Errata for “USB Video Payload H264 1.0” as of August 9, 2011.

Check the http://www.usb.org website for the latest errata.

1. Errata wLayerID

Section 3.3.2.1 of Specification “USB Video Payload H264 1.0”

Section 2.21 of FAQ ““USB Video Payload H264 FAQ 1.0”

Background: The wLayerID structure parameters bits are not consistent with the H.264 specification.

Change:

wLayerID										
Reserved (3 bits)			StreamID (3 bits)			QualityID (3 bits)			DependencyID (4 bits)				TemporalID (3 bits)		
15		13	12		10	9		7	6		3	2		0

Table 3: wLayerID Structure

Change to:

wLayerID for SVC Streams										
Reserved (3 bits)			StreamID (3 bits)			TemporalID (3 bits)			QualityID (4 bits)				DependencyID (3 bits)		
15		13	12		10	9		7	6		3	2		0

wLayerID for MVC Streams									
Reserved (3 bits)			StreamID (3 bits)			TemporalID (3 bits)			ViewID (7 bits)					
15		13	12		10	9		7	6					0

Table 3: wLayerID Structure

StreamID:

The StreamID provides specification of a specific H.264 stream in the case of a simulcast sequence. The StreamID has 3 bits (bits 12-10 in wLayerID) to support 7 streams (0-6). A value of 7 shall be used to simultaneously refer to all streams. In the case of a single H.264 stream, stream_id is always 0. Non-zero StreamID only appears in cases of simulcast of two or more H.264 streams.

TemporalID:

The TemporalID provides specification of a specific Temporal Layer in a multi-layer SVC/MVC stream. The TemporalID has 3 bits (bits 9-7 in wLayerID) to support 7 temporal layers (0 enhancements – 6 enhancements layers). A value of 7 shall be used to simultaneously refer to all temporal layers. In the case of a single-layer H.264 stream, TemporalID shall always be 0. In the case of a SVC stream not using temporal scalability, TemporalID shall always be 0. A non-zero TemporalID shall only appear in SVC streams using temporal scalability where 1 indicates the first temporal enhancement layer, up to the maximum temporal Enhancement layer bTemporalScaleMode set in the UVCX_TEMPORAL_SCALE_MODE control.

QualityID:

The QualityID provides specification of a specific Quality layer in a multi-layer SVC stream. The QualityID has 4 bits (bits 6-3 in wLayerID) to support 15 Quality layers (0 enhancements – 14 enhancements layers). A value of 15 shall be used to simultaneously refer to all quality layers. In the case of a single-layer H.264 stream, QualityID shall always be 0. In the case of a SVC stream not using MGS mode SNR scalability, QualityID shall always be 0. A non-zero QualityID shall only appear in SVC streams using MGS mode SNR scalability where 1 indicates the first quality enhancement layer, up to the maximum quality Enhancement layer. The MSG mode of SNR scalability partitions transform coefficients into separate Quality layers.

DependencyID:

The DependencyID provides specification of a specific Dependency Layer in a multi-layer SVC stream. The DependencyID has 3 bits (bits 2-0 in wLayerID) to support 7 dependency layers (0 enhancements – 6 enhancements layers). A value of 7 shall be used to simultaneously refer to all Dependency layers. In the case of a single-layer H.264 stream, DependencyID shall always be 0. In the case of a SVC stream not using either CGS mode SNR scalability or Spatial scalability mode, DependencyID shall always be 0. A non-zero DependencyID shall only appear in SVC streams using either CGS mode SNR scalability or Spatial scalability where 1 indicates the first SNR or spatial enhancement layer, up to the maximum SNR or spatial Enhancement layer defined as the sum of bSpatialScaleMode and the number of CGS mode SNR scalable enhancement layers identified in table 8.

ViewID:

The ViewID provides specification of a specific view in a MVC stream. The ViewID has 7 bits (bits 6-0 in wLayerID) to support 62 views (0 views – 62 views). A value of 63 shall be used to simultaneously refer all views. Values 64 to 127 are reserved.

Reserved:

The Reserved field has 3 bits (bits 15-13 in wLayerID) and shall always be 0.

2. Errata Appendix C "USB Video Payload H264 1.0"

Section 6.1.1 Correlating between Device and PC clocks

Background: The clarification on the clock exposed.

Changed to:

Since the capture time of the video frame (PTS) is indicated by the device using the STC, and A/V sync will rely on PC clock value, we need to correlate the two clocks. On Windows, the PC clock exposed via the Query Performance Counter (QPC). The correlation 'constant' between PTS and QPC can be calculated as the most recent Total Video Delay.

Clock Correlation Constant (CCC) = Total Video Delay Equation 4

Section 6.1.2 Video Time Stamping

Background: Equation 5 correction.

Changed to:

The timestamp applied by the video driver to the current video frame is calculated as the timestamp for the current frame – CCC.

Timestamp for current frame = QPC - CCC Equation 5

The timestamp calculated above is applied by the host driver to all NAL Units belong to the same picture. The camera indicates a new picture by toggling the FID between 0 and 1 on the UVC payload header.