SEMI G85-0303
SPECIFICATION FOR MAP DATA FORMAT

This specification was technically approved by the Global Automated Test Equipment Committee and is the direct responsibility of the North American Automated Test Equipment Committee. Current edition approved by the North American Regional Standards Committee on October 25, 2002 and November 22, 2002. Initially available at www.semi.org December 2002; to be published March 2003. Originally published November 2001.

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1 Purpose

1.1 This document describes in detail how the data items that relate to electronic mapping are to be represented in a file format.

1.2 Although the examples given in this document are for wafers, the map data format described can be applied to any substrate including, but not limited to, wafer, tray, strip or tape.

2 Scope

2.1 This document applies to format of map data items. This document does not address the transmission, file naming conventions, storage or archiving of maps.

2.2 The semantics of the map data items are not specified in this document.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Limitations

3.1 This document is limited to representing maps for MapType = “Array”. See SEMI G81 for a definition of MapType.

4 Referenced Standards

4.1 *SEMI Standards*

SEMI G81 — Specification for Map Data Items

4.2 *World Wide Web Consortium Documents*[1]

Extensible Markup Language (XML) 1.0 (Second Edition. Namespaces in XML)

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

5 Terminology

5.1 *Definitions*

5.1.1 *map* — a two dimensional array of bin codes derived from electrical test data of a two dimensional substrate including, but not limited to, wafer, tray, strip or tape.

6 Ordering Information

6.1 None.

7 Description

7.1 XML Notation Extensible Markup Language is the universal language for data on the Web. It gives developers the power to deliver structured data from a wide variety of applications to the desktop for local computation and

[1] World Wide Web Consortium Documents are available from Massachusetts Institute of Technology Laboratory for Computer Science, 200 Technology Square, Cambridge, MA 02139, USA Telephone: +1.617.253.2613, Fax: +1.617.258.5999, http://www.w3.org/TR/REC-xml

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presentation. XML allows the creation of unique data formats for specific applications. It is also an ideal format for server-to-server transfer of structured data.

7.2 XML consists of elements (referred to as 'items' in the remainder of this document) that may have attributes and nested items.

7.2.1 Example:

```
<Map xmlns: "http://www.semi.org">
  <Device>
  </Device>
</Map>
```

defines a Map item with the attribute xmlns: "http://www.semi.org" which defines a namespace and the governing body for that namespace. This is in accordance with the "Namespaces in XML" specification (see references). Specifying the namespace ensures that the names within the Map element are distinguishable from the same names in other non-SEMI XML documents.

7.2.2 The Map item contains nested items called Device.

7.3 The listing below is an example[2] of a well-formed map data file for a single map with all the map data items except for Label and SupplierValue. The elements of this template will be described in the sections that follow. Examples of map data files with data are shown in the appendices.

```
<?xml version="1.0"?>
<Map
  xmlns: "http://www.semi.org"
  WaferId=" "
  FormatRevision=" ">
  <Device
    ProductId=""
    LotId=" "
    Orientation=""
    DeviceSizeX=""
    DeviceSizeY=""
    Rows=""
    Columns=""
    BinType=" "
    FrameId=" "
    NullBin=""
    SupplierName=""
    OriginLocation=""
    CreateDate=""
    Status="">
    <ReferenceDevice
      ReferenceDeviceX=""
      ReferenceDeviceY=""
      RefDevicePosX=""
      RefDevicePosY=""
    />
    <Bin
      BinCode=""
      BinQuality=""
      BinDescription=""
    />
    <SupplierData
      MyData=" "
    />
```

[2] This example is for a wafer map identified by WaferId. Other substrate types may also be represented. See Table 1.

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```
    <Data MapName=" " MapVersion="">
       <Row><![CDATA[]]></Row>
    </Data>
  </Device>
</Map>
```

7.3.1 The order of attributes and sub items within their parent item is not significant but the parent child relationship is. One exception is the Row items which must match the actual rows on the substrate being mapped.

7.4 Every map file starts with the declaration:

```
<?xml version="1.0"?>
```

This line informs the parser that the data that follows conforms to the XML Version 1.0 specification.

7.5 The data for each wafer is enclosed within the map data item:

```
<Map xmlns: "http://www.semi.org" WaferId="ZSDGS88DF">
</Map>
```

7.5.1 The attribute setting, xmlns: “http://www. semi.org” informs the parser that the item and attribute names within this item are unique within the namespace identified as SEMI.

7.5.2 All the attributes within the Map item are defined in the SEMI G81.

7.5.3 All the items within the Map Item are defined in this document except for the sub items of the SupplierData item.

7.5.4 Some of these attributes and items are mandatory and some are optional as defined in Table 1.

7.5.5 One or more maps can be represented in a single file by simply repeating the <Map> element. Each map can be distinguished based on an identifier attribute as shown in the following example:

```
<?xml version="1.0"?>
<Maps>
   <Map xmlns: "http://www.semi.org" WaferId="ZSDGS88DF" >
   </Map>
   <Map xmlns: "http://www.semi.org" WaferId="JDUJ102MJS" >
   </Map>
</Maps>
```

7.6 The Map item contains one or more Device items. This allows multiple overlaying maps of different device types to be represented. The Device item contains a number of attributes and some sub items.

7.6.1 The ReferenceDevice item contains attributes which describe a single reference device. Several ReferenceDevice items may be represented by repeating this item with different attribute values.

7.6.2 The Bin item contains attributes which describe a single bin code. Several Bin items may be represented by repeating this item with different attribute values.

7.6.3 The SupplierData item contains attributes which are defined by the supplier of the map.

7.6.4 The Data item contains attributes and a list of Row items. Several Data items may be represented by repeating this item with different attribute values. This might be used for example to represent versions of the map after each process step.

7.6.5 The Row items are defined as XML CDATA section. The example below shows the Data item for a binary map with two rows and two columns.

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