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TABLE OF CONTENT

[1 SCOPE 7](#_Toc193202265)

[1.1 Purpose 7](#_Toc193202266)

[1.2 Applicable Documents 7](#_Toc193202267)

[1.3 Introduction 8](#_Toc193202268)

[2 DIRCM MLV Capabilities 9](#_Toc193202269)

[2.1 General 9](#_Toc193202270)

[2.2 Accounts, used name and password: 9](#_Toc193202271)

[2.3 The required Tabs: 9](#_Toc193202272)

[2.4 Definition JC Handling TAB 10](#_Toc193202273)

[2.5 Tabs and capabilities 13](#_Toc193202274)

[2.5.1 Main menu: 13](#_Toc193202275)

[2.5.2 System Tab: 14](#_Toc193202276)

[2.5.3 LOG Download Tab: 14](#_Toc193202277)

[2.5.4 Versions tab 15](#_Toc193202278)

Table 1: Acronyms and Abbreviations

| Acronym | Definition |
| --- | --- |
| A/C | Aircraft |
| AC | Alternating Current |
| ACIF | Aircraft Interface Unit |
| AGS | Air-Ground System |
| A-KIT | Kit of Group A parts (affixed to the A/C- enabling installation, interface) |
| ARINC | Aeronautical Radio Incorporated (standards organization) |
| BIT | Built In Test |
| CDU | Control and Display Unit |
| DC | Direct Current |
| DIRCM | Directional Infrared Countermeasures |
| ELU | Electronic Control Unit |
| ETA | Estimated Time of Arrival |
| ETH | Ethernet |
| FMC | Flight Management Computer |
| FPIL | Front Panel Indicator light |
| GND | Ground |
| GPS | Global Positioning Satellites |
| ICD | Interface Control Document |
| INS | Inertial Navigation System |
| IR | Infrared |
| JT | Jamming Turret |
| LGU | Laser Generator Unit |
| LHU | Laser Head Unit |
| LRRA | Low Range Radar Altimeter |
| LRU | Line Replaceable Unit |
| MJ-MUSICTM | Multi Jet Spectral IR Countermeasure |
| MWS | Missile Warning System |
| N/A | Not Applicable |
| NAV | Navigation |
| RX | Receiver |
| SPS | Self-Protection Suite |
| TE | Test Equipment |
| TRD | Test Requirements Document |
| TTD | Time to destination |
| TX | Transmission |
| UTC | Universal Time Coordinates |

# SCOPE

## Purpose

This document defines the required applications capabilities for the **OLTE computer** and **JC Loader** computer for J-MUSIC DIRCM - C-390 Holand program.

The applications shall support technician at Omaintenances level for the J-MUSIC DIRCM.

Both applications will be installed on TEMPEST rugged laptops that will be supplied by the customer.

Laptop HW is defined in the Tech Computer requirement document.

Laptop cable is defined as ETH COMM CABLE SD-T-3586-0109-50

## Applicable Documents

|  |  |
| --- | --- |
| No Doc ID | Document Title |
| 1. ?? | Tech computer requirements REV -- |
| 1. SD-T-3586-0109-50 | ETHERNET COMUNICATION CABLE REV A |
| 1. -- | -- |
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## Introduction

J-MUSIC for EMBRAER includes the following main units.

1. 1 x Electronic Unit (J-ELU)
2. 1 x Fiber Laser, comprised of a Laser Generator Unit (J-LGU)
3. 1 x Jamming Turret (J-JT) including:
   1. Mirror Turret (J-MITUR),
   2. Laser Head Unit (J-LHU)
   3. gyro (J-GYRO),
   4. Thermal Sensor (J-MTTS) and



**Figure 1: J-MUSIC Simplified Block Diagram**

# DIRCM MLV Capabilities

## General

1. The DIRCM applications shall be based on the NOVA Tech-computer (one turret).
2. The DIRCM applications shall support the C-390 Holand project.
3. All application activities shall be done using Ethernet communication to the DIRCM system.
4. The project will have two OLTE computers – a Technician computer and a JC LOADER computer.
5. Two applications shell be implemented for the project, one for each computer.

Comment - The separation between the two applications will be by configuration in a generic application that will contain all the capabilities.

1. The system is compatible with the C-MUSIC system, which has only MNG without SUITE, and the logs are saved in the SPARE CPU (example project – DUET).
2. The access password for MNG matches NOVA.

## Application Installation

1. The Application Installation by the customer shall be done through an activation process that contains the requirement to insert a code that will be received from the application's producer.

## Accounts, username and password:

1. The application shall be operated only by using program username and password (fixed and defined for each project).
2. Administrator:
   * The application shall support also administrator account.
   * The administrator account shall include full control of the application capabilities, including definition of every program account capability.

## The required Tabs:

1. System Status Tab
2. Logs viewer Tab
3. Versions Tab
4. JC Handling

The following paragraphs detail the required capabilities for every tab.

## Definition JC Handling TAB

1. **General**
   1. The project will have two OLTE computers – a technician computer and a JC LOADER computer.
   2. The basic version for the application shell be the NOVA project.
   3. Two applications will be implemented for the project, one for each computer.  
      this document defines which functionality will be in each application.
   4. The system is compatible with the C-MUSIC system, which has only MNG without SUITE, and the logs are saved in SPARE (example project – DUET).
   5. The access password for MNG matches NOVA.
   6. The purpose is to define the dedicated TAB named **JC Handling** for the C-390 HOLAND project.
   7. This TAB will be used in the JC LOADER application as an additional interface with the TAB- **System Status**.
   8. This TAB will be used in the Technician Computer application as an additional interface with the TABs - **System Status, Logs viewer** and **Versions.**
   9. The TAB in the JC LOADER application will include the following capabilities (see **Figure 2 - JC Handling**):
      * JC LOADER – Ability to load customer technique.
      * JC SELECTION – Ability to replace the selected technique for use.
      * Zeroize JC Customer – Ability to delete customer technique.
      * Zeroize JC OEM – Ability to delete Elbit technique.
      * System status – Displays the system status.
   10. The TAB in the technician computer application will include the following capabilities:
       * JC SELECTION – Ability to replace the selected technique for use.
       * Zeroize JC Customer – Ability to delete customer technique.
       * System status – Displays the system status.
2. **JC LOADER**
   1. General – This capability allows loading a customer technique from a dedicated directory in the computer.
   2. The directory will be named JC CUSTOMER and will be defined in a fixed location under the application installation.
   3. It is the customer's responsibility to copy their two techniques to this directory with the required names (LWC.DAT, SWC.DAT).
   4. By clicking the ENABLE circle, a check will be performed to ensure the appropriate files are in the directory. If valid, the indicators for each file will turn green, and the Enable circle will become active.
   5. By clicking the Upload JC button, a confirmation message will appear, and upon clicking it, the JC loading process will be executed by a dedicated LSHEL command (see paragraph 6)
   6. During the loading process, a dynamic ICON will appear indicating that the loading process is in progress.
   7. Upon successful completion, a message will appear indicating that the loading completed successfully., and a system reset will be performed automatically. If unsuccessful, a message will appear indicating the failure.
3. **JC SELECTION**
   1. General – This capability allows changing the selected technique in the system, OEM or CUSTOMER.
   2. A pair of indicators shows the current selected technique.
   3. Another pair of indicators shows the state after the replacement. By default, no indicator is marked, and only the inverse technique can be selected. The selection allows the replacement to be performed (like ENABLE).
   4. By clicking the Replace JC button, a confirmation message will appear, and upon clicking it, the replacement process will be executed by a dedicated LSHEL command (see paragraph 6).
   5. During the replacement process, a dynamic ICON will appear indicating that the replacement process is in progress.
   6. Upon successful completion, a message will appear indicating that the replacement completed successfully, and a system reset will be performed automatically. If unsuccessful, a message will appear indicating the failure.
4. **Zeroize JC Customer**
   1. General – This capability allows deleting a customer technique.
   2. To enable the deletion process, first click the ENABLE circle.
   3. By clicking the Zeroize JC button, a confirmation message will appear, and upon clicking it, the deletion process will be executed by a dedicated LSHEL command (see paragraph 6).
   4. During the deletion process, a dynamic ICON will appear indicating that the deletion process is in progress.
   5. Upon successful completion, a message will appear indicating that the deletion was successful, and a system reset will be performed automatically. If unsuccessful, a message will appear indicating the failure.
5. **Zeroize JC OEM**
   1. General – This capability allows deleting the Elbit technique.
   2. To enable the deletion process, first click the ENABLE circle.
   3. By clicking the Zeroize JC OEM button, a confirmation message will appear and upon clicking it, another message followed by clarifying that the deletion means "sending the unit to the system manufacturer," and upon clicking it, the deletion process will be executed by an FTP deletion command to files LWC.enc, SWC.enc at /tffs1 folder.
   4. During the deletion process, a dynamic ICON will appear indicating that the deletion process is in progress.
   5. Upon successful completion, a message will appear indicating that the deletion completed successfully, and a system reset will be performed automatically. If unsuccessful, a message will appear indicating the failure.



**Figure 2: JC handling**

1. **New Lshell commands for JC Handling**

* The following commands are required for implementation of JC Handling Tab

|  |  |  |
| --- | --- | --- |
| **Directory** | **Command** | **Description** |
| LaserTech | Command:  **zc**  parameters:  **0**- Do nothing  **1**- Zeroize CUST tech | The command zeroized the Cust techniques After the Zeroize is completed, the system will be rebooted. |
| LaserTech | Command:  **zo**  parameters:  **0**- Do nothing  **1**- Delete OEM tech | The command Delete the OEM techniques After the deletion is completed, the system will be rebooted. |
| ltec | Command:  **jc**  parameters:  **No parameters** – Print Current JC only.  **0** – Change JC to OEM  **1** – Change JC to CUST | After executing the command, the selection will be saved in the SelectedJammingCode.ini file. A system reboot will then be triggered. |

## Tabs and capabilities

### Main menu:

The application shall include the following main menu (upper left side of the application screen):

* File :
  + Exit
* Tools
  + Shall be available only for the administrator.
  + Shall include the following capabilities:
    - Setting menu with the following capabilities:
      * General tab:
        + Bit status request opcode
        + Bit status interval.
      * Upload Tab:
        + List of all the source(C drive) and destination (DIRCM flash drive) of the SW upload capability.
    - Users menu with the following capabilities:
      * Capability to add/delete user.
    - Security menu with the following capabilities:
      * Capability to define security level including its capabilities
    - System menu with the following capabilities:
      * Capability to define each computer IP.
      * Capability to define MWS SW path
* Help:
  + Application version display.
  + Shortcut to PDF file

### System Tab:

System tab shall include the following capabilities:

1. Shall include the following DIRCM status:
   1. DIRCM mode (power up, operate etc..).
   2. Communications:
      1. Turret communication (green/black). This status display shall show the communication between the application and the DIRCM main computer.
2. System list of failures, including the following information:

* System (DIRCM-L, DIRCM-R)
* ID
* Suspected unit
* Name
* Active
* Severity.

(The displayed bit severity shall be major or higher)

### LOG Download Tab:

Shall include the following capabilities.

1. Tail no. selection box
2. Adding New tail number.
3. LOG download button. While pressed, LOG's shall be downloaded from SPARE CPU flash memories (only from /tffs1 - MNG Logs). At the same time, process bar shall be displayed during download.
   1. The downloaded files shall be saved in the following locations:
      1. In the OLTE drive C – main root.
      2. “Logs” directory
      3. Date and time directory (of the day and time the LOG files were created in the Dircm system).
4. "Delete from SPS" button. While pressed, only LOGS that were downloaded shall be deleted.

Notes:

* + - 1. After any action done, success /failure message shall be displayed (for the specific DIRCM system).

### Versions tab

Shall include the following capabilities.

1. "Read" version button. while pressed, The flowing SW version shall be display:
   * 1. DIRCM-SW kit version
2. For each version, the following information shall be displayed:
   * 1. Unit - NA
     2. Actual version
     3. Expected version.
     4. Status (Ok/Fail)
3. While checking SW version, the application shall check also the SW integrity check (ensure the SW in flash was copied correctly).

### JC Handling TAB

See the description in paragraph 2.5.