**BUFFER ISSUE RESOLUTION DOCUMENT (BIRD)**

**BIRD NUMBER:** 230

**ISSUE TITLE:** Adding a Definitions Section to IBIS

**REQUESTOR:**  Michael Mirmak, Intel Corporation

**DATE SUBMITTED:** March 19, 2024

**DATE REVISED:**

**DATE ACCEPTED:**

**DEFINITION OF THE ISSUE:**

Several terms are used throughout the IBIS specification, particularly in the Algorithmic Model Interface section, which are defined only in passing or by implication. As more features are added to IBIS and changes are made to the document organization, terms may be used before their definitions appear. To remedy this, a definitions section is proposed, to be added to the specification between Sections 3 and 4 in IBIS 7.2.

**SOLUTION REQUIREMENTS:**

The IBIS specification must meet these requirements:

Table 1: Solution Requirements

|  |  |
| --- | --- |
| Requirement | Notes |
| 1. Common terms should be defined once, early in the IBIS document, in a separate section |  |
| 1. Any future approved BIRDs should refer to the common terms section, or add to it, rather than attempt definitions “in-line” |  |

**SUMMARY OF PROPOSED CHANGES:**

For review purposes, the proposed changes are summarized as follows:

Table 2: IBIS Keywords, Subparameters, AMI Reserved\_Parameters, and AMI functions Affected

|  |  |  |
| --- | --- | --- |
| Specification Item | New/Modified/Other | Notes |
| A new Section 4 is defined, which will appear between the current Section 3, “General Syntax Rules and Guidelines” and the current Section 4, “File Header and File End Information”. | New |  |

**PROPOSED CHANGES:**

The following Section should be placed between the current Sections 3 and 4, becoming the new Section 4.

# General Terminology Definitions

This section contains definitions of terms used throughout this document.

## Technical Definitions for Algorithmic Modeling

The following definitions apply primarily to algorithmic modeling as described in Section 11.

* **Block**: A group of waveform samples, denominated as a number of samples, a number of symbols, or a number of bits (in the case of NRZ signaling). See also “segment” below. For example, at a sampling rate of 32 samples per UI, a block of 512 samples would represent 16 symbols. As a corollary to this, a block of 16 symbols would consist of 512 samples.
* **NRZ**: Non-Return-to-Zero signaling, where two distinct voltage levels define the two logic states possible in a symbol.
* **PAM**: Pulse-Amplitude Modulation, a signaling designation where the number of voltage levels and therefore the number of logic states possible in a symbol is explicitly defined. The term is followed by a non-zero integer to indicate the number of levels (e.g., in PAM4, four levels are possible within a symbol; PAM2 is equivalent to NRZ).
* **Segment**: A group of sequential waveform samples. In the AMI context, this is used in reference to the wave\_size parameter passed as part of AMI function calls. Also called “time segment”.
* **Symbol**: A unit of data transmitted in a given time interval, consisting of a single bit or multiple bits depending on the signaling used (in NRZ signaling, two values are possible: 0 or 1; in PAM4 signaling, four values are possible, each containing two bits: 00, 01, 10, and 11).
* **Time segment**: see “segment”.
* **UI**: Unit Interval, the time duration in which a symbol is transmitted.

**BACKGROUND INFORMATION/HISTORY:**

This BIRD is submitted to help simplify the clarifications for “block” and “segment” proposed in a separate BIRD.