

SEMI E127.1-0304

PROVISIONAL SPECIFICATION FOR SECS-II PROTOCOL FOR INTEGRATED MEASUREMENT MODULE COMMUNICATIONS (IMMC)

This provisional specification was technically approved by the Global Information & Control Committee and is the direct responsibility of the North American Information & Control Committee. Current edition approved by the North American Regional Standards Committee on December 4, 2003. Initially available at www.semi.org February 2004; to be published March 2004.

1 Purpose

1.1 This document maps the services and data of IMMC to SECS-II streams and functions and data definitions.

2 Scope

2.1 This document applies to all implementations of IMMC that use the SECS-II message protocol (SEMI E5).

2.2 This is a provisional specification. To remove the provisional status, Table 6 ErrorCode Mappings to SECS-II ERRCODE values must be completed.

NOTICE: This standard does not purport to address safety issues, if any, associated with its use. It is the responsibility of the users of this standard to establish appropriate safety and health practices and determine the applicability of regulatory or other limitations prior to use.

3 Referenced Standards

3.1 SEMI Standards

SEMI E5 — SEMI Equipment Communications Standard 2 Message Content (SECS-II)

SEMI E39 — Object Services Standard: Concepts, Behavior, and Services

SEMI E39.1 — SECS-II Protocol for Object Services Standard (OSS)

SEMI E90.1 — Provisional Specification for SECS-II Protocol Substrate Tracking

SEMI E127 — Specification for Integrated Measurement Module Communications: Concepts, Behavior, and Services (IMMC)

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

4 Conventions

4.1 Names of SECS-II data items are in all upper case. Names of SEMI E127 services, parameters, and attributes are in Title or mixed case.

4.2 SML notation is used for SECS-II format codes. See SEMI E30, Section 8.4.

5 Services Mapping

5.1 Table 1 shows the specific SECS-II streams and functions that shall be used for SECS-II implementations of the services defined in IMMC.

Table 1 Services Mapping Table

Message Name	Stream, Function	SECS-II Message Name
ChangeService	S14, F19/20	Generic Service Request/Acknowledge
ClientConnect	S14, F19/20	Generic Service Request/Acknowledge
ClientDisconnect	S14, F19/20	Generic Service Request/Acknowledge
RequestRetentionConditions	S14, F19/20	Generic Service Request/Acknowledge
SetAutoTableSend	S14, F19/20	Generic Service Request/Acknowledge

Message Name	Stream, Function	SECS-II Message Name
SetRetentionConditions	S14, F19/20	Generic Service Request/Acknowledge
TransferPathCalibration	S14, F19/20	Generic Service Request/Acknowledge
XfrCmdListReq	S14, F19/20	Generic Service Request/Acknowledge
XfrCommand.req	S4, F29	Handoff Command (HO)
XfrCommand.rsp	S4, F31	Handoff Command Complete (HCC)
XfrVerify.req	S4, F33	Handoff Verified (HV)
XfrVerify.rsp	S4, F33	Handoff Verified (HV)
XfrHalt.req	S4, F39	Handoff Halt (HH)
XfrHalt.rsp	S4, F41	Handoff Halt Acknowledge (HHA)

Note 1: All Stream 4 messages are primaries with no replies defined. This avoids transaction timeouts.

Note 2: The response to S4, F33 is another S4, F33.

Note 3: Mappings for UpdateSubstrateObject are defined in SEMI E90.1. Mappings for Delete, GetAttr and SetAttr are defined in SEMI E39.1.

6 Service Parameter Mapping

6.1 Two tables providing mappings service parameter mappings are provided, one for those services mapped to S14, F19/20 and one for those services mapped to Stream 4.

6.2 Table 2 shows the mapping for service parameters and their elements for services mapped to S14, F19/20. The data item SVCNAME is the text string representation of the service name found in Table 1 and should be assumed as case-sensitive. The name of each parameter is the text string representation of the parameter name as it appears in Table 2.

Table 2 Service Parameter Mapping Table for S14, F19/20

Parameter Name (SPNAME)	Parameter Range (SPVAL)	SECS-II Data Item Reference	SECS-II Format
AutoSendCalibrationData	TRUE/FALSE	SPVAL	BOOLEAN
AutoSendConvertedData	TRUE/FALSE	SPVAL	BOOLEAN
AutoSendRawData	TRUE/FALSE	SPVAL	BOOLEAN
ClientID	Text.	SPVAL	A[1,40]
ClientInterfaceVersion	Text.	SPVAL	A[1,80]
ClientConnectAck	TRUE/FALSE	SVCACK	BOOLEAN
ClientConnectStatus	—		L, 2 1. <SVCACK> 2. <Status>
ClientType	Enumerated: “Ctrl” or “Data”	SPVAL	A[4]
ErrorCode	Enumerated	ERRCODE	U2
ErrorText	80 characters	ERRTEXT	A[1,80]
OrientationIn	Any	SPVAL	F8
OrientationOut	Any	SPVAL	F8
Properties	—	SPVAL	L, n 1. L, 2 1. <ATTRID 2. <ATTRDATA> . n. L,2 1. <ATTRID 2. <ATTRDATA>

<i>Parameter Name (SPNAME)</i>	<i>Parameter Range (SPVAL)</i>	<i>SECS-II Data Item Reference</i>	<i>SECS-II Format</i>
RetentionRules	—	SPVAL	L,n 1. <RetentionRule ₁ > . n. <RetentionRule _n >
ServiceAck	Enumerated	SVCACK	BIN
Status	—	SPVAL	L, n 1. L, 2 1. < ErrorCode > 2. < ErrorText > . n. L,2 1. < ErrorCode > 2. < ErrorText >
Substid	1–80 characters	SPVAL	[A1,80]
XfrCmdList	—	SPVAL	L,n 1. <HOCMDNAME ₁ > . n. <HOCMDNAME _n >

6.3 Table 3 provides the parameter mappings for services mapped to Stream 4.

Table 3 Service Parameter Mapping Table for Stream 4

<i>Parameter Name</i>	<i>Parameter Range</i>	<i>SECS-II Data Item Reference</i>	<i>SECS-II Format</i>
ErrorCode	Enumerated	ERRCODE	U2
ErrorText	80 characters	ERRTEXT	A[1,80]
ObjID names/value	Text = “ObjID” Text = value of STPO ObjID	CPNAME ₁ CPVAL ₁	A[5] A[1,80]
Status	—	SPVAL	L, n 1. L, 2 1. <ErrorCode> 2. <ErrorText> . n. L,2 1. < ErrorCode > 2. < ErrorText >
XfrAck	TRUE/FALSE	HOACK	BOOLEAN
XfrCmdName	1–20 characters	HOCMDNAME	A[1,20]
XfrHaltAccept	0–1	HOHALTACK	I1
XfrLink	0–65,535	TRLINK	U2
XfrStatus	—	—	L, 2 1. <HOACK> 2. <Status>

6.4 Table 4 shows the data items in SECS II messages that do not have a corresponding service parameter.

Table 4 Additional Data Item Requirement Table

<i>Function</i>	<i>SECS-II Message</i>	<i>SECS-II Data Item</i>
Used to satisfy SECS-II conventions for linking a multi-block inquiry with subsequent multi-block message.	S14,F19	DATAID
Specifies the number of the HOCMDNAME in XfrCmdList, Table 2.	S4, F29	MCINDEX
Name of IMMC service. Enumerated text strings: ChangeService ClientConnect ClientDisconnect RequestRetentionConditions SetAutoTableSend SetRetentionConditions TransferPathCalibration XfrCmdListReq	S14, F19	SVCNAME
A unique number generated by the service requestor to identify a specific operation and connect it to a later completion confirmation. If there are multiple STPOs, OPID in the S14, F19 message used for UpdateSubstrateObject and TRLINK shall be assigned the same value to allow the hand-off messages in Stream 4 to be matched to the properties of the substrate being transferred.	S14, F19	OPID
Used to uniquely identify one substrate handoff from another. Assigned by the Control Client. If there are multiple STPOs, OPID in the S14, F19 message used for UpdateSubstrateObject and TRLINK shall be assigned the same value to allow the hand-off messages in Stream 4 to be matched to the properties of the substrate being transferred.	S4, F29, 31, 33, 39	TRLINK

6.5 Table 5 provides the parameter mapping for IMMC service parameters not specified in Tables 2 or 3.

Table 5 Mapping for Elements of Service Parameters

<i>ElementName</i>	<i>Mapping</i>	<i>SPVAL Format</i>
RetentionRule	Each RetentionRule is either a list of RetentionRules to be ANDed together, or a single RetentionRule. Each RetentionRule is sent as a name/value pair.	L,2 1. <RetentionRuleName> 2. <RetentionRuleValue> or L, n 1. <RetentionRule> . n. <RetentionRule>
RetentionRuleName	Enumerated text strings: “AfterXfr” “ClientDel” “MaxTbl” “RetTime”	A[6,9]
RetentionRuleValue	Any non-negative integer	U2