

Department of Defense  
**JOINT SPECTRUM CENTER**  
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**Equipment Location – Certification Information Database  
(EL-CID)  
Requirements Document**

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## 1.0 Introduction

The National Telecommunications and Information Administration (NTIA) tasked the Joint Spectrum Center (JSC) to develop a modern equipment spectrum certification system to provide Spectrum Certification System (SCS) legacy system functionality as well as the following:

- the ability to capture and manage spectrum certification inter and intra-system relationships
- a user-friendly graphical interface with sophisticated logic to facilitate capture and management of certification data

The new spectrum certification system, or the Equipment Location – Certification Information Database (EL-CID), will be based on the NTIA Data Dictionary and will enforce improved data integrity through the advanced user interface, database structure, and data audit functionality.

## 2.0 Glossary

The following terms apply to this system:

<b>NTIA Spectrum Certification</b>	NTIA determination of a systems compliance with prevailing spectrum management policy, allocations, regulations, and technical standards in order to assure the availability of appropriate frequency assignment support.
<b>Spectrum Certification Request (SCR)</b>	A request for an equipment spectrum certification.
<b>Approved Spectrum Certification Request (ASCR)</b>	A spectrum certification request that has been approved.
<b>Spectrum Certification/ Certification Record</b>	A Spectrum Certification Request or an Approved Spectrum Certification Request in the format of the database.
<b>Certification Fields</b>	Certification data fields populated by the certifier upon approval.

<b>Certifier</b>	A person or entity with the authority to approve a certification request. For example, the National Telecommunications and Information Administration (NTIA) is the “certifier” for the United States.
<b>Equipment</b>	Transmitter(s), receiver(s), and/or antenna(s) associated with a certification.
<b>Export</b>	To extract data from the system database using an electronic format.
<b>History</b>	A certification that is retained in the database for future reference.
<b>Import</b>	To introduce data into the system database using an electronic format.
<b>Link</b>	A line between two stations on a line diagram that represents an electromagnetic connection between the stations.

<b>Non-certifier</b>	A person or entity without authority to approve a certification.
<b>Station</b>	One or more transmitters or receivers, including the accessory equipment, necessary at one location for carrying on a radiocommunication service or the radio astronomy service. Each station is classified by the service in which it operates permanently or temporarily.
<b>Timestamp</b>	A data field containing the time and date of the creation or latest modification.
<b>Analysis Tools (AT)</b>	A module that is used to determine compliance to NTIA standards and provide mathematical approximations to several parameters.

### 3 Requirements

The following defines this system's requirements.

#### 3.1 General

#	Name	Description
3.1.1	SCS DMR Functionality	Provide Spectrum Certification System (SCS) Data Maintenance and Retrieval (DMR) software Version 5.2 NTIA functionality.
3.1.2	NTIA DD	Support the NTIA data dictionary.
3.1.3	SXXI integration	Support integration of EL-CID with SPECTRUM XXI.
3.1.4	Status tracking	Provide functionality to track certification status through the approval process and host nation coordination process.
3.1.5	Centralized server	Provide centralized management and tracking of EL-CID data through a centralized database and specialized client software.
3.1.6	Security	Support security classifications up to SECRET-HIGH.
3.1.7	On-line Help	Provide detailed, user-friendly on-line help.
3.1.8	Cut, copy, and paste	Enable cut, copy, and paste functionality in all appropriate objects (e.g. textboxes, grids, etc.) based on Microsoft Windows standards.
3.1.9	User preferences	Enable user specification of the system's default numerical units and icon sizes.
3.1.10	Create	Create a spectrum certification request.
3.1.11	Modify	Modify a spectrum certification
3.1.12	Clone	Support copying (cloning) of a spectrum certification
3.1.13	Identical SCRs	Support multiple instances of the same spectrum certification
3.1.14	Delete certifications	Support deletion of spectrum certifications.
3.1.15	Permissions	Support read-only, read-write, and delete permissions to spectrum certifications.
3.1.16	Attach file	Attach and detach files to/from spectrum certifications.
3.1.17	History	Retain active (current) and historical (old) spectrum certifications in the database.

### 3.2 Query

#	Name	Description
3.2.1	Query engine	Support user entry of Structured Query Language (SQL) based queries and query execution through a database engine.
3.2.2	Query results	Display query-selected records; provide the capability to choose query-selected records and forward the records to other EL-CID functionality. (Other functionality includes export, compare, print, etc.)
3.2.3	Save Query Results	Save the query results to a spreadsheet-compatible file.

### 3.3 Line Diagram Editor

#	Name	Description
3.3.1	Line diagram editor	Provide an "intelligent" graphical line diagram editor. (The editor will provide access to spectrum certification data through mouse-clicks on line diagram stations and links.)
3.3.2	Create station	Create, modify, and view stations and the corresponding station data.
3.3.3	Create link	Create, modify, and view links and the corresponding link data.
3.3.4	Delete station	Delete stations from a line diagram.
3.3.5	Delete link	Delete links from a line diagram.
3.3.6	Link rules	Enforce the station class and service relationships defined in the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management (NTIA Red book)

### 3.4 Analysis Requirements

#	Name	Description
3.4.1	Compare certifications	Compare two spectrum certifications.
3.4.2	Compare equipment data	Compare the equipment information within two spectrum certifications. (e.g. Compare the equipment information from an approved spectrum certification with the equipment from a spectrum certification request awaiting approval.)
3.4.3	Build	Propose all allowed frequency ranges, based on a Table of Allocations and station classes.
3.4.4	Data missing	Identify required data fields missing from a certification.
3.4.5	AT analysis	Perform an AT analysis of a single link mode.
3.4.6	AT analysis - All	Perform an AT analysis of all link modes within a certification record.

### 3.5 Import and Export Requirements

#	Name	Description
3.5.1	Import SCS	Import SCS data from a standard SCS export file.

3.5.2	Import/export certifications	Import and export individual spectrum certifications in an EL-CID-defined format.
3.5.3	Import/export equipment data	Import and export equipment data from spectrum certifications in EL-CID-defined format.
3.5.4	NTIA export functionality	Provide an option to the standard export to restrict the exportable spectrum certifications to those that comply with NTIA criteria.
3.5.5	NTIA import functionality	Provide an import option to restrict spectrum certification imports to those exported with "NTIA Export" functionality.
3.5.6	Identify imported	Provide the capability to identify the spectrum certifications imported during the last import.
3.5.7	Import conflicts	Resolve import conflicts. Allow user specification of conflict resolution options/rules.
3.5.8	Backup	Backup and restore EL_CID data.
3.5.9	Import merge	Upon import, support merging of imported spectrum certifications with existing certifications.

### 3.6 Print and Report Requirements

#	Name	Description
3.6.1	Print 1494	Print spectrum certifications as DD Form 1494s.
3.6.2	Print compare	Print comparison results.
3.6.3	Print ASCR summary	Print a spectrum certification summary.
3.6.4	Print ASCR certification	Print a spectrum certification.
3.6.5	Print equipment	Print the equipment data fields from a spectrum certification database.
3.6.6	Print query results	Print the results of a query.
3.6.7	Print diagram	Print the line diagram.

### 3.7 Certifier Functional Requirements

#	Name	Description
3.7.1	Restrict certifier functionality	Restrict non-certifiers from accessing "certifier" functionality.
3.7.2	Export certifications	Export the spectrum certification database.
3.7.3	Data certification	Transfer spectrum certifications requests into the official read-only certification portion of the database.
3.7.4	Certification fields	Edit "certification fields".
3.7.5	Create/delete history	Create and/or delete historical spectrum certifications

3.7.6	Fixed tables	Add, modify, or delete data from the fixed tables. (Fixed tables include the manufacturer table and location table.)
3.7.7	Change name	Change any component of a spectrum certification name. (A spectrum certification name is composed of the appropriate organization name, system name, and certification stage (1-4))