

LISUN RS & CS Immunity Test Standard Operating Procedure (SOP)

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Best Regards,

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Lisun Group (Hong Kong) Limited
Tel: +86-51083341 Email: Admin@Lisungroup.com
Website: www.Lisungroup.com

1. RS (Radiated Immunity) Test Procedure (3m and 10V/m)

1.1 Hardware Setup and Power-on

1.1.1 Environmental setup: Refer to section 5.3 of IEC 61000-4-3:2020 and Figure 1. Fix the antenna at the marked position in the anechoic chamber; fix the field strength probe LS-PB60 at the marked position on the test table (i.e., 3m away from the antenna); place 3*3 absorbing material directly in front of the antenna.

1.1.2 Equipment startup: Turn on the power to the field strength probe LS-PB60 and confirm that the blue indicator light is on; turn on the signal source LS-SMB100B, and turn on the RS power amplifier LS-0315M01 after an interval of 5-10 seconds.

1.2 Calibration Operation

1.2.1 Horizontal polarization (H) calibration

1.2.1.1 Adjust the antenna to be horizontal, ensuring that the cable is not dangled on the antenna mast.

1.2.1.2 Key pre-operation: Tap RF ON on the touchscreen of the power amplifier LS-0315M01.

1.2.1.3 Open the i2-RS software and click Start to enter the main interface.

1.2.1.4 Click on "RS CAL..." in the software interface 1.1.1, enter H (level) in the calibration interface, the number after FW/RV Power Factor should be 0. Double-click the boxes after Ext.File FW Power Factor and Ext.File RV Power Factor to select RS - FW Coupler and RS - RV Coupler respectively. Keep the other parameters at their default settings. (if a 3V/m test is required, change the Center Level to 5.4V/m; if a 10V/m test is required, change the Center Level to 18V/m) and click OK to enter the calibration.



1.2.1.5 Key final step: After calibration, click RF OFF on the power amplifier touchscreen.

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 Tel: +86-51083341 Email: Admin@Lisungroup.com
 Website: www.Lisungroup.com

1.2.1.6 Click 1.8 "Save Pattern", and name it in the format: RS-H-10VM-P1-Date.

1.2.2 Vertical polarization (V) calibration

1.2.2.1 Adjust the antenna vertically, ensuring the cable is not dangled on the antenna mast.

1.2.2.2 Key pre-operation: Tap RF ON on the touchscreen of the LS-0315M01 power amplifier.。

1.2.2.3 Open the i2-RS software and click Start to enter the main interface.

1.2.2.4 Click on "RS CAL..." in the software interface 1.1.1, enter V (vertical) in the calibration interface, keep the other parameters at their default values and click OK to enter the calibration.

1.2.2.5 Key final step: After calibration, click RF OFF on the power amplifier touchscreen.

1.2.2.6 Click 1.8 "Save Pattern", and name it in the format: RS-V-10VM-P1-Date.

1.3 Sample (EUT) Installation

1.3.1 Open the Chamber door, place the EUT at the marked position on the test table, and adjust the front of the EUT to face the antenna to ensure it is placed stably.

1.3.2 Connect the EUT power supply, confirm that the equipment is powered on normally and in working condition, and close the anechoic chamber door.

1.4 Test Execution

1.4.1 Vertical polarization test

1.4.1.1 After adjusting the antenna vertically, click "Select Pattern" in the software interface 2.1 to call up the vertical polarization calibration file, and ensure that the cable is not dangled on the antenna mast.

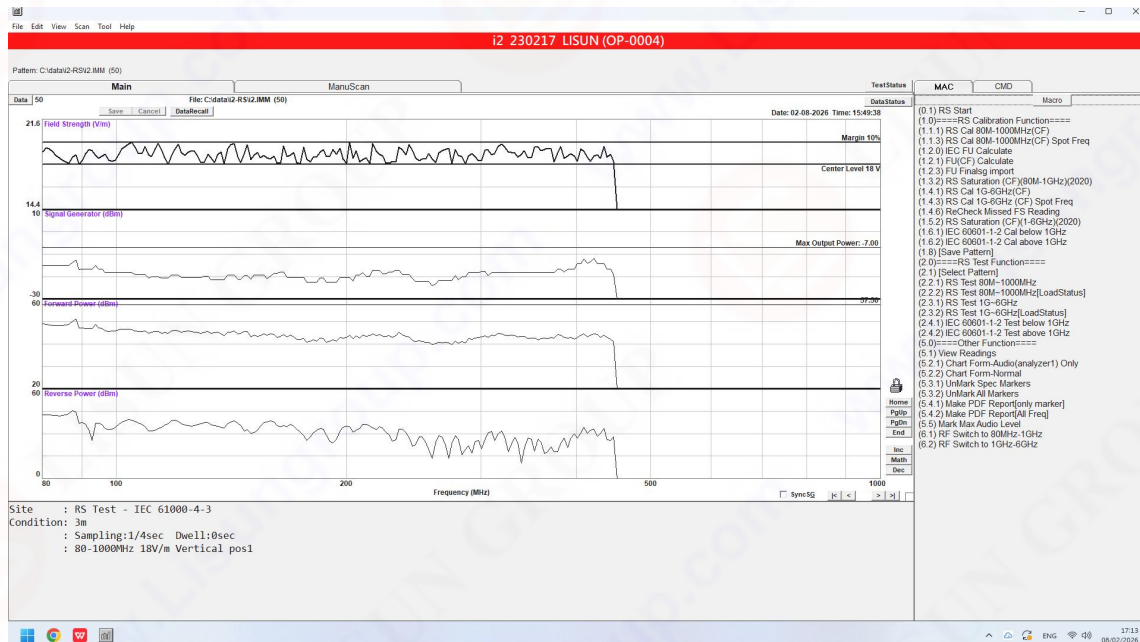
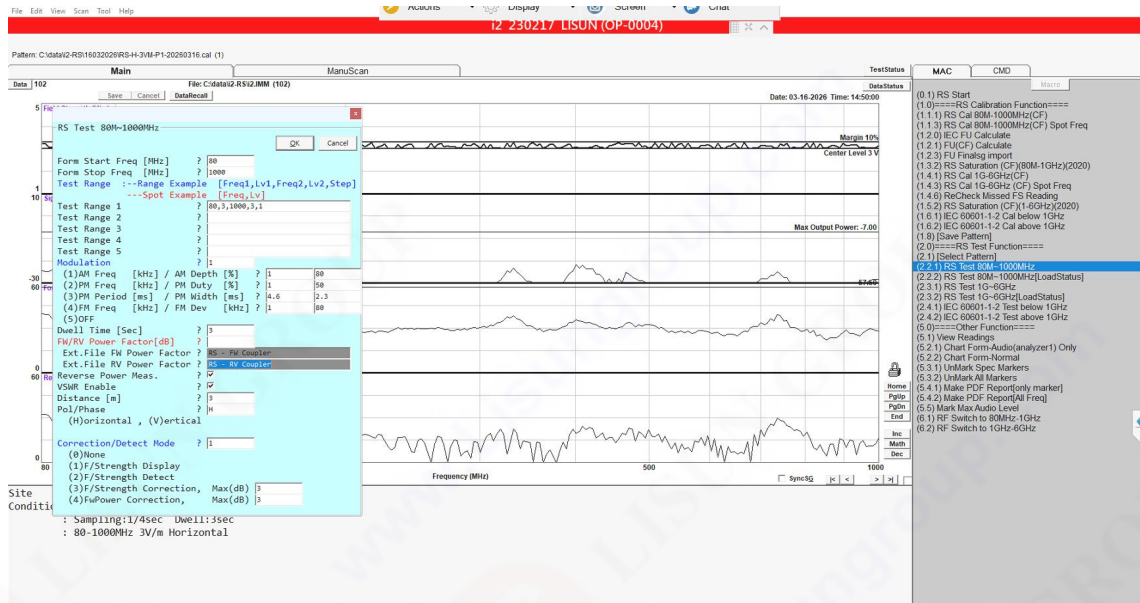
1.4.1.2 Key pre-operation: Tap RF ON on the amplifier touchscreen.

1.4.1.3 Click on "RS Test..." in the i2-RS software interface 2.2.1, enter V in Pol/Phase, the number after FW/RV Power Factor should be 0. Double-click the boxes after Ext.File FW Power Factor and Ext.File RV Power Factor to select RS - FW Coupler and RS - RV Coupler respectively. Keep the other parameters at their default settings and click OK to start the vertical polarization frontal test.

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Tel: +86-51083341 Email: Admin@Lisungroup.com
Website: www.Lisungroup.com



1.4.1.4 Key closing procedure: After the front test is completed, click RF OFF on the amplifier touchscreen.

1.4.1.5 Rotation test: Open the Chamber door, rotate the EUT 90° clockwise, and close the Chamber door. Repeat the "RF ON -> Continue testing -> RF OFF" steps to complete the vertical polarization test on all surfaces.

1.4.2 Horizontal polarization test

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1.4.2.1 Adjust the antenna to horizontal polarization. Click "Select Pattern" in the software interface 2.1 to call up the horizontal polarization calibration file. Make sure the cable is not dangling on the antenna mast.

1.4.2.2 Repeat the "RF ON -> Test -> RF OFF -> Rotate EUT" process to complete the horizontal polarization test on all 6 faces.

1.5 Exception Handling and Judgment

1.5.1 If the EUT malfunctions during testing, immediately click "Stop" in the CMD on the right side of the software interface and simultaneously click "RF OFF" on the power amplifier touchscreen.

1.5.2 Record the abnormal frequency bands and phenomena before conducting further investigation.

1.5.3 Result determination: Determined strictly in accordance with the requirements of IEC 61000-4-3:2020 Clause 9.

2. RS and CS test mode switching operation

2.1 Prerequisite for switching: Ensure that the RS test is completely powered off (power amplifier and signal source power are both off).

2.2 Manual switching steps

2.2.1 Disconnect signal source from the RS dedicated power amplifier (LS-0315M01) cable.

2.2.2 Securely connect the signal source cable to the corresponding interface of the CS dedicated power amplifier (LS-0315M00A).

2.2.3 Check the placement of the equipment required for CS testing (CDN, calibration fixtures, etc.) and ensure proper grounding.

2.2.4 Double confirm all USB connections whether have loose.

3. CS (Conducted Immunity) Test Procedure

3.1 Hardware setup and power-on

3.1.1 Wiring specifications (using CDN-M3-16 as an example): Refer to IEC 61000-4-6:2023 Figure 1. Connect the CDN's RF INPUT terminal to the 6dB attenuator to the power amplifier LS-0315M00A; connect the CDN's EUT terminal to the calibration fixture to the monitoring power meter LS-PM9K400M-MN; connect the AE terminal to the 50-ohm load of the calibration fixture. All components must be securely grounded.

3.1.2 Device startup: Turn on the signal source LS-SMB100B, and turn on the power amplifier LS-0315M00A after an interval of 5-10 seconds.

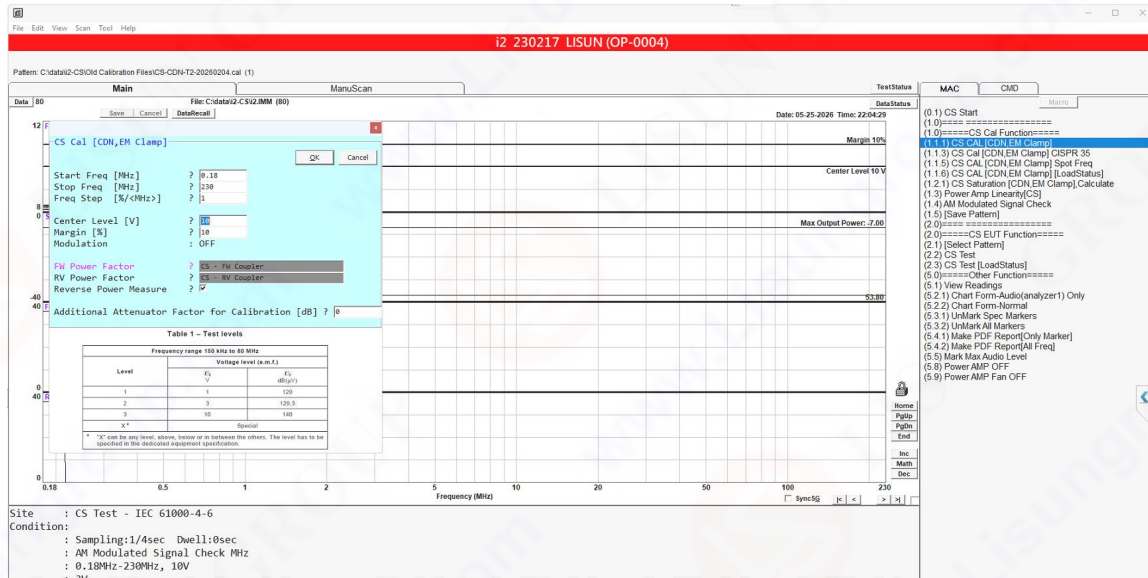
3.2 Calibration operation

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- 3.2.1** Key pre-operation: Tap RF ON on the touchscreen of the power amplifier LS-0315M00A.
- 3.2.2** Click on the software interface 1.1.1 "CS CAL...", Enter 20dB for Additional Attenuator. Double-click the boxes next to Ext.File FW Power Factor and Ext.File RV Power Factor to select RS - FW Coupler and RS - RV Coupler respectively. Keep the other parameters at their default values and click OK to enter the calibration.
- 3.2.3** Key closing procedure: After calibration, immediately tap RF OFF on the power amplifier touchscreen
- 3.2.4** Click 1.5 "Save Pattern", and name it in the format: CS-CDN-M3-16-Date.



3.3 Sample (EUT) Installation

- 3.3.1** Open the Chamber door and remove the calibration fixture. Place a 5mm insulating pad under the EUT, at least 0.3m away from the CDN. Connect the EUT terminal of the CDN to the EUT, and connect the AE terminal to the EUT's input power supply.
- 3.3.2** Connect the EUT power supply, confirm that the equipment is powered on and in working condition, and close the Chamber door.

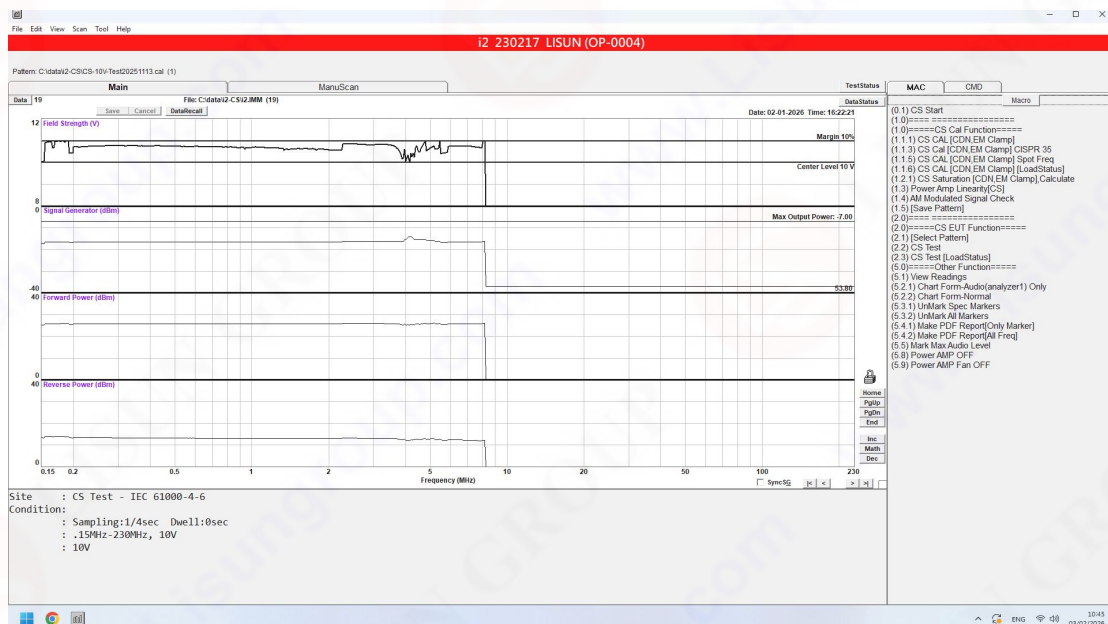
3.4 Test Execution

- 3.4.1** Click on the "Select Pattern" option in the software interface 2.1 to call up the corresponding calibration file.
- 3.4.2** Key pre-operation: Click RF ON on the power amplifier touchscreen.
- 3.4.3** Click on "CS Test" in section 2.2 of the software interface to start the test, double-click the boxes next to Ext.File FW Power Factor and Ext.File RV Power Factor to select RS - FW Coupler and RS - RV Coupler respectively. Keep the other parameters at their default values.

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3.4.4 Click "RF OFF" when the test is complete.

4. Report generation and shutdown

4.1 Report Generation

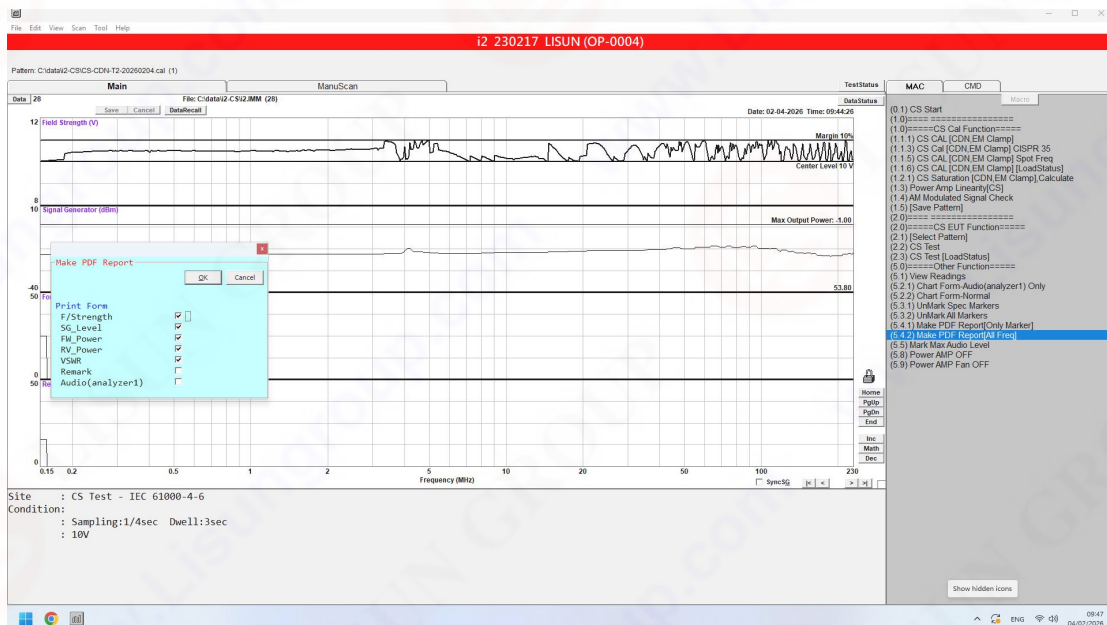
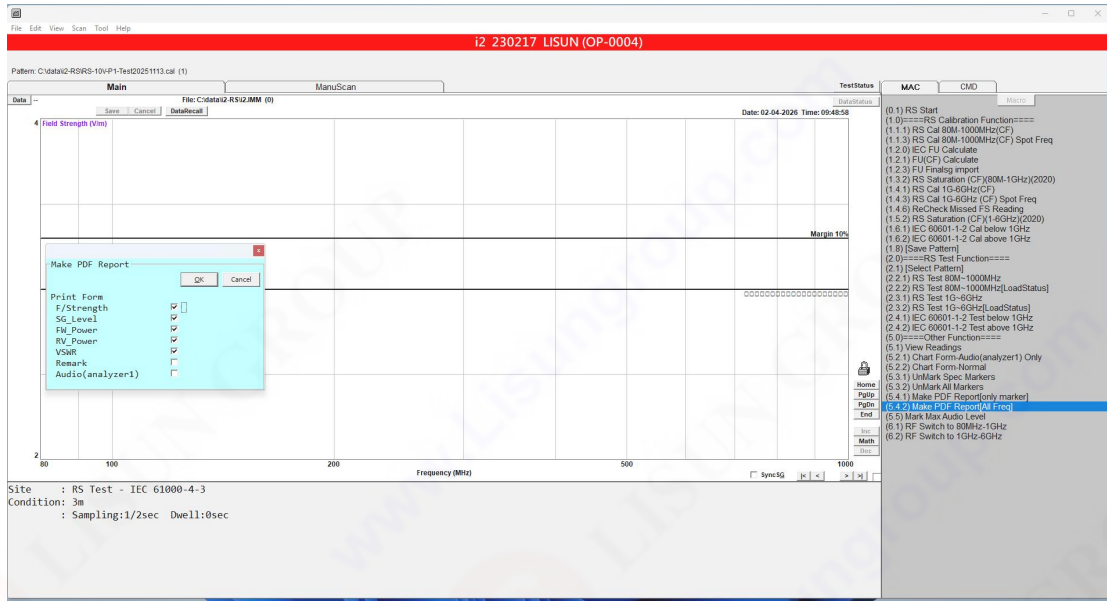
4.1.1 In the software, navigate to "Make PDF Report (All Freq)" on the right side of the software interface.

4.1.2 Naming format: RS/CS-Sample Name-CDN Model-Date-Judgment Result

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 Tel: +86-51083341 Email: Admin@Lisungroup.com
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4.2 Shutdown Sequence

- 4.2.1 Close the test software.
- 4.2.2 Turn off the power amplifier (LS-0315M01 or LS-0315M00A).
- 4.2.3 After an interval of 5-10 seconds, turn off the signal source LS-SMB100B.
- 4.2.4 Turn off the probe power, straighten the optical fiber, and disconnect the main power supply to the anechoic chamber.

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5. Core Operational Taboos

- 5.1 Sequence guidelines: RF must be ON before calibration/testing; RF must be OFF after calibration/before opening the Chamber door.
- 5.2 Switching Guidelines: Before switching the RS/CS physical link, the hardware power must be completely turned off. Switching cables while the power is on is strictly prohibited.
- 5.3 Operational Guidelines: The power amplifier must not be run under no-load for more than 10 minutes; fiber optic cables must not be stepped on or bent at a small radius.
- 5.4 Emergency Guidelines: If any abnormal noise, odor, or smoke is detected, immediately disconnect the main power supply. Do not attempt to disassemble the equipment yourself.
- 5.5 Software Guidelines: When run i2-RS or is-CS, you can't run any other programs at the same time.

6. Typical Test Report

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