iccMAX amendment: Extended Device Colour Space support

This minor revision of the iccMAX specification ICC.2:2023 was passed by the ICC Steering Committee on 30 October 2025. It extends the allowable device colour space signatures to allow for both spectral spaces to be defined with associated spectral ranges, and provide separate associated Profile Connection Conditions for the source space in abstract profiles.

Summary
Spectral signatures are added to device colour space signature table in the header. A spectralRangeType is added to section 9, a deviceSpectralRangeTag and a devicePccTag are added to section 10 and a profileConnectionConditionsStructure to section 12.

The detailed changes to the specification are as follows:

7.2.8 Data colour space field

Add signatures from Table 21 to Table 15. Add additional text as follows.

When the device colour space signature is the same as one of the signatures in Table 21 the source space is considered to be a spectral space and the spectral range for this colour space shall be defined by either a deviceSpectralRangeTag, or the spectral PCS range field [7.2.22] along with the bi-spectrral PCS range field [7.2.23] (as needed) if the deviceSpectralRangeTag is not present.

9.2.x deviceSpectralRangeTag

Tag signature ‘dsrn’ (6473726eh)
Allowed tag type: specrtralRangeType

This optional tag is used to define the spectral range for the device colour space when a spectral colour space signature is used. If this tag is not present and the device colour space uses a spectral colour space signature [Table 21] then the spectral range shall be defined by the spectral wavelength range and bi-spectral wavelength range fields in the profile header.

9.2.x+1 devicePccTag

Tag signature ‘dpcc’ (64706363h)
Permitted tag types: tagStructType of type profileConnectionConditionsStructure

This tag provides alternate replacement profile connection conditions for PCS and profile processing of an abstract profile when the device colour space is either a colorimetric PCS or spectral PCS signature. This allows the abstract profile to provide the transforms that convert between the source and destination profile connection conditions. All requirements for PCS operation and PCC processing for PCS side of transforms shall apply the alternate PCC replacements provided in the associated profileConnectionConditionsStructure.

10.2.w spectralRangeType

The spectralRangeType contains information that defines the spectral ranges for an associated spectral colour space signature. The encoding of this tag type is defined in Table W. The Bi-Spectral wavelength range shall be zero if the associated spectral colour space signature is not bi-spectral.

Table W – spectralRangeType encoding

Byte position	Field length (bytes)	Content	Encoded as…
0 to 3	4	'srng' () type signature	
4 to 7	4	Reserved, shall be 0	
8 to 13	6	Spectral wavelength range	spectralRange
14 to 19	6	Bi-spectral wavelength range	spectralRange

12.2.y profileConnectionConditionsStructure

12.2.y.1 General

Structure Type Identifier: 'pcc ' (70636320h)

The profileConnectionConditionsStructure defines member tags that parallel profile connection conditions associated with colorimetric PCS and spectral PCS fields of the header. In general, the requirements for applying the members of this structure shall be the same as applying corresponding PCC elements of a profile as they are logically replaced by the members of this structure.

Required sub-tag members of the profileConnectionConditionsStructure are shown in Table Y. Descriptions for each sub-tag member can be found in 12.2.y.2.

Table Y - profileConnectionConditonsStructure element sub-tags

Id	Signature	Description	Sub-tag type	Use
pcsIlluminantXYZMbr	"iXYZ' (6958595ah)	PCS illuminant XYZ [12.2.y.2.1]	XYZType	Required
mediaWhitePointMbr	'mwpt' (6d777074h)	Media white point [12.2.y.2.2]	XYZType	Required if colorimetric connection used
spectralWhitePointMbr	'swpt' (73777074h)	Spectral white Point [12.2.y.2.3]	float16ArrayType, float32ArrayType, uInt16ArrayType	Required if spectral connection used
spectrrlViewingConditionsMbr	'svcn' (7376636eh)	Spectral viewing conditions [12.2.y.2.4]	spectralViewingConditionsType	Required
customToStandardPccMbr	'c2sp' (63327370h)	Custom to standard PCC transform [12.2.y.2.5]	multiProcessElementsType	Required
standardToCustomPccMbr	's2cp' (73326370h)	Standard to custom PCC transform [12.2.y.2.6]	multiProcessElementsType	Required

12.2.y.2 profileConnectionConditionsStructure sub-tag member elements

12.2.y.2.1 pcsIlluminantXYZMbr
Member signature: “iXYZ’ (6958595ah)
Allowed tag type: XYZType

The contents of this required member tag shall replace the functionality of using the PCS illuminant field [7.2.18] of the profile header when the containing structure is used for PCC processing. The values shall correspond to the colorimetry of the illuminant as computed using the illuminant and observer values specified in the spectralViewingConditionsMbr tag, as described in 12.2.x.2.4.

12.2.y.2.2 mediaWhitePointMbr
Member signature: ‘mwpt’ (6d777074h)
Allowed tag type: XYZType

The contents of this required member tag shall replace the functionality of using the mediaWhitePointTag [9.2.18] of the profile when the containing structure is used for PCC and PCS processing. This tag shall be used for media relative and absolute relative colorimetric PCS conversions in the same way as the mediaWhitePointTag is used.

12.2.y.2.3 spectralWhitePointMbr
Member signature: ‘mwpt’ (73777074h)
Allowed tag type: XYZType

The contents of this required member tag shall replace the functionality of using the mediaWhitePointTag [9.2.112] of the profile when the containing structure is used for PCC and PCS processing. This tag shall be used for media relative and absolute relative spectral PCS conversions in the same way as the spectralWhitePointTag is used.

12.2.y.2.4 spectralViewingConditionsMbr
Member signature: ‘svcn’ (7376636eh)
Allowed tag type: spectralViewingConditionsType

The contents of this required member tag shall replace the functionality of using the spectralViewingConditionsTag [9.2.112] of the profile when the containing structure is used for PCC and PCS processing.

12.2.y.2.5 customToStandardPccMbr
Member signature: ‘c2sp’ (63327370h)
Allowed tag type: multiProcessElementsType

The contents of this required member tag shall replace the functionality of using the customToStandardPCCTag [9.2.57] of the profile when the containing structure is used for PCC related processing.

12.2.y.2.6 standardToCustomPccMbr
Member signature: ‘s2cp’ (73326370h)
Allowed tag type: multiProcessElementsType

The contents of this required member tag shall replace the functionality of using the standardToCustomPccTag [9.2.113] of the profile when the containing structure is used for PCC related processing.