23
P08R Echo path -AEC convergence test A-wt at call start, Index: 1.....	24

**P01A Send path - avg MOS-LQO - Shared Space, Index: 1****Correction**

PMOS_SND_F1	3.600	2/21/2023	Measured	Super Wideband MOS (P.863) SND - female run 1
PMOS_SND_F2	3.500	2/21/2023	Measured	Super Wideband MOS (P.863) SND - female run 2
PMOS_SND_M1	3.700	2/21/2023	Measured	Super Wideband MOS (P.863) SND - male run 1
PMOS_SND_M2	3.700	2/21/2023	Measured	Super Wideband MOS (P.863) SND - male run 2

$$(PMOS\_SND\_F1+PMOS\_SND\_F2+PMOS\_SND\_M1+PMOS\_SND\_M2)/4$$

Calculated Value: 3.6 MOS Ok

**Ok**

2/21/2023 4:03 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P02A Send path - avg latency over E2E, Index: 1****Correction**

DELAY_SND_F1	263.732 ms	2/21/2023	Measured	Super Wideband MOS (P.863) SND - female run 1
DELAY_SND_M1	259.595 ms	2/21/2023	Measured	Super Wideband MOS (P.863) SND - male run 1
DELAY_SND_F2	267.898 ms	2/21/2023	Measured	Super Wideband MOS (P.863) SND - female run 2
DELAY_SND_M2	262.333 ms	2/21/2023	Measured	Super Wideband MOS (P.863) SND - male run 2

$$(DELAY\_SND\_F1+DELAY\_SND\_M1+DELAY\_SND\_F2+DELAY\_SND\_M2) / 4$$

Calculated Value: 263.4 ms Not Ok

**Not Ok**

2/21/2023 4:03 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P03A Send path: signal level with normal speech, Index: 1****Correction**

SNDLVL_N_AR_SHAR2.3	-16.190 dBm0	2/21/2023	Measured	Rec. for P03A Send path signal level with normal speech
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SNDLVL\_N\_AR\_SHAR2.3

Calculated Value: -16.2 Ok

**Ok**

2/21/2023 4:05 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P04A Send path - signal level with quiet speech, Index: 1****Correction**

SNDLVL_Q_AR_SHAR2.3	-22.920 dBm0	2/21/2023	Measured	Rec. for P04A Send path signal level with quiet speech
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SNDLVL\_Q\_AR\_SHAR2.3

Calculated Value: -22.9 Ok

**Ok**

2/21/2023 4:06 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P05A Send path - idle channel SpNR , Index: 1****Correction**

SND_SP_LVL_SHAR2.3	-16.010 dBm0	2/21/2023	Measured	Graph for P05A- P06A - speech level
SND_IDLE_NOI_SHAR2.3	-70.630 dBm0	2/21/2023	Measured	Graph for P05A - idle channel noise A-weight

SND\_SP\_LVL\_SHAR2.3 - SND\_IDLE\_NOI\_SHAR2.3

Calculated Value: 55 Ok

**Ok**

2/21/2023 4:07 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P06A Send path - active channel SpNR, Index: 1**

### **Correction**

SND_SP_LVL_SHAR2.3	-16.010 dBm0	2/21/2023	Measured	Graph for P05A- P06A - speech level
SND_ACT_NOI_SHAR2.3	-58.190 dBm0	2/21/2023	Measured	Graph for P06A - active channel noise A-weight

SND\_SP\_LVL\_SHAR2.3 - SND\_ACT\_NOI\_SHAR2.3

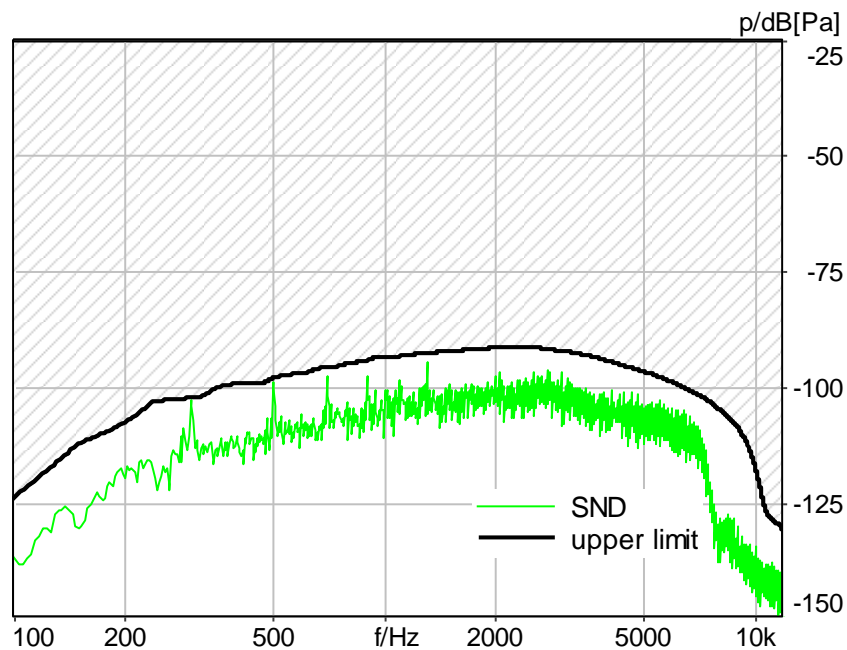
Calculated Value: 42 Ok

**Ok**

2/21/2023 4:07 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P07A Single Frequency Interference SND, Index: 1**



Absolute minimal distance

0.17 dB at 301.8 Hz Ok



**Ok**

2/21/2023 4:07 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

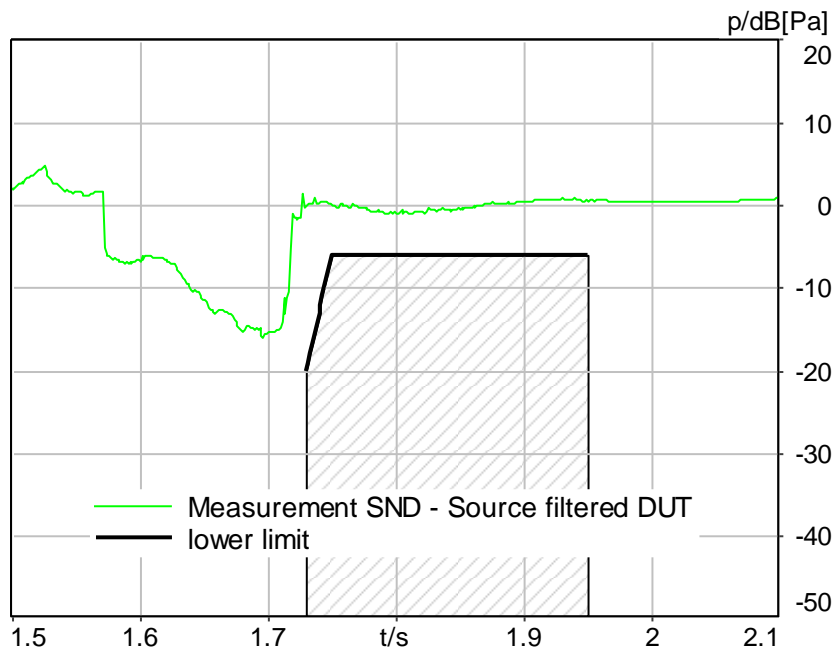
If this test case shows a failing result then please check next SMD for the peak noise level value.

If the peak interference noise level measured is below -80dBV then the result of send interference noise test can be marked as Pass over ruling the calculated result.

**P08A Send path - distortion and noise, Index: 1**

Variable Name	Distortion Value [dB]	Lower Limit [dB]	Frequency Range [Hz]	Center Frequency [Hz]	Pass/Fail
iso24_89_SP	42.33	30	224...282	250	Pass
iso25_89_SP	38.99	30	282...355	315	Pass
iso26_89_SP	41.93	30	355...447	400	Pass
iso27_89_SP	46.18	30	447...562	500	Pass
iso28_89_SP	47.67	30	562...708	630	Pass
iso29_89_SP	50.5	30	708...891	800	Pass
iso30_89_SP	50.8	30	891...1122	1000	Pass
iso31_89_SP	52.48	30	1122...1413	1250	Pass
iso32_89_SP	53.15	30	1413...1778	1600	Pass
iso33_89_SP	42.98	30	1778...2239	2000	Pass
iso34_89_SP	50.07	30	2239...2818	2500	Pass
iso35_89_SP	43.11	30	2818...3548	3150	Pass
iso36_89_SP	49.19	30	3548...4467	4000	Pass
iso37_89_SP	53.67	28	4467...5623	5000	Pass

2/21/2023 4:09 PM ACQUA

**P09A Send path- act. sens.- 2nd mask - Shared Space, Index: 1**

Absolute minimal distance

5.00 dB at 1.800 s Ok

**Ok**

2/21/2023 4:11 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P10A Send path: SpNR with maximum microphone gain , Index: 1****Correction**

spnr_89	58.500 dB	2/21/2023	Measured	Analysis - SpNR - 89dBSPL
spnr_86	56.100 dB	2/21/2023	Measured	Analysis - SpNR - 86dBSPL
spnr_83	53.000 dB	2/21/2023	Measured	Analysis - SpNR - 83dBSPL
spnr_80	50.100 dB	2/21/2023	Measured	Analysis - SpNR - 80dBSPL
spnr_77	47.200 dB	2/21/2023	Measured	Analysis - SpNR - 77dBSPL

min ( min( min ( min (spnr\_89, spnr\_86), spnr\_83), spnr\_80), spnr\_77)

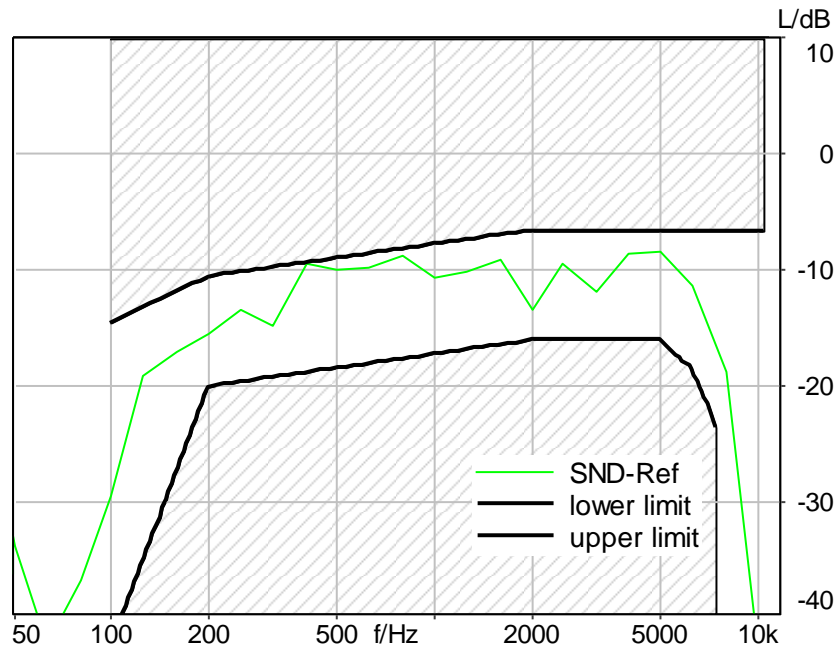
Calculated Value: 47.2 dB Ok

**Ok**

2/21/2023 4:13 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P11A Send path - freq. resp.- Shared Space Speakerphone, Index: 1**



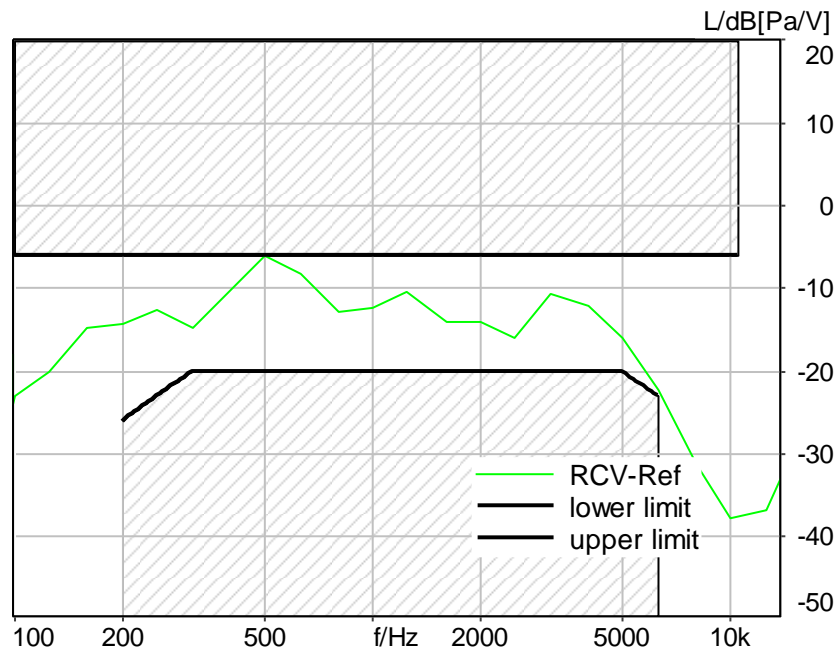
Absolute minimal distance

2.73 dB at 2000.0 Hz Ok

**Ok**

2/21/2023 4:56 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P18A Receive path - freq. resp. - Shared Space Sp., Index: 1**

Absolute minimal distance

0.93 dB at 6300.0 Hz Ok

**Ok**

2/21/2023 4:56 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P12A Receive path - output level - Shared - up to 2.3m, Index: 1**

Level RCV: 69.77 dB[SPL] Ok

**Ok**

2/21/2023 4:15 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P13A Receive path - avg MOS-LQO - Shared Space Sp., Index: 1**

**Correction**

PMOS_RCV_F1	3.400	2/21/2023	Measured	Super Wideband MOS (P.863) RCV - female run 1
PMOS_RCV_F2	3.500	2/21/2023	Measured	Super Wideband MOS (P.863) RCV -

				female run 2
PMOS_RCV_M1	3.500	2/21/2023	Measured	Super Wideband MOS (P.863) RCV - male run 1
PMOS_RCV_M2	3.400	2/21/2023	Measured	Super Wideband MOS (P.863) RCV - male run 2

$(\text{PMOS\_RCV\_F1} + \text{PMOS\_RCV\_F2} + \text{PMOS\_RCV\_M1} + \text{PMOS\_RCV\_M2}) / 4$

Calculated Value: 3.45 MOS Not Ok

### Not Ok

2/21/2023 4:17 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## P14A Receive path - avg latency over E2E call, Index: 1

### Correction

DELAY_RCV_F1	254.823 ms	2/21/2023	Measured	Super Wideband MOS (P.863) RCV - female run 1
DELAY_RCV_M1	253.529 ms	2/21/2023	Measured	Super Wideband MOS (P.863) RCV - male run 1
DELAY_RCV_F2	252.739 ms	2/21/2023	Measured	Super Wideband MOS (P.863) RCV - female run 2
DELAY_RCV_M2	249.909 ms	2/21/2023	Measured	Super Wideband MOS (P.863) RCV - male run 2

$(\text{DELAY\_RCV\_F1} + \text{DELAY\_RCV\_M1} + \text{DELAY\_RCV\_F2} + \text{DELAY\_RCV\_M2}) / 4$

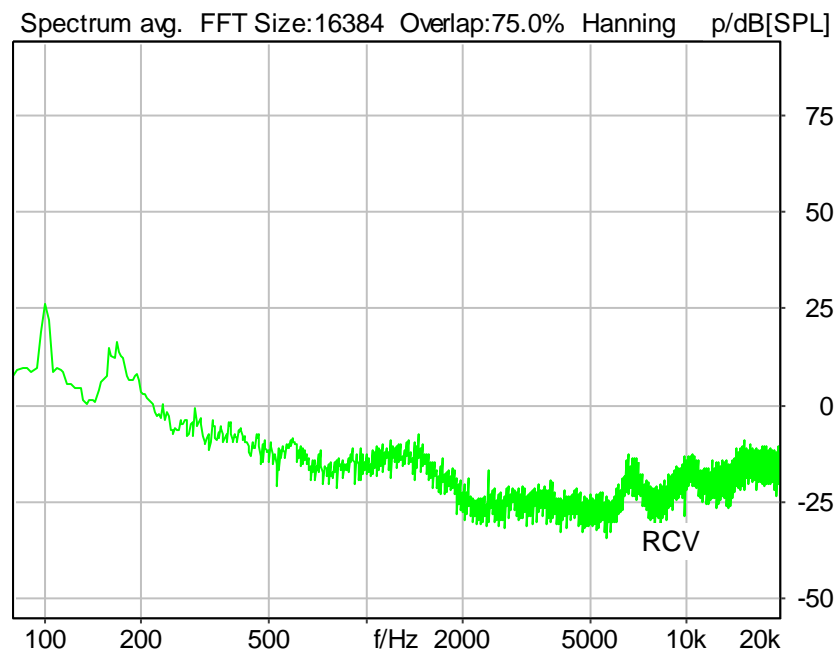
Calculated Value: 252.75 ms Not Ok

### Not Ok

2/21/2023 4:17 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P15A Receive idle channel noise - Personal/Shared space, Index: 1**



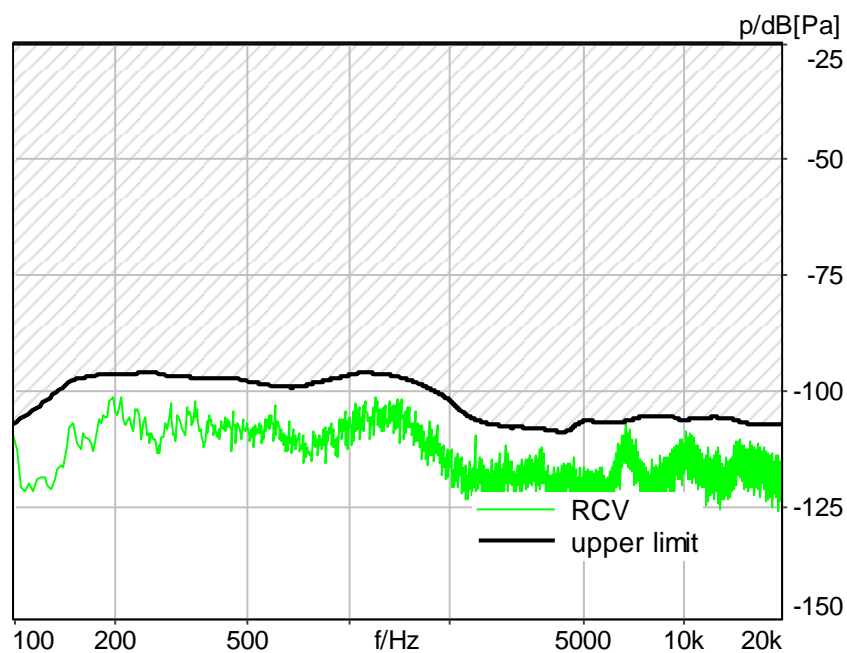
Level: 16.93 dB[SPL](A) Ok

**Ok**

2/21/2023 4:17 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P16A Single Frequency Interference RCV , Index: 1**



Absolute minimal distance  
-0.48 dB at 6706.1 Hz Not Ok

### Not Ok

2/21/2023 4:18 PM ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

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If this test case shows a failing result then please check next SMD for the peak noise level value.

If the peak interference noise level measured is below 24dB SPL then the result of receive interference noise test can be marked as Pass over ruling the calculated result.

## **P16A Single Frequency Interference PEAK 24dB20uPa RCV, Index: 1**

### Correction

RCV_SFI_PEAK	-95.200 dB[Pa]	2/21/2023	Measured	Graph for P16A - single frequency interference dBPa(A)
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RCV\_SFI\_PEAK + 94

Calculated Value: -1.20 dB20uPa Ok

### Ok

2/21/2023 4:18 PM ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## **P17A Receive path - distortion and noise - Shared Space, Index: 1**

Variable Name	Distortion Value [dB]	Lower Limit [dB]	Frequency Range [Hz]	Center Frequency [Hz]	Pass/Fail
iso24_16_SP	34.96	20	224...282	250	Pass
iso25_16_SP	32.42	20	282...355	315	Pass
iso26_16_SP	38.11	22	355...447	400	Pass
iso27_16_SP	43.07	24	447...562	500	Pass
iso28_16_SP	35.67	24	562...708	630	Pass
iso29_16_SP	38.62	24	708...891	800	Pass

iso30_16_SP	40.47	24	891...1122	1000	Pass
iso31_16_SP	40.33	24	1122...1413	1250	Pass
iso32_16_SP	35.1	24	1413...1778	1600	Pass
iso33_16_SP	33.09	24	1778...2239	2000	Pass
iso34_16_SP	29.6	24	2239...2818	2500	Pass
iso35_16_SP	37.09	24	2818...3548	3150	Pass
iso36_16_SP	32.63	24	3548...4467	4000	Pass
iso37_16_SP	26.84	24	4467...5623	5000	Pass

2/21/2023 4:20 PM ACQUA

**P19A Receive path - no extra gain for quiet signals, Index: 1****Correction**

DRC_gain_1	-58.800 dB[Pa]	2/21/2023	Measured	Analysis P19A compression - quiet signal - beginning
DRC_gain_2	-58.770 dB[Pa]	2/21/2023	Measured	Analysis P19A compression - quiet signal - end

DRC\_gain\_2 - DRC\_gain\_1

Calculated Value: 0.03 Ok

**Ok**

2/21/2023 4:21 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P20A Echo path - terminal coupling loss (TCL) , Index: 1****Correction**

echo_tcl_e2e	59.920 dB	2/21/2023	Measured	Recording for P20A terminal coupling loss (TCL)
snd_normal_tcl_e2e	-15.730 dBm0	2/21/2023	Measured	Send path - signal level with normal speech for TCL

echo\_tcl\_e2e + (snd\_normal\_tcl\_e2e - (-18))

Calculated Value: 62 dB Ok

**Ok**



2/21/2023 4:23 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P21A Echo path - EQUEST nomvol - worst of 6, Index: 1**

### **Correction**

EMOS_E2E_AR_NOM_1	5.000	2/21/2023	Measured	Echo path - P21A EQUEST nomvol (male) 1/6
EMOS_E2E_AR_NOM_2	4.500	2/21/2023	Measured	Echo path - P21A EQUEST nomvol (female) 2/6
EMOS_E2E_AR_NOM_3	5.000	2/21/2023	Measured	Echo path - P21A EQUEST nomvol (male) 3/6
EMOS_E2E_AR_NOM_4	5.000	2/21/2023	Measured	Echo path - P21A EQUEST nomvol (male) 4/6
EMOS_E2E_AR_NOM_5	4.500	2/21/2023	Measured	Echo path - P21A EQUEST nomvol (female) 5/6
EMOS_E2E_AR_NOM_6	4.400	2/21/2023	Measured	Echo path - P21A EQUEST nomvol (female) 6/6

min ( min ( min( min ( min (EMOS\_E2E\_AR\_NOM\_1, EMOS\_E2E\_AR\_NOM\_2),  
EMOS\_E2E\_AR\_NOM\_3) ,EMOS\_E2E\_AR\_NOM\_4) ,EMOS\_E2E\_AR\_NOM\_5)  
,EMOS\_E2E\_AR\_NOM\_6)

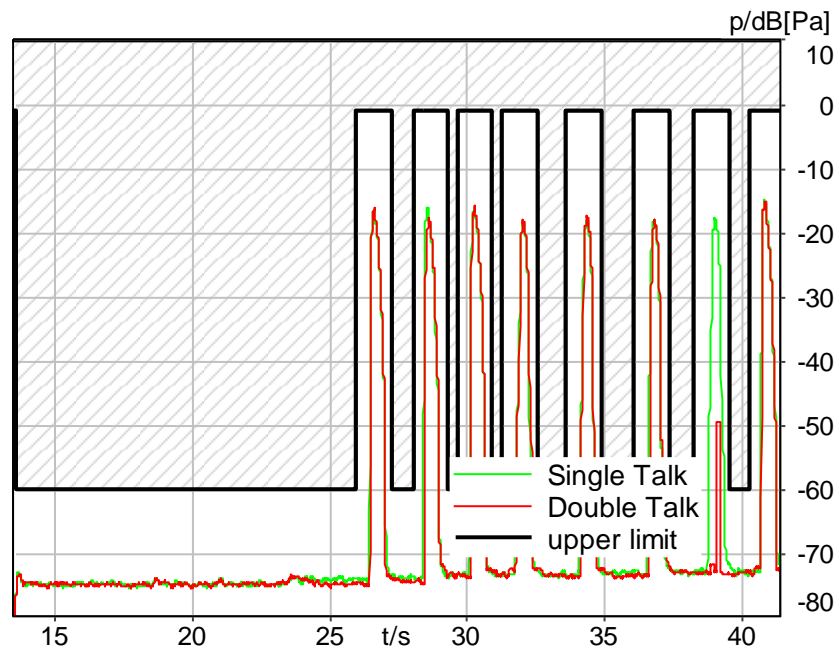
Calculated Value: 4.4 MOS Ok

### **Ok**

2/21/2023 4:25 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P22A Echo path - echo dur alt. SND-RCV P1- ARnom - 2.3m, Index:** **1**

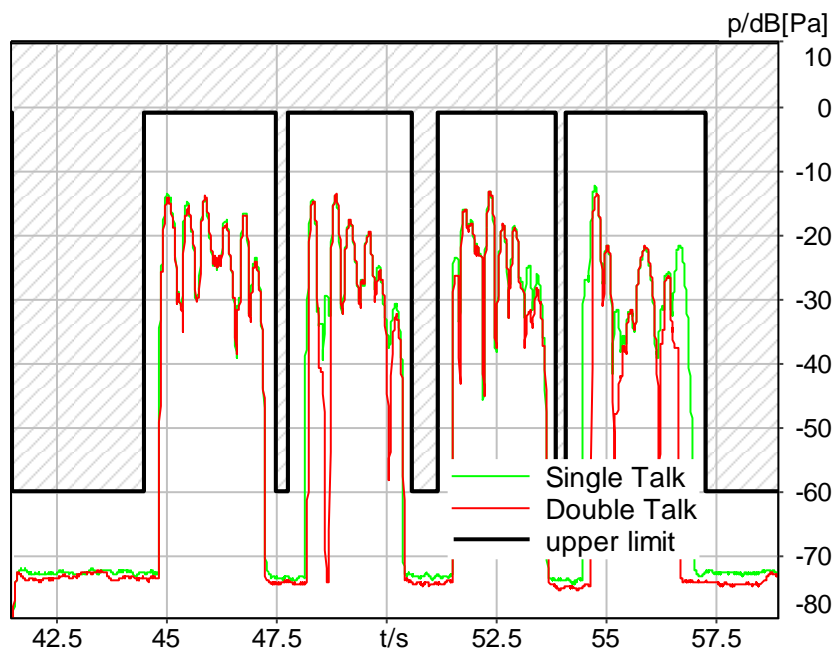


Absolute minimal distance  
11.99 dB at 39.633 s Ok

**Ok**

2/21/2023 4:28 PM ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## **P22A Echo path - echo dur alt. SND-RCV P2- ARnom - 2.3m, Index: 1**



Absolute minimal distance  
11.38 dB at 54.764 s Ok

**Ok**

2/21/2023 4:28 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P23A Echo path - SND attn. dur. DT - ARNom - 2.3m, Index: 1**

### **Correction**

DTatt_E2E_NOM_1_SH23	1.804 dB	2/21/2023	Measured	Analysis P23A - SNDattn.during DT P1 - ARNom - 2.3m
DTatt_E2E_NOM_2_SH23	4.806 dB	2/21/2023	Measured	Analysis P23A - SNDattn.during DT P2 - ARNom - 2.3m

max (DTatt\_E2E\_NOM\_1\_SH23, DTatt\_E2E\_NOM\_2\_SH23)

Calculated Value: 4.8 dB Ok

**Ok**

2/21/2023 4:29 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P01R Send quality with ambient noise - avg S-MOS, Index: 1****Correction**

S_MOS_E2E_PROJ_SHAR	3.998	2/21/2023	Measured	A. Analyze 3QUEST - Projector noise - Pos1
S_MOS_E2E_CONF_SHAR	4.109	2/21/2023	Measured	B. Analyze 3QUEST - Conference 3 noise - Pos1

 $1/2 * (S\_MOS\_E2E\_PROJ\_SHAR + S\_MOS\_E2E\_CONF\_SHAR)$ 

Calculated Value: 4.05 MOS (Avg) Ok

**Ok**

2/21/2023 6:08 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P02R Send quality with ambient noise - avg N-MOS , Index: 1****Correction**

N_MOS_E2E_PROJ_SHAR	3.618	2/21/2023	Measured	A. Analyze 3QUEST - Projector noise - Pos1
N_MOS_E2E_CONF_SHAR	3.360	2/21/2023	Measured	B. Analyze 3QUEST - Conference 3 noise - Pos1

 $1/2 * (N\_MOS\_E2E\_PROJ\_SHAR + N\_MOS\_E2E\_CONF\_SHAR)$ 

Calculated Value: 3.49 MOS (Avg) Ok

**Ok**

2/21/2023 6:09 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**P03R Send path - Average Alter. talker1&2 S-MOS, Index: 1****Correction**

S_MOS_MIN_T1_SHAR	4.300 MOS	2/22/2023	Measured	Calc P03R Send path - Altern. talker S-MOS - Talker 1
S_MOS_MIN_T2_SHAR	4.300 MOS	2/22/2023	Measured	Calc P03R Send path - Altern.

				talker S-MOS - Talker 2
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min(S\_MOS\_MIN\_T1\_SHAR, S\_MOS\_MIN\_T2\_SHAR)

Calculated Value: 4.3 MOS Ok

**Ok**

2/22/2023 10:37 AM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### **P04R Send path - Average Alter. talker 1&2 - Level, Index: 1**

#### **Correction**

LVL_ALT_T1	-16.500 dB	2/22/2023	Measured	Calc P04R Send - Alternating talker level - Talker 1
LVL_ALT_T2	-15.900 dB	2/22/2023	Measured	Calc P04R Send - Alternating talker level - Talker 2

min(LVL\_ALT\_T1, LVL\_ALT\_T2)

Calculated Value: -16.5 dB Ok

**Ok**

2/22/2023 10:37 AM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### **P05R Receive path: output level in reverber - upto 2.3m, Index: 1**

Level RCV: 70.11 dB[SPL](C) Ok

**Ok**

2/21/2023 5:09 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### **P06R Echo path - EQUEST nomvol - worst of 6, Index: 3**

#### **Correction**

EMOS_E2ERR_NOM_SHAR1	5.000	2/21/2023	Measured	Echo path - P06R EQUEST RR nomvol (male) 1/6
EMOS_E2ERR_NOM_SHAR2	4.500	2/21/2023	Measured	Echo path - P06R EQUEST RR nomvol (female) 2/6

EMOS_E2ERR_NOM_SHAR3	5.000	2/21/2023	Measured	Echo path - P06R EQUEST RR nomvol (male) 3/6
EMOS_E2ERR_NOM_SHAR4	5.000	2/21/2023	Measured	Echo path - P06R EQUEST RR nomvol (male) 4/6
EMOS_E2ERR_NOM_SHAR5	4.500	2/21/2023	Measured	Echo path - P06R EQUEST RR nomvol (female) 5/6
EMOS_E2ERR_NOM_SHAR6	4.400	2/21/2023	Measured	Echo path - P06R EQUEST RR nomvol (female) 6/6

min ( min ( min( min ( min (EMOS\_E2ERR\_NOM\_SHAR1, EMOS\_E2ERR\_NOM\_SHAR2),  
EMOS\_E2ERR\_NOM\_SHAR3), EMOS\_E2ERR\_NOM\_SHAR4), EMOS\_E2ERR\_NOM\_SHAR5),  
EMOS\_E2ERR\_NOM\_SHAR6)

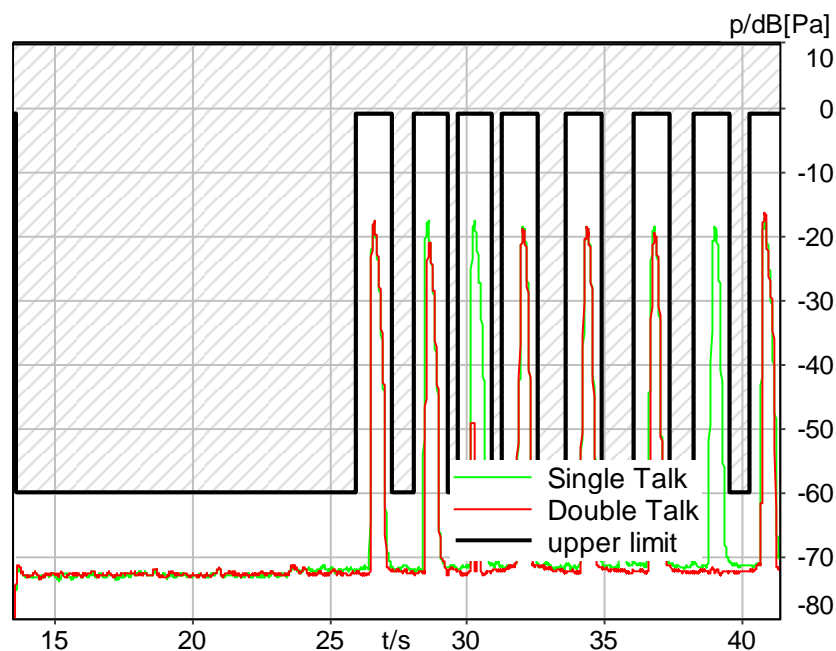
Calculated Value: 4.40 MOS Ok

Ok

2/21/2023 5:45 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### **P07R Echo Path- A-wt echo during alt. SND-RCV P1-Reverb, Index: 3**



Absolute minimal distance

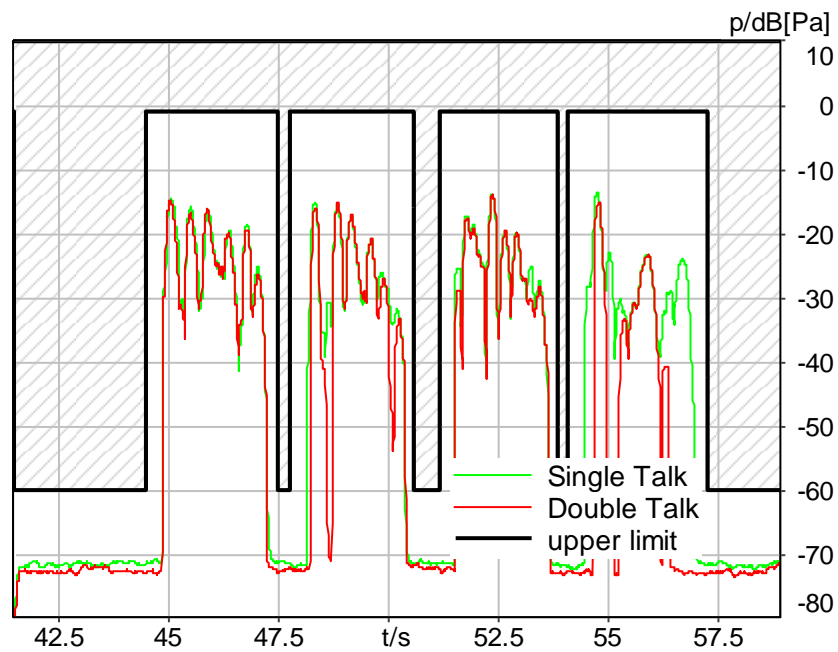
6.01 dB at 35.660 s Ok

Ok

2/21/2023 5:49 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### **P07R Echo Path- A-wt echo during alt. SND-RCV P2-Reverb, Index:** **3**



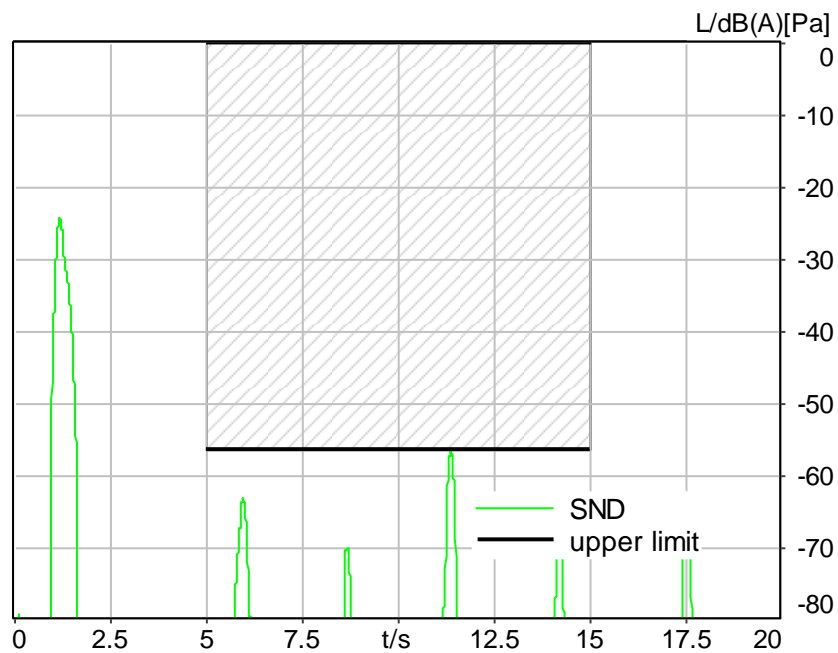
Absolute minimal distance  
10.64 dB at 50.748 s Ok

**Ok**

2/21/2023 5:49 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **P08R Echo path -AEC convergence test A-wt at call start, Index: 1**



Absolute minimal distance

0.25 dB at 11.355 s Ok

**Ok**

2/21/2023 5:41 PM ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor