Summary:

We propose the addition of new usages to the Sensor Page, to support various sensors which have recently become available on computing devices.

Background:

Provide background information around the problem and how changes to the HID Usage Tables will solve the problem.

Proposal:

1. Object Presence and Object Proximity

Add the following two new usages to the Sensors Usage Page, in section 1.0, page 8

<table>
<thead>
<tr>
<th>Usage ID</th>
<th>Usage Name</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A</td>
<td>Environmental: Object Presence</td>
<td>CA,CP</td>
</tr>
<tr>
<td>3B</td>
<td>Environmental: Object Proximity</td>
<td>CA,CP</td>
</tr>
</tbody>
</table>

Omit 3A and 3B from Environmental: Reserved

Add the following to section 1.1, page 21

<table>
<thead>
<tr>
<th></th>
<th>CA,CP – An application-level or physical collection that identifies a device that detects object presence (Boolean yes or no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental: Object Presence</td>
<td>CA,CP – An application-level or physical collection that identifies a device that detects object proximity (range of values)</td>
</tr>
</tbody>
</table>

Add the following to section 4.1, page 71
Add the following to section 1.0, page 14

<table>
<thead>
<tr>
<th>Usage ID</th>
<th>Usage Name</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>043A</td>
<td>Data Field: Object Presence</td>
<td>SF</td>
</tr>
<tr>
<td>043B</td>
<td>Data Field: Object Proximity Range (default Unit: meters)</td>
<td>SV</td>
</tr>
<tr>
<td>043C</td>
<td>Data Field: Object Proximity Out of Range</td>
<td>SF</td>
</tr>
</tbody>
</table>

Omit 043A, 043B, 043C from Data Field: Environmental Reserved

Add the following to table in section 1.8, page 31:

<table>
<thead>
<tr>
<th>Data Field</th>
<th>Usage Name</th>
<th>Usage Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Object Presence</td>
<td>SF</td>
<td>TRUE when an object presence is detected by the computing device, otherwise FALSE</td>
</tr>
<tr>
<td></td>
<td>Object Proximity Range</td>
<td>SV</td>
<td>Measures the distance between an object and the computing device. Default unit of measure is meters; can be overridden using explicit Unit and/or Unit Exponent.</td>
</tr>
<tr>
<td></td>
<td>Object Proximity Out of Range</td>
<td>SF</td>
<td>TRUE when the sensor measuring object proximity range indicates “out of range” meaning the value provided as Object Proximity Range may not be accurate</td>
</tr>
</tbody>
</table>

Add the following to section 4.1, page 75:

```c
#define HID_USAGE_SENSOR_DATA_ENVIRONMENTAL_OBJECT_PRESENCE 0x0A,0x3A,0x04
#define HID_USAGE_SENSOR_DATA_ENVIRONMENTAL_OBJECT_PROXIMITY_RANGE 0x0A,0x3B,0x04
#define HID_USAGE_SENSOR_DATA_ENVIRONMENTAL_OBJECT_PROXIMITY_OUT_OF_RANGE 0x0A,0x3C,0x04
```

Add the following to section 4.3, page 151:

Illustration of sensor Environmental: Object Presence

// For reference: Complete HID report descriptor
```c
const unsigned char pres_report_descriptor[] = {
    HID_USAGE_PAGE_SENSOR,
    HID_USAGE_SENSOR_TYPE_ENVIRONMENTAL_OBJECT_PRESENCE,
    HID_COLLECTION(Physical),
    // feature reports (xmit/receive)
    HID_USAGE_PAGE_SENSOR,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE,
    HID_LOGICAL_MIN_8(0),
    HID_LOGICAL_MAX_8(5),
    HID_REPORT_SIZE(8),
    HID_REPORT_COUNT(1),
    HID_COLLECTION(Logical),
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_NO_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_ALL_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_THRESHOLD_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_NO_EVENTS_WAKE,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_ALL_EVENTS_WAKE,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_THRESHOLD_EVENTS_WAKE,
    HID_FEATURE(Data_Arr_Abs),
    HID_END_COLLECTION,
    HID_USAGE_SENSOR_PROPERTY_SENSOR_STATUS,
    HID_LOGICAL_MIN_8(0),
    HID_LOGICAL_MAX_32(0xFF,0xFF,0xFF,0xFF),
    HID_REPORT_SIZE(32),
    HID_REPORT_COUNT(1),
    HID_FEATURE(Data_Var_Abs), // up to VT_UI4 worth of status info
    HID_USAGE_SENSOR_PROPERTY_REPORT_INTERVAL,
    HID_LOGICAL_MIN_8(0),
    HID_LOGICAL_MAX_32(0xFF,0xFF,0xFF,0xFF),
    HID_REPORT_SIZE(32),
    HID_REPORT_COUNT(1),
};
```
Illustration of sensor Environmental: Object Proximity

// For reference: Complete HID report descriptor
const unsigned char pres_report_descriptor[] = {
  HID_USAGE_PAGESENSOR,
  HID_USAGESENSOR_TYPEENVIRONMENTAL_OBJECT_PROXIMITY,
  HID_COLLECTION(Physical),
};
// feature reports (xmit/receive)
HID_USAGE_PAGE_SENSOR,
HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_8(5),
HID_REPORT_SIZE(8),
HID_REPORT_COUNT(1),
HID_COLLECTION(Logical),
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_NO_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_ALL_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_THRESHOLD_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_NO_EVENTS_WAKE,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_ALL_EVENTS_WAKE,
HID_FEATURE(Data_Arr_Abs),
HID_END_COLLECTION,
HID_USAGE_SENSOR_PROPERTY_SENSOR_STATUS,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_32(0xFF,0xFF,0xFF,0xFF),
HID_REPORT_SIZE(32),
HID_REPORT_COUNT(1),
HID_FEATURE(Data_Var_Abs), // up to VT_UI4 worth of status info
HID_USAGE_SENSOR_PROPERTY_REPORT_INTERVAL,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_32(0xFF,0xFF,0xFF,0xFF),
HID_REPORT_SIZE(32),
HID_REPORT_COUNT(1),
// HID_USAGE_SENSOR_UNITS_MILLISECOND,
HID_UNIT_EXPONENT(0),
HID_FEATURE(Data_Var_Abs),
HID_USAGE_SENSOR_PROPERTY_SENSOR_CONNECTION_TYPE, // Nary
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_8(2),
HID_REPORT_SIZE(8),
HID_REPORT_COUNT(1),
HID_COLLECTION(Logical),
    HID_USAGE_SENSOR_PROPERTY_CONNECTION_TYPE_PC_INTEGRATED,
    HID_USAGE_SENSOR_PROPERTY_CONNECTION_TYPE_PC_ATTACHED,
    HID_USAGE_SENSOR_PROPERTY_CONNECTION_TYPE_PC_EXTERNAL,
HID_FEATURE(Const_Arr_Abs),
HID_END_COLLECTION,
HID_USAGE_SENSOR_PROPERTY_CHANGE_SENSITIVITY_ABS,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_16(0xFF,0xFF),
HID_REPORT_SIZE(16),
HID_REPORT_COUNT(1),
// HID_USAGE_SENSOR_UNITS_METER,
HID_UNIT_EXPONENT(0x0D), // scale default unit “meter” to “centimeter” to provide 2 digits past decimal point
HID_FEATURE(Data_Var_Abs),
HID_USAGE_SENSOR_DATA(HID_USAGE_SENSOR_DATA_ENVIRONMENTAL_OBJECT_PROXIMITY_RANGE,HID_USAGE_SENSOR_DATA_MOD_MAX),
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_16(0xFF,0xFF),
HID_REPORT_SIZE(16),
HID_REPORT_COUNT(1),
// HID_USAGE_SENSOR_UNITS_METER,
HID_UNIT_EXPONENT(0x0D), // scale default unit “meter” to “centimeter” to provide 2 digits past decimal point
HID_FEATURE(Data_Var_Abs),
HID_USAGE_SENSOR_DATA(HID_USAGE_SENSOR_DATA_ENVIRONMENTAL_OBJECT_PROXIMITY_RANGE,HID_USAGE_SENSOR_DATA_MOD_MIN),
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_16(0xFF,0xFF),
HID_REPORT_SIZE(16),
HID_REPORT_COUNT(1),
// HID_USAGE_SENSOR_UNITS_METER,
HID_UNIT_EXPONENT(0x0D), // scale default unit “meter” to “centimeter” to provide 2 digits past decimal point
HID_FEATURE(Data_Var_Abs),
// input reports (transmit)
HID_USAGE_PAGE_SENSOR,
HID_USAGE_SENSOR_STATE,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_8(6),
HID_REPORT_SIZE(8),
HID_REPORT_COUNT(1),
HID_COLLECTION(Logical),
    HID_USAGE_SENSOR_STATE_UNKNOWN,
2. Auto Brightness Preferred and Auto Color Preferred

Add the following new property to the Sensors Usage Page, in section 1.0, page 16

<table>
<thead>
<tr>
<th>Usage ID</th>
<th>Usage Name</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>04E2</td>
<td>Property: Auto Brightness Preferred</td>
<td>DF</td>
</tr>
<tr>
<td>04E3</td>
<td>Property: Auto Color Preferred</td>
<td>DF</td>
</tr>
</tbody>
</table>

Omit 04E4 from Property: Light Reserved

Add the following to section 1.9, page 32

<table>
<thead>
<tr>
<th>Property: Auto Brightness Preferred</th>
<th>DF – TRUE when this light sensor is preferred to be used for system auto brightness usage, otherwise FALSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property: Auto Color Preferred</td>
<td>DF – TRUE when this light sensor is preferred to be used for system auto color usage, otherwise FALSE</td>
</tr>
</tbody>
</table>

Add the following to section 4.1, page 75:
#define HID_USAGE_SENSOR_PROPERTY_AUTO_BRIGHTNESS_PREFERRED 0x0A,0xE2,0x04
#define HID_USAGE_SENSOR_PROPERTY_AUTO_COLOR_PREFERRED 0x0A,0xE3,0x04

### 3. NIR (Near Infra-Red)

Add the following new data field to the Sensors Usage Page, in section 1.0, page 15:

<table>
<thead>
<tr>
<th>Usage ID</th>
<th>Usage Name</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>04DE</td>
<td>Data Field: Near Infrared Light (default Units: W/mm²)</td>
<td>SV</td>
</tr>
</tbody>
</table>

Omit 04DE from Data Field: Light Reserved

Add the following to section 1.9, page 32:

Near Infrared Light SV – Measures the amount of infrared light (wavelength of approximately 700nm to 1mm). Default unit of measure is W/mm², can be overridden using explicit Unit and/or Unit Exponent.

Add the following to section 4.1, page 75:

```c
#define HID_USAGE_SENSOR_DATA_NEAR_INFRARED_LIGHT 0x0A,0xDE,0x04
```

Add the following to section 4.3.12, page 119:

```c
// For reference: Complete HID report descriptor
const unsigned char als_report_descriptor[] = {
    HID_USAGE_PAGE_SENSOR, // USAGE_PAGE (Sensor)
    HID_USAGE_SENSOR_TYPE_LIGHT_AMBIENTLIGHT, // USAGE (AmbientLight)
    HID_COLLECTION(Physical),

    // feature reports (xmit/receive)
    HID_USAGE_PAGE_SENSOR,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE,
    HID_LOGICAL_MIN_8(0),
    HID_LOGICAL_MAX_8(5),
    HID_REPORT_SIZE(8),
    HID_REPORT_COUNT(1),
    HID_COLLECTION(Logical),
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_NO_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_ALL_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_THRESHOLD_EVENTS,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_NO_EVENTS_WAKE,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_ALL_EVENTS_WAKE,
    HID_USAGE_SENSOR_PROPERTY_REPORTING_STATE_THRESHOLD_EVENTS_WAKE,
    HID_FEATURE(Data_Arr_Abs),

    HID_END_COLLECTION,
    HID_USAGE_SENSOR_PROPERTY_SENSOR_STATUS,
    HID_LOGICAL_MIN_8(0),
    HID_LOGICAL_MAX_32(0xFF,0xFF,0xFF,0xFF),
    HID_REPORT_SIZE(32),
    HID_REPORT_COUNT(1),
    HID_FEATURE(Data_Var_Abs), // up to VT_UI4 worth of status info
    HID_USAGE_SENSOR_PROPERTY_REPORT_INTERVAL,
    HID_LOGICAL_MIN_8(0),
    HID_LOGICAL_MAX_32(0xFF,0xFF,0xFF,0xFF),
    HID_REPORT_SIZE(32),
    HID_REPORT_COUNT(1),
    // HID_USAGE_SENSOR_UNITS_MILLISECOND,
    HID_UNIT_EXPONENT(0),
    HID_FEATURE(Data_Var_Abs),
    HID_USAGE_SENSOR_PROPERTY_SENSOR_CONNECTION_TYPE, // NAry
    HID_LOGICAL_MIN_8(0),
    HID_LOGICAL_MAX_8(2),
    HID_REPORT_SIZE(8),
    HID_REPORT_COUNT(1),
    HID_COLLECTION(Logical),
    HID_USAGE_SENSOR_PROPERTY_CONNECTION_TYPE_PC_INTEGRATED,
    HID_USAGE_SENSOR_PROPERTY_CONNECTION_TYPE_PC.Attached,
};
```

// HID_FEATURE(transparent)

HID_USAGE_SENSOR_PROPERTY_CONNECTION_TYPE_PC_EXTERNAL,
HID_FEATURE(Const_Arr_Abs),
HID_END_COLLECTION,
HID_USAGE_SENSOR_PROPERTY_CHANGE_SENSITIVITY_REL_PCT,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_16(0x10,0x27), // 10000 = 0.00 to 100.00 percent with 2 digits past decimal point
HID_REPORT_SIZE(16),
HID_REPORT_COUNT(1),
// HID_USAGE_SENSOR_UNITS_PERCENT,
HID_UNIT_EXPONENT(0x0E), // scale default unit to provide 2 digits past decimal point
HID_FEATURE(Data_Var_Abs),
HID_USAGE_SENSOR_DATA(HID_USAGE_SENSOR_DATA_LIGHT_ILLUMINANCE,HID_USAGE_SENSOR_DATA_MOD_MAX),
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_16(0xFF,0xFF),
HID_REPORT_SIZE(16),
HID_REPORT_COUNT(1),
HID_USAGE_SENSOR_UNITS_LUX,
HID_UNIT_EXPONENT(0x0F), // scale default unit to provide 1 digit past decimal point
HID_FEATURE(Data_Var_Abs),
HID_USAGE_SENSOR_DATA(HID_USAGE_SENSOR_DATA_LIGHT_ILLUMINANCE,HID_USAGE_SENSOR_DATA_MOD_MIN),
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_16(0xFF,0xFF),
HID_REPORT_SIZE(16),
HID_REPORT_COUNT(1),
HID_USAGE_SENSOR_UNITS_LUX,
HID_UNIT_EXPONENT(0x0F), // scale default unit to provide 1 digit past decimal point
HID_FEATURE(Data_Var_Abs),
HID_USAGE_SENSOR_PROPERTY_AUTO_BRIGHTNESS_PREFERRED,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_8(1),
HID_REPORT_SIZE(8),
HID_REPORT_COUNT(1),
HID_UNIT_EXPONENT(0),
HID_FEATURE(Data_Var_Abs),
HID_USAGE_SENSOR_PROPERTY_AUTO_COLOR_PREFERRED,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_8(1),
HID_REPORT_SIZE(8),
HID_REPORT_COUNT(1),
HID_UNIT_EXPONENT(0),
HID_FEATURE(Data_Var_Abs),
//input reports (transmit)
HID_USAGE_PAGE_SENSOR,
HID_USAGE_SENSOR_STATE,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_8(6),
HID_REPORT_SIZE(8),
HID_REPORT_COUNT(1),
HID_COLLECTION(Logical),
HID_USAGE_SENSOR_STATE_UNKNOWN,
HID_USAGE_SENSOR_STATE_READY,
HID_USAGE_SENSOR_STATE_NOT_AVAILABLE,
HID_USAGE_SENSOR_STATE_NO_DATA,
HID_USAGE_SENSOR_STATE_INITIALIZING,
HID_USAGE_SENSOR_STATE_ACCESS_DENIED,
HID_USAGE_SENSOR_STATE_ERROR,
HID_INPUT(Const_Arr_Abs),
HID_USAGE_SENSOR_EVENT,
HID_LOGICAL_MIN_8(0),
HID_LOGICAL_MAX_8(16),
HID_REPORT_SIZE(8),
HID_REPORT_COUNT(1),
HID_COLLECTION(Logical),
HID_USAGE_SENSOR_EVENT_UNKNOWN,
HID_USAGE_SENSOR_EVENT_STATE_CHANGED,
HID_USAGE_SENSOR_EVENT_PROPERTY_CHANGED,
HID_USAGE_SENSOR_EVENT_DATA_UPDATED,
HID_USAGE_SENSOR_EVENT_POLL_RESPONSE,
HID_USAGE_SENSOR_EVENT_CHANGE_SENSITIVITY,
HID_USAGE_SENSOR_EVENT_MAX_REACHED,
HID_USAGE_SENSOR_EVENT_MIN_REACHED,
HID_USAGE_SENSOR_EVENT_HIGH_THRESHOLD_CROSS_UPWARD,
HID_USAGE_SENSOR_EVENT_HIGH_THRESHOLD_CROSS_DOWNWARD,
4. **IsPrimary**

Add the following new property to the Sensors Usage Page, in section 1.0, page 12

<table>
<thead>
<tr>
<th>Usage ID</th>
<th>Usage Name</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>031E</td>
<td>Property: Is Primary</td>
<td>DF</td>
</tr>
</tbody>
</table>

Omit 031E from Property: Reserved

Add the following to section 1.5, page 30

| Property: Is Primary | DF – used in multiple sensor in same type, operating system can use this property to tell whether this sensor is primary: TRUE if it is primary, otherwise FALSE |

Add the following to section 4.1, page 74:

```c
#define HID_USAGE_SENSOR_PROPERTY_IS_PRIMARY 0xA,0xE,0x3
```
5. Custom Properties

Add the following new property to the Sensors Usage Page, in section 1.0, page 20

<table>
<thead>
<tr>
<th>Usage ID</th>
<th>Usage Name</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>05C0</td>
<td>Property: Custom</td>
<td></td>
</tr>
<tr>
<td>05C1</td>
<td>Property: Custom Value 1 DV</td>
<td></td>
</tr>
<tr>
<td>05C2</td>
<td>Property: Custom Value 2 DV</td>
<td></td>
</tr>
<tr>
<td>05C3</td>
<td>Property: Custom Value 3 DV</td>
<td></td>
</tr>
<tr>
<td>05C4</td>
<td>Property: Custom Value 4 DV</td>
<td></td>
</tr>
<tr>
<td>05C5</td>
<td>Property: Custom Value 5 DV</td>
<td></td>
</tr>
<tr>
<td>05C6</td>
<td>Property: Custom Value 6 DV</td>
<td></td>
</tr>
<tr>
<td>05C7</td>
<td>Property: Custom Value 7 DV</td>
<td></td>
</tr>
<tr>
<td>05C8</td>
<td>Property: Custom Value 8 DV</td>
<td></td>
</tr>
<tr>
<td>05C9</td>
<td>Property: Custom Value 9 DV</td>
<td></td>
</tr>
<tr>
<td>05CA</td>
<td>Property: Custom Value 10 DV</td>
<td></td>
</tr>
<tr>
<td>05CB</td>
<td>Property: Custom Value 11 DV</td>
<td></td>
</tr>
<tr>
<td>05CC</td>
<td>Property: Custom Value 12 DV</td>
<td></td>
</tr>
<tr>
<td>05CD</td>
<td>Property: Custom Value 13 DV</td>
<td></td>
</tr>
<tr>
<td>05CE</td>
<td>Property: Custom Value 14 DV</td>
<td></td>
</tr>
<tr>
<td>05CF</td>
<td>Property: Custom Value 15 DV</td>
<td></td>
</tr>
<tr>
<td>05D0</td>
<td>Property: Custom Value 16 DV</td>
<td></td>
</tr>
<tr>
<td>05D1-05DF</td>
<td>Property: Custom Reserved</td>
<td></td>
</tr>
</tbody>
</table>

(These Properties are commonly used by all Sensors)

Omit 05C0-05DF in Reserved for future use as Sensor Types, Data Fields and Properties

Create new section 1.19, in page 44, as “Custom Properties“

<table>
<thead>
<tr>
<th>Property: Custom Value 1</th>
<th>DV – A first custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property: Custom Value 2</td>
<td>DV – A second custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
<tr>
<td>Property: Custom Value 3</td>
<td>DV – A third custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
<tr>
<td>Property: Custom Value 4</td>
<td>DV – A fourth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
<tr>
<td>Property: Custom Value 5</td>
<td>DV – A fifth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
<tr>
<td>Property: Custom Value 6</td>
<td>DV – A sixth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
<tr>
<td>Property: Custom Value 7</td>
<td>DV – A seventh custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
<tr>
<td>Property: Custom Value 8</td>
<td>DV – An eighth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
<tr>
<td>Property: Custom Value 9</td>
<td>DV – A ninth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
<tr>
<td>Property: Custom Value 10</td>
<td>DV – A tenth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.</td>
</tr>
</tbody>
</table>
### Property: Custom Value 11
DV – An eleventh custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.

### Property: Custom Value 12
DV – A twelfth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.

### Property: Custom Value 13
DV – A thirteenth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.

### Property: Custom Value 14
DV – A fourteenth property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.

### Property: Custom Value 15
DV – A fifteenth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.

### Property: Custom Value 16
DV – A sixteenth custom property value. Units are specified by the Units usage and scaling by the Unit Exponent usage.

---

**Response:**

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<Added by HID Chair upon closing the Request>

**Notes on Approval Procedure:**

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HID WG On Line Voting Procedures

1. Votes are on a per company basis.

2. Each Review Request shall have attached a Required Voter List that is the result of recruiting by the HID Chair and submitter of members of the USB IF. Required Voter List must include the HID Chair plus 2 companies (other than the submitter) plus any others designated by the HID Chair at the Chair’s discretion. The Required Voter List ensures that a quorum is available to approve the Request.

3. Impose a 7-calendar-day posting time limit for new Review Requests. HID Chair or designate must post the RR within 7 calendar days. HID Chair or designate must work with the submitter to make sure the request is valid prior to posting. Valid review request must include all fields marked as required in the template. A new template will be adopted that requires at least the following fields: Change Text, Required Voter List, Review Period End Date and Voting End Date, Submittal Date, Submitter, Review Request Title and RR Number.

4. If a RR approval process stalls, the HID Chair may call a face-to-face meeting or conference call to decide the issue. Submitter may request that this take place.

5. Impose a minimum 15-calendar-day review period on a posted RR prior to the
voting period. At HID Chair discretion, changes to the RR may require this
review period to restart.

6. The Chair will accept votes via documentable means such as mail or e-mail
during the 7 calendar days after the close of the review period. If a Required
Voter does not vote during the period, then there is no quorum and the Chair
may pursue the absent required voter and extend the voting period. The Chair
may designate a substitute for the absent voter and extend the voting period
if necessary.