



INTERNATIONAL STANDARD ISO/IEC 23003-2:2010
TECHNICAL CORRIGENDUM 2

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Information technology — MPEG audio technologies —
Part 2:
Spatial Audio Object Coding (SAOC)

TECHNICAL CORRIGENDUM 2

Technologies de l'information — Technologies audio MPEG —
Partie 2: Codage d'objet audio spatial (SAOC)

RECTIFICATIF TECHNIQUE 2

Technical Corrigendum 2 to ISO/IEC 23003-2:2010 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

Replace the following text in the subclause “7.7.2.4 Stereo to binaural “x-2-b” processing mode” (inappropriate indexing):

$$v = (\mathbf{D}^1 + \mathbf{D}^2) \mathbf{E} (\mathbf{D}^1 + \mathbf{D}^2)^* + \varepsilon^2.$$

with:

$$v = (\mathbf{D}^0 + \mathbf{D}^1) \mathbf{E} (\mathbf{D}^0 + \mathbf{D}^1)^* + \varepsilon^2$$

Replace the following text in the subclause “7.7.2.4 Stereo to binaural “x-2-b” processing mode” (inappropriate and confusing indexing):

$$e_{i,j}^x = e_{i,j} \left(\frac{d_i^x}{d_i^1 + d_i^2} \right) \left(\frac{d_j^x}{d_j^1 + d_j^2} \right)$$

with:

$$e_{i,j}^x = e_{i,j} \left(\frac{d_{x,i}}{d_{0,i} + d_{1,i}} \right) \left(\frac{d_{x,j}}{d_{0,j} + d_{1,j}} \right)$$

Replace the following text in the subclause “7.7.2.4 Stereo to binaural “x-2-b” processing mode” (redundant definition of already introduced variables and inappropriate indexing):

The downmix matrix $\mathbf{D}^{l,x}$ of size $1 \times N$ with elements $d_i^{l,x}$ can be found as

$$d_i^{l,1} = 10^{0.05 DMG_i^l} \sqrt{\frac{10^{0.1 DCLD_i^l}}{1 + 10^{0.1 DCLD_i^l}}}, \quad d_i^{l,2} = 10^{0.05 DMG_i^l} \sqrt{\frac{1}{1 + 10^{0.1 DCLD_i^l}}}.$$

The stereo downmix matrix $\mathbf{D}^l$ of size $2 \times N$ with elements $d_{x,i}^l$ can be found as

$$d_{x,i}^l = d_i^{l,x}.$$

with:

where the downmix matrix $\mathbf{D}^x$ of size $1 \times N$ and $\mathbf{D}$ of size $2 \times N$ contain elements $d_{x,i}$, ($x = 0,1$).

Replace the following text in the subclause “7.6.2.4 Derivation of the MPS parameters” (incorrect statement: “parameters are quantized, formatted as MPS bitstream”):

The obtained CLD, ICC and ADG parameters are quantized, formatted as MPS bitstream and fed into the MPS decoder.

with:

The obtained $\mathbf{D}_{\text{ADG}}$, $\mathbf{D}_{\text{CLD}}$ and $\mathbf{D}_{\text{ICC}}$ parameters are fed into the MPS decoder.

Remove the following equation and its lead-in text in the subclause “7.6.3.3 Stereo Preprocessing” (this equation contradicts to the one given above, namely $\mathbf{P}_2 = \begin{cases} \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix} & , r_{1,2} > \varepsilon^2, \\ \mathbf{v}_R \text{diag}(\mathbf{w}_d) & , \text{otherwise.} \end{cases}$):

and finally the mix matrix,

$$\mathbf{P}_2 = (\mathbf{v}_{R1} \quad \mathbf{v}_{R2}) \begin{pmatrix} \mathbf{w}_{d1} & 0 \\ 0 & \mathbf{w}_{d2} \end{pmatrix}$$

Replace the following text in the subclause “7.6.3.3 Stereo Preprocessing” (incomplete specification $\mathbf{P}_1$ and inconsistent notation $\mathbf{G}_{\text{Mod}}$):

and the mix matrix $\mathbf{G}_{\text{Mod}}$ is given as:

$$\mathbf{G}_{\text{Mod}} = \begin{cases} \text{diag}(\mathbf{g}_{\text{vec}}) \mathbf{G}, & r_{1,2} > 0, \\ \mathbf{G}, & \text{otherwise.} \end{cases}$$

Similarly, the mix matrix $\mathbf{P}_2$ is given as:

$$\mathbf{P}_2 = \begin{cases} \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix} & , r_{1,2} > \varepsilon^2, \\ \mathbf{v}_R \text{diag}(\mathbf{w}_d) & , \text{otherwise.} \end{cases}$$

with:

The SAOC downmix preprocessor unit modifies the downmix according to the MPS parameters derived from SAOC data and rendering information. The matrices $\mathbf{G}$, $\mathbf{P}_1$ and $\mathbf{P}_2$ of size 2×2 are given as

$$\mathbf{G} = \begin{cases} \text{diag}(\mathbf{g}_{\text{vec}}) \cdot \hat{\mathbf{G}}, & r_{1,2} > \varepsilon^2, \\ \hat{\mathbf{G}}, & \text{otherwise.} \end{cases}$$

$$\mathbf{P}_1 = \begin{pmatrix} 1 & 1 \\ 0 & 0 \end{pmatrix} \hat{\mathbf{G}},$$