

Change Log

Rev	Issue Date	Affected Paragraphs	Change Summary
Initial	11/30/2000	All	All
A	4/1/2010	All	Updates names, titles, and website references due to organizational changes.
B	4/29/2011	All	Update names, titles due to organizational changes.

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1 Introduction

1.1 Purpose

This modular handbook has been approved by the Deep Space Network (DSN) Project Office and is published as a source of interface design data for all flight projects using the DSN. It provides information useful to flight projects contemplating the design of hardware and software, with reasonable assurance that the resulting project telecommunications interfaces will be compatible with the established or planned DSN configurations.

1.2 Scope

The handbook consists of modules that present technical information applicable to the current DSN configuration and preliminary information applicable to future DSN configurations. These modules will be revised to reflect new capabilities and distributed to all users as these capabilities are in the plan and budgeted for by DSN Project Office.

This handbook is primarily concerned with performance parameters of equipment that supports the forward and return telecommunications link interfaces between spacecraft and the DSN.

1.3. *Distribution*

This handbook is published as an electronic document. The latest copy of the entire document series may be downloaded from this publicly accessible website:

<http://deepspace.jpl.nasa.gov/dsndocs/810-005/>

Notification of revisions will be distributed by electronic mail only. Requests for e-mail address changes should be submitted to the Editor of this document.

2 *General Information*

2.1 *Constraints*

The disclosure of a capability by this handbook does not assure that it can be made available to all potential DSN users. Specific support commitments must be negotiated between individual flight projects and the DSN/Mission Services Planning & Management Office <<http://deepspace.jpl.nasa.gov/advmis/>>. Furthermore, this handbook does not relieve projects of the responsibility for obtaining frequency spectrum support for their equipment designs. Contact the DSN/Mission Services Planning & Management Office for assistance in obtaining spectrum support from the JPL Frequency Manager.

In seeking viable solutions to telecommunications or data processing problems, flight projects are not necessarily constrained by the effective design parameters contained in this handbook. However, flight project requirements that could require DSN interface design beyond what is specified by this handbook are subject to negotiation with the DSN/Mission Services Planning & Management Office.

The term *user* appears throughout this handbook whenever a mode of operation or parameter must be selected by a flight project. It must be understood that it is only in rare cases that these decisions can be made in real time. All DSN activities are planned well in advance and conducted by highly skilled personnel trained in handling contingencies. Changes to planned operations must be made in accordance with DSN procedures that are beyond the scope of this document.

2.2 *Types of Data*

It is the intent of this handbook to provide data verified by measurement and, therefore, representing actual performance. Unless clearly marked to the contrary, data in this handbook should be assumed to comply with this intent.

Sometimes it is necessary to include DSN design performance data that have not been verified by measurement. These data will be clearly identified in the associated text or by appropriate marking.

As hardware and software are tested and evaluated under operational conditions throughout the DSN, performance parameters will be upgraded to represent actual performance and published in the next revision of the appropriate module.

2.3 *Proposed Capabilities*

Whenever sufficient information is known about a capability being implemented in the DSN and having adequate maturity to be considered for spacecraft mission and equipment design, this information will be included in the appropriate modules under the heading of *Proposed Capabilities*. Telecommunications engineers are advised that anything discussed under this heading cannot be committed to except by negotiation with the DSN/Mission Services Planning & Management Office.

2.4 *Document Layout*

The modules in this revision of 810-005 have been divided into major sections that can be identified by their module numbers and the color of the index/tab at the on-line document website.

This module is part of an introductory section that may be expanded in the future to include tutorial or summary information. Modules in this section have yellow tabs and numbers starting with 0.

The next section, Space Link Interfaces, contains modules that provide information to those concerned with antenna selection and propagation effects. Modules in this section have blue tabs and numbers starting with 1.

The third section, Station Data Processing, contains modules that provide capabilities and performance of equipment installed in the Signal Processing Center (SPC) portion of each DSN location. This information will be of interest both to telecommunications engineers and spacecraft mission designers. Modules in this section have green tabs and numbers starting with 2.

The fourth section in this revision, Ground Station Properties, contains modules that provide information about the underlying technologies relating to many of the Space Link Interfaces and Station Data Processing modules. These modules have been grouped to consolidate this information in one place. Modules in this section have brown tabs and numbers starting with 3.

2.5 *Module Revision and Control*

The modules contained in this handbook are approved for publication under the authority of the cover page signatories. Revisions are indicated by a revision letter following the module designator.

A summary of the changes and additions can be accessed on the home page of the document website, provided in Section 1.3 and as listed on the cover and title page of this document. Currency of modules in printed copies can be verified against the information in the Table of Contents supplied with each revision or by comparison with the version downloaded from the website.

Persons requesting additions of modules to the handbook should direct their request to the DSN Project Office. Persons requesting changes, corrections, or additions to existing modules should direct their comments to either of the cover page signatories or to the Editor of this document. All modules are subject to the review and approval process of DSN

Standard Practice in: DSN Documentation Structure, Standards, and Definitions, DSN Document 810-001.

2.6 *Abbreviations*

Abbreviations are normally defined after their first textual usage and are compiled in module 901, Handbook Glossary. It should be recognized, however, that certain common abbreviations or acronyms used in this handbook might not be defined. External users may refer to any of several compilations of electronic terms for omitted definitions. Users with access to the JPL Intranet can find additional abbreviations at the DSN Acronym Reference Tool website: <http://dsnprocess.jpl.nasa.gov/dart/>

2.7 *Applicable Documents*

The latest issues of the following documents are referenced by modules in this handbook or are the source of requirements for this handbook or the capabilities described herein.

2.7.1 *DSN External Documents*

The following documents either are public documents or may be made available to organizations or individuals under contract to, or having received a request for a proposal from, NASA or one of its Centers.

1. The Interplanetary Network Progress Report, On-line document: <http://eis.jpl.nasa.gov/tmo/index.cfm>
2. DSN External Interface Specifications, DSN Document 820-013
3. Deep Space Network Services Catalog, DSN Document 820-100

2.7.2 *DSN Internal Documents*

The following DSN internal documents are referenced by, or provide requirements for, this handbook and may be found at the Product Data Management System web site: <https://pdms.jpl.nasa.gov/CMTOOLS/>

1. DSN Standard Practice, DSN Documentation Structure, Standards, and Definitions, DSN Document 810-001
2. DSN Subsystem Requirements; DSN Document Series 834