

EBU – TECH 3287



Parameters for the Subjective Evaluation of Sound Programme material (PEQS)

Users' handbook for the EBU PEQS CD

Geneva
October 2008

Users' handbook for the EBU PEQS CD

<i>EBU Committee</i>	<i>First Issued</i>	<i>Revised</i>	<i>Re-issued</i>
PMC	1998	2008	

Keywords: Subjective Evaluation Sound Quality, CD

Introduction

The EBU would like to thank the organisations and performers who have contributed to this collection of test tracks. Users should realise that the defects in the recordings and performances are deliberate or have been artificially produced for the purposes of these demonstrations. They are in no way a reflection of the technical or artistic competence of the contributors, rather the reverse.

The CD that accompanies the present document contains signals designed for four purposes:

- to verify and/or adjust the coding levels in digital audio recording and production systems,
- to provide an alignment signal for listening tests,
- to illustrate positive and negative values of the parameters described in EBU Tech 3286.
- to be used as training material before starting national and international listening evaluations.

The signals are recorded with (or converted to) a sampling frequency of 44.1 kHz and are digitally edited from R-DAT tapes delivered by a number of EBU countries (see Notes).

Summary of CD content

3-level test signal	01:46
Alignment leader signal according to EBU Tech R49	01:00
Digitally-generated quasi-random noise "pink" weighted	05:00
63 music recordings illustrating different values of parameters used for subjective evaluations	51:47

Full details of all signals are given in the following tables.

Trk.	Description	Level dBFS	Dur.	Note
1	3-level test signal Frequency 1 kHz	-30 -18 -9	01:46	1
2	Alignment leader according to EBU R49 Frequency 1 kHz	-18	01:00	1
3	Pink Noise, non-coherent	-9	05:00	1
4	Homogeneity of spatial sound: Uneven Puccini: 0 mio babbo caro Song/Piano NRK-studio	-9	01:05	2
5	Homogeneity of spatial sound: Even Puccini: 0 mio babbo caro Song/Piano NRK-studio	-9	01:05	2
6	Reverberance: Too dry Planicky: Opella Ecclesiastica Chamber orchestra Atrium Hall, Prague <i>Recorded with 3 A/B pairs (Neumann U87)</i>	-9	00:24	3
7	Reverberance: Too reverberant Planicky: Opella Ecclesiastica Chamber orchestra Atrium Hall, Prague <i>Recorded with 3 A/B pairs (U87) added reverb from Lexicon 300</i>	-9	00:24	3
8	Reverberance: Appropriate reverberance Planicky: Opella Ecclesiastica Chamber orchestra Atrium Hall, Prague <i>Recorded with 3 A/B pairs (U87) added reverb from Lexicon 300</i>	-9	00:24	3
9	Acoustical balance: Too direct Prokofiev: Romeo and Juliet Piano solo BBC-studio <i>Recorded with a pair of AKG 414 mics</i>	-9	00:41	4
10	Acoustical balance: Too indirect Prokofiev: Romeo and Juliet Piano solo BBC-studio <i>Recorded with a pair of AKG 414 mics</i>	-9	00:41	4
11	Acoustical balance: Well balanced Prokofiev: Romeo and Juliet Piano solo BBC-studio <i>Recorded with a pair of AKG 414 mics</i>	-9	00:41	4
12	Acoustical balance: Too direct Bruckner: Symphony No. 3 Slovenia Philharmonic Orchestra /Gyorgy Gyorivanyi Ljubljana, Gallus Hall KDIC <i>Recorded with an A/B pair of B&K 4006 (10 m height), Stereo Comp C426 (4 m height, position at the conductor), 12 spot mics for strings and woodwinds (AKG 414), spot mic for percussion (KM84)</i>	0	00:45	5
13	Acoustical balance: Too indirect Bruckner: Symphony No. 3 Slovenia Philharmonic Orchestra /Gyorgy Gyorivanyi Ljubljana, Gallus Hall KDIC <i>Recorded with an A/B pair of B&K 4006 (10 m height), Stereo Comp C426 (4 m height, position at the conductor), 12 spot mics for strings and woodwinds (AKG414), spot mic for percussion (KM84)</i>	0	00:47	5

Trk.	Description	Level dBFS	Dur.	Note
14	Acoustical balance: Well balanced Bruckner: Symphony No. 3 Slovenia Philharmonic Orchestra / Gyorgy Gyorivanyi Ljubljana, Gallus Hall KDIC <i>Recorded with an A/B pair of B&K 4006 (10 m height), Stereo Comp C426 (4 m height, position at the conductor), 12 spot mics for strings and woodwinds (AKG 414), spot mic for percussion (KM 84)</i>	0	00:47	5
15	Acoustical balance: Too direct Saint Saëns: Symphony No. 3 Rudolfinum Concert Hall, Prague <i>Recorded with an A/B pair of TLM 170, spacing 30 cm, very close to the orchestra</i>	0	00:41	3
16	Acoustical balance: Too indirect Saint Saëns: Symphony No. 3 Rudolfinum Concert Hall, Prague <i>Recorded with an A/B pair of TLM 170, spacing 120 cm, 10 m from the orchestra</i>	0	00:41	3
17	Acoustical balance: Well balanced Saint Saëns: Symphony No. 3 Rudolfinum Concert Hall, Prague <i>Recorded with an A/B pair of TLM 170, figure of eight, spacing 30 cm, very close to the orchestra and several spot mics</i>	0	00:40	3
18	Apparent room size: Too small Haydn: Symphony No. 16 Radio House, Bratislava <i>Simple mic setting in a small studio (800 m³, Reverberation Time 0.8s)</i>	-6	00:41	6
19	Apparent room size: Slightly too large Haydn: Symphony No. 16 Radio House, Bratislava <i>Simple mic setting in a medium studio (4200 m³, Reverberation Time 1.7s)</i>	-6	00:41	6
20	Apparent room size: Proper room size Haydn: Symphony No. 16 Radio House, Bratislava <i>Simple mic setting in a big studio (13000 m³, Reverberation Time 1.8s)</i>	-6	00:41	6
21	Apparent room size: Much too large Mahler: Symphony No. 10 Danish National Radio Symphony Orchestra / Leif Segerstam Grundtvigskirken, Copenhagen (very large church, reverb 6s) <i>Recorded with an A/B pair of B&K 4006, spacing 50 cm, distance 3 m, height 4 m from orchestra</i>	0	00:51	7
22	Apparent room size: Appropriate/too small a size Mahler: Symphony No. 10 Danish National Radio Symphony Orchestra / Leif Segerstam Concert Hall of the Danish Broadcasting Corp, Reverberation Time 1.8s <i>Recorded with an A/B pair of B&K 4006, spacing 50 cm, distance 3 m, height 4 m from orchestra (same mics and positioning as above)</i>	0	00:48	7
23	Depth perspective: Too much depth Strauss: Also sprach Zarathustra Orchestre Philharmonique de Radio France / Eliahu Inbal Chatelet, Paris <i>Recorded with an A/B pair of B&K 4006, spacing 70 cm, 2 Schoeps MK4 AB, 6 spot mics on strings (Schoeps MK21), 4 spot mics on woodwinds (KM84)</i>	-12	00:51	8
24	Depth perspective: Too little depth Strauss: Also sprach Zarathustra Orchestre Philharmonique de Radio France / Eliahu Inbal Chatelet, Paris <i>Recorded with an A/B pair of B&K 4006, spacing 70 cm, 2 Schoeps MK4 AB, 6 spot mics on strings (Schoeps MK21), 4 spot mics on woodwinds (KM84)</i>	-12	00:51	8

Trk.	Description	Level dBFS	Dur.	Note
25	Depth perspective: Appropriate depth Strauss: Also sprach Zarathustra Orchestre Philharmonique de Radio France / Eliahu Inbal Chatelet, Paris <i>Recorded with an A/B pair of B&K 4006, spacing 70 cm, 2 Schoeps MK4 AB, 6 spot mics on strings (Schoeps MK21), 4 spot mics on woodwinds (KM84)</i>	-12	00:51	8
26	Depth perspective: Too much depth Liaros: En gjetermelodi Kali Lonnestad (vocal), Harald Roine (hardingfele), Henning Andersen (hardingfele) Førde Kirke <i>Recorded with 2 U89 (singer), 2 KM84 (hardingfeler) and B&K 4006 (ambience)</i>	-12	00:33	2
27	Depth perspective: Appropriate depth Liaros: En gjetermelodi Kali Lonnestad (vocal), Harald Roine (hardingfele), Henning Andersen (hardingfele) Førde Kirke <i>Recorded with 2 U89 (singer), 2 KM84 (hardingfeler) and B&K 4006 (ambience)</i>	-9	00:33	2
28	Sound colour of reverberation: Proper Bartok: Improvisations op. 20 Solo piano Small studio at the Danish Broadcasting Corporation <i>Recorded with an A/B pair of B&K 4006, spacing 40 cm, added reverb from a Lexicon 480 (low HFC)</i>	-8	00:38	7
29	Sound colour of reverberation: Too metallic Bartok: Improvisations op. 20 Solo piano Small studio at the Danish Broadcasting Corporation <i>Recorded with an A/B pair of B&K 4006, spacing 40 cm, added reverb from a Lexicon 480 (high HFC)</i>	-8	00:38	7
30	Directional balance: Uneven Orthodox vigilia Novospask Monastery Choir St. Johns Church, Helsinki	-6	00:58	9
31	Directional balance: Even Sibelius: Symphony No. 1 Lahti City Orchestra Risti Church, Lahti	0	01:14	9
32	Stability: Good Bach: Suite No. 2 Symphonieorchester des Bayerischen Rundfunks / Lorin Maazel Soloist: Philippe Boucly Philharmonie im Mûchner Gasteig <i>Recorded with an A/B pair (B&K 4006), spacing 100 cm, distance 3 m, height 8 m + for the flute: 1 spot-mic (MK4), distance 1.5 m, height 2.3 m, delayed 17.6 ms, panned 10° left</i>	-12	00:51	10
33	Stability: Bad Bach: Suite No. 2 Symphonieorchester des Bayerischen Rundfunks / Lorin Maazel Soloist: Philippe Boucly Philharmonie im Mûchner Gasteig <i>Recorded with an A/B pair (B&K 4006), spacing 100 cm, distance 3 m, height 8 m + for the flute: 2 spot-mics (MK4) in A/B configuration, spacing 40 cm, distance 1.5 m, height 2.3 m and delayed 17.6 ms (L) and 20.54 ms (R), delayed 17.6 ms and panned 10° left</i>	-12	00:50	10
34	Sound Image width: Too narrow Debussy: Prelude No. 10 Tatjana Ognjanovic, piano	-18	00:36	5
35	Sound Image width: Too wide Debussy: Prelude No. 10 Tatjana Ognjanovic, piano	-18	00:36	5

* type of Norwegian fiddle

Trk.	Description	Level dBFS	Dur.	Note
36	Sound Image width: Appropriate Debussy: Prelude No. 10 Tatjana Ognjanovic, piano	-18	00:38	5
37	Location accuracy: Inaccurate Beethoven/Mahler: String quartet op 95, 1st movement Danish National Radio Symphony Orchestra / Leil Segerstam Concerthall of the Danish Broadcasting Corporation <i>Recorded with an A/B pair (B&K 4006), spacing 40 cm, distance 3 m, height 4 m</i>	-6	00:44	7
38	Location accuracy: Accurate Beethoven/Mahler: String quartet op 95, 1st movement Danish National Radio Symphony Orchestra / Leil Segerstam Concerthall of the Danish Broadcasting Corporation <i>Recorded with a coincident mic (Neumann SM69), cardioid/figure of eight, distance 3 m, height 4 m</i>	-6	00:42	7
39	Sound source definition: Muddy Ligeti: Selbssportrait P.L. Aimard/I. Kataeva, pianos Meeting room of the Hungarian Academy of Sciences, Budapest <i>Recorded with an A/B pair (B&K 4006) + Jecklin disk</i>	-9	00:31	11
40	Sound source definition: Clear Ligeti: Selbssportrait P.L. Aimard/I. Kataeva, pianos Meeting room of the Hungarian Academy of Sciences, Budapest <i>Recorded with an A/B pair (B&K 4006) + Jecklin disk, distance 3 m and 2x2 spot-mics on the pianos</i>	-9	00:32	11
41	Time definition: Bad Bernstein: On the waterfront Oslo Philharmonic Orchestra Konserthuset, Oslo <i>Recorded with an A/B pair (B&K 4006), spacing 100 cm + another pair, spacing 5-6 m on line with the first pair</i>	0	01:19	2
42	Time definition: Good Bernstein: On the waterfront Oslo Philharmonic Orchestra Konserthuset, Oslo <i>Recorded with an A/B pair (B&K 4006), spacing 100 cm + another pair, spacing 5-6 m on line with the first pair + 3-point Decca configuration (Schoeps MK21), several spot mics (Schoeps 451) and a Neumann U87 by the double-bass</i>	0	01:19	2
43	Intelligibility: Bad Orthodox Lithurgia The choir of Uspenski Cathedral and priests Uspenskii Cathedral, Helsinki	-12	00:53	9
44	Loudness balance: Trombone too weak Livi Danceanu: Concerto for trombone and orchestra Romanian Chamber Radio orchestra / Cristian Brăcuși Soloist: Berry Web (United Kingdom) Concert Hall of the Romanian Radio	-3	00:41	12
45	Loudness balance: Trombone too loud Livi Danceanu: Concerto for trombone and orchestra Romanian Chamber Radio orchestra / Cristian Brăcuși Soloist: Berry Web (United Kingdom) Concert Hall of the Romanian Radio	-3	00:41	12
46	Loudness balance: Trombone at appropriate level Livi Danceanu: Concerto for trombone and orchestra Romanian Chamber Radio orchestra / Cristian Brăcuși Soloist: Berry Web (United Kingdom) Concert Hall of the Romanian Radio	-3	00:41	12

* a sound-absorbing disk placed between two microphones

Trk.	Description	Level dBFS	Dur.	Note
47	Dynamics: Too large a dynamic range for FM Stravinsky: Firebird Suite Danish National Radio Symphony Orchestra / Dimitri Kitajenko Concert Hall of the Danish Broadcasting Corporation <i>Recorded with an A/B pair (B&K 4006), spacing 50 cm + about 20 spot mics (Neumann U89 & KM84, B&K 4011) Original dynamic range of the recording (60 dB)</i>	0	01:47	7
48	Dynamics: Appropriate dynamic range for FM Stravinsky: Firebird Suite Danish National Radio Symphony Orchestra / Dimitri Kitajenko Concert Hall of the Danish Broadcasting Corporation <i>Recorded with an A/B pair (B&K 4006), spacing 50 cm + about 20 spot mics (Neumann U89 & KM84, B&K 4011) Digitally compressed version of the recording (44 dB)</i>	0	01:47	7
49	Dynamics: Very compressed Stravinsky: Firebird Suite Danish National Radio Symphony Orchestra / Dimitri Kitajenko Concert Hall of the Danish Broadcasting Corporation <i>Recorded with an A/B pair (B&K 4006), spacing 50 cm + about 20 spot mics (Neumann U89 & KM84, B&K 4011) Digitally very compressed version of the recording (20 dB)</i>	0	01:47	7
50	Sound colour: Dull Oscar Lindberg: Konsertfantasi Organist: Olle Johansson Engelbrektskyrkan, Stockholm <i>Recorded with an A/B pair (Neumann U89), distance 20 m, height 8 m from the centre of the organ</i>	-3	00:53	13
51	Sound colour: Nasal Oscar Lindberg: Konsertfantasi Organist: Olle Johansson Engelbrektskyrkan, Stockholm <i>Recorded with a coincident-mic (Neumann USM69), M/S, distance 25 m, height 4 m from the centre of the organ</i>	-3	00:53	13
52	Sound colour: Natural Oscar Lindberg: Konsertfantasi Organist: Olle Johansson Engelbrektskyrkan, Stockholm <i>Recorded with a PZM configuration (Schoeps BLM3) on the floor at 20 m from the centre of the organ</i>	-3	00:52	13
53	Sound attack: Imprecise Haydn: Symphony No. 103 Timpani solo Concert Hall of the Danish Radio, Copenhagen <i>Recorded with a main stereo pair + undelayed support mic on the timpani</i>	-6	00:16	7
54	Sound attack: Precise Haydn: Symphony No. 103 Timpani solo Concert Hall of the Danish Radio, Copenhagen <i>Recorded with a main stereo pair + delayed support mic on the timpani</i>	-5	00:16	7
55	Electrical noise: Ripple Puccini: O mio babbo caro Song/Piano	-9	00:28	2
56	Electrical noise: No ripple Puccini: O mio babbo caro Song/Piano	-9	00:28	2
57	Electrical noise: Clicks (electrical) Haydn: Symphony No. 92, 2nd movement Kringkastingsorkesteret, NRK/Erich Binder Large Studio, NRK	-9	00:34	2
58	Electrical noise: No clicks (electrical) Haydn: Symphony No. 92, 2nd movement Kringkastingsorkesteret, NRK/Erich Binder Large Studio, NRK	-9	00:34	2

Trk.	Description	Level dBFS	Dur.	Note
59	Electrical noise: Induction noise Improvisations in the style of Gershwin Wayne Marshall, piano St. John's, Smith Square, London <i>Spurious induction occurring just before a live recital</i>	-10	00:30	4
60	Acoustical noise: Noise from performers J.S. Bach: Matthew passion Orchestra of the Hungarian Radio/W. Gönenwein Budapest Congress Centre <i>Recorded with 6 B&K 4006, 2 B&K 4006 + Jecklin disks, 4 AKG C460, 3 Neumann U89 and 1 TLM 170 mics</i>	-12	00:28	11
61	Acoustical noise: Ventilation noise Purcell: Dido & Aeneas Orchestra of the Hungarian Radio/A. Korody Soloist: Julla Hamari <i>Recorded with 6 Neumann U89, 1 KM84 and 2 B&K 4006 mics</i>	-12	01:07	11
62	Acoustical noise: Audience noise S.D. Sandströ: Seven poems Danish Radio Chorus/S. Parkmann Nationalbibliotekets Vandrehal, Copenhagen <i>Recorded with an A/B pair of B&K 4006 mics, spacing 50 cm</i>	-22	01:08	7
63	Bit errors: Clicks (digital) K. Å. Riisager: Etudes Danish National Radio Symphony Orchestra / G. Rozhdestvensky Concert Hall of the Danish Radio, Copenhagen <i>Recorded with 2 B&K 4006 (spacing 50 cm), 10 Neumann U89 on the strings, 4 B&K 4011 on the woodwinds and a Neumann KM84 on the percussion The clicks are caused by asynchronism between the digital console and the multi-track machine</i>	-18	00:41	7
64	Bit errors: No clicks (digital) K. Å. Riisager: Etudes Danish National Radio Symphony Orchestra / G. Rozhdestvensky Concert Hall of the Danish Radio, Copenhagen <i>Recorded with 2 B&K 4006 (spacing 50 cm), 10 Neumann U89 on the strings, 4 B&K 4011 on the woodwinds and a Neumann KM84 on the percussion The digital console and the multi-track machine are here in sync</i>	-18	00:41	7
65	Distortions: Severe distortion Haydn: Symphony No. 92, 1st movement Kringkastingsorkesteret, NRK/Erich Binder Large Studio, NRK	-3	00:30	2
66	Distortions: No distortion Haydn: Symphony No. 92, 1st movement Kringkastingsorkesteret, NRK/Erich Binder Large Studio, NRK	-3	00:30	2

Notes for the table

- 1 Digitally copied from EBU R-DAT Levels Tape (EBU tech 3282)
- 2 Recording made by NRK / Norsk Rikskringkasting (Norway)
- 3 Recording made by CR / Cesky Rozhlas (Czech Republic)
- 4 Recording made by BBC / British Broadcasting Corporation (United Kingdom)
- 5 Recording made by RTVSLO / Radiotelevizija Slovenija (Slovenia)
- 6 Recording made by SR / Slovensky Rozhlas (Slovakia)
- 7 Recording made by DR / Danmarks Radio (Denmark)
- 8 Recording made by SRF / Radio France (France)
- 9 Recording made by YLE / Yleisradio Oy (Finland)
- 10 Recording made by BR & IRT / Bayerischer Radio & Institut für Rundfunktechnik (Germany)
- 11 Recording made by MR / Magyar Radio (Hungary)
- 12 Recording made by RR / Societatea Romana de Radiodifuziune (Romania)
- 13 Recording made by SR / Sveriges Radio Ab. (Sweden)

Audio Editing and User Guide:

Lars S. Christensen
DR-Radio (Danish Broadcasting Corporation)
Musicproduction, FB01
Rosenørns Allé 22
DK1999 Frederiksberg C
Denmark
phone: (+45) 35 20 67 35
e mail: lasc@dr.dk