



**Maxtor Corporation**  
**500 McCarthy Boulevard**  
**Milpitas, CA 95035 USA**

**To:** T10 SAS Protocol Working Group  
**Contact:** Mark Evans  
**Phone:** 408-894-5310  
**Email:** mark\_evans@maxtor.com  
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**Subject:** SAT, START STOP UNIT command mapping

## **1 Related documents**

SCSI / ATA Translation (SAT) draft, revision 04.

## **2 Introduction**

The following proposes how to map the functionality of the START STOP UNIT command using ATA commands.

Additional comments about this proposal relative to what is in the latest SAT draft:

- a) Since SCSI implementations only use the IMMED, LOEJ, and START bits in the CDB to control a target device, this proposal is limited to defining the functionality associated with those bits;
- b) The mechanism for spinning a device up from Sleep mode has been removed, as there is no way that a device could get into this condition without the SATL having issued a SLEEP command, which the SATL should never do;
- c) The POWER CONDITIONS field has been made "U" as this functionality is not used by SCSI applications today; and
- d) The features of the POWER CONDITIONS field and their functionality could be added by a subsequent proposal at a later date if someone actually found a use for them.

## **3 Proposal**

Change the relevant clauses to be as follows:

## 9.7 START STOP UNIT command (1Bh)

### 9.7.1 Command summary

The START STOP UNIT command provides a method for controlling the power state of a logical unit.

**Table 1 — START STOP UNIT command CDB fields**

| Field            | SATType | Description or reference  |
|------------------|---------|---|
| OPERATION CODE   | E       | Commands issued to the attached device depend upon the other values in the CDB as described in 9.7.2. |
| IMMED            | I       | The SATL shall implement this field as defined in 9.7.2.  |
| POWER CONDITIONS | U       | The SATL shall ignore this field.   |
| LOEJ             | I       | The SATL shall implement this field as defined in 9.7.2.  |
| START            | I       | The SATL shall implement this field as defined in 9.7.2.  |
| CONTROL          | I       | (see 6.4)   |

### 9.7.2 START STOP UNIT CDB field options

The SATL shall perform the actions shown in table 2 in response to a START STOP UNIT command received depending on the values of the IMMED, LOEJ, and START bits.

Table 2 — Interpretation of IMMED, LOEJ, and START bits in the START STOP UNIT CDB

| IMMED  | LOEJ | START | SATType | Interpretation   |
|--------|------|-------|---------|--|
| 0      | 0    | 0     | I       | The SATL shall issue a STANDBY command to the attached non-packet device with a value of zero in Sector Count. The SATL shall return status after completion of the STANDBY command.   |
| 1      | 0    | 0     | I       | The SATL shall return GOOD status, and then issue a STANDBY command to the attached non-packet device with a value of zero in Sector Count.  |
| 0      | 0    | 1     | I       | The SATL shall issue a READ VERIFY SECTOR(S) command to the attached non-packet device with a value of zero in LBA and Sector Count. The SATL shall return status after completion of the READ VERIFY SECTOR(S) command.   |
| 1      | 0    | 1     | I       | The SATL shall return GOOD status, and then issue a READ VERIFY SECTOR(S) command to the attached non-packet device with a value of zero in LBA and Sector Count.  |
| 0      | 1    | 0     | I       | If the device supports the Removable Media feature set, then the SATL shall issue a MEDIA EJECT command to the attached non-packet device, and then return status after completion of the STANDBY command.<br><br>If the device does not support the Removable Media feature set, then the SATL shall return CHECK CONDITION status, with the sense key set to ILLEGAL REQUEST, and the additional sense code set to INVALID FIELD IN CDB. |
| 1      | 1    | 0     | I       | If the device supports the Removable Media feature set, then the SATL shall return GOOD status, and then issue a MEDIA EJECT command to the attached non-packet device.<br><br>If the device does not support the Removable Media feature set, then the SATL shall return CHECK CONDITION status, with the sense key set to ILLEGAL REQUEST, and the additional sense code set to INVALID FIELD IN CDB.                                    |
| 0 or 1 | 1    | 1     | I       | The SATL shall return CHECK CONDITION status, with the sense key set to ILLEGAL REQUEST, and the additional sense code set to INVALID FIELD IN CDB.  |