Introduction to USB3.2 Type-C EMI Testing

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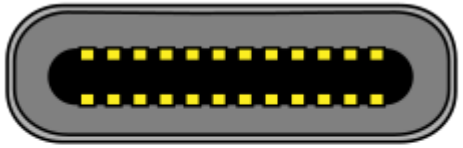
What is USB Type-C?

USB 3.2 Type-C

Type-C is an USB 3.2 standard based on 5Gbps or 10Gbps transmission speed, it will be wide used in all electronic device like Laptop, Mobile phone, thumb drive disk or others etc,

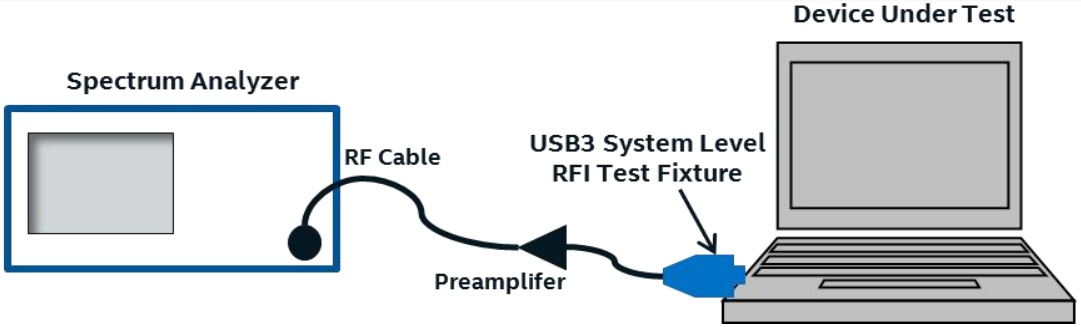


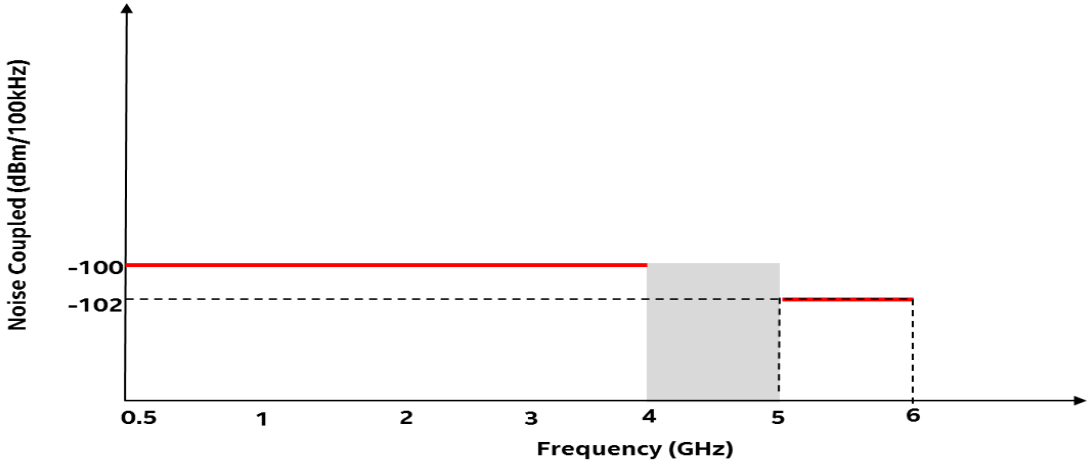
Type-C

EMI Test Configuration and Specification

All Type C connector(s) on host, hub or dual-role device systems shall pass the system level RFI test for compliance. RFI compliance is not a component level requirement. The compliance criteria for the Type C connector are shown as below specifications.

USB3 System Level
RFI Test Fixture





*Noise level specified is after correction for preamplifier gain

Feature/Advantage/Benefit

Feature:

1. Use Spectrum Analyzer + S1210 Software
2. Fast response for EMI spectral diagram
3. Limit line setting to verify “pass” or “fail”

Advantage:

1. Easy use of DSA875 and S1210 Software.
2. Accurate measurement result

Benefit:

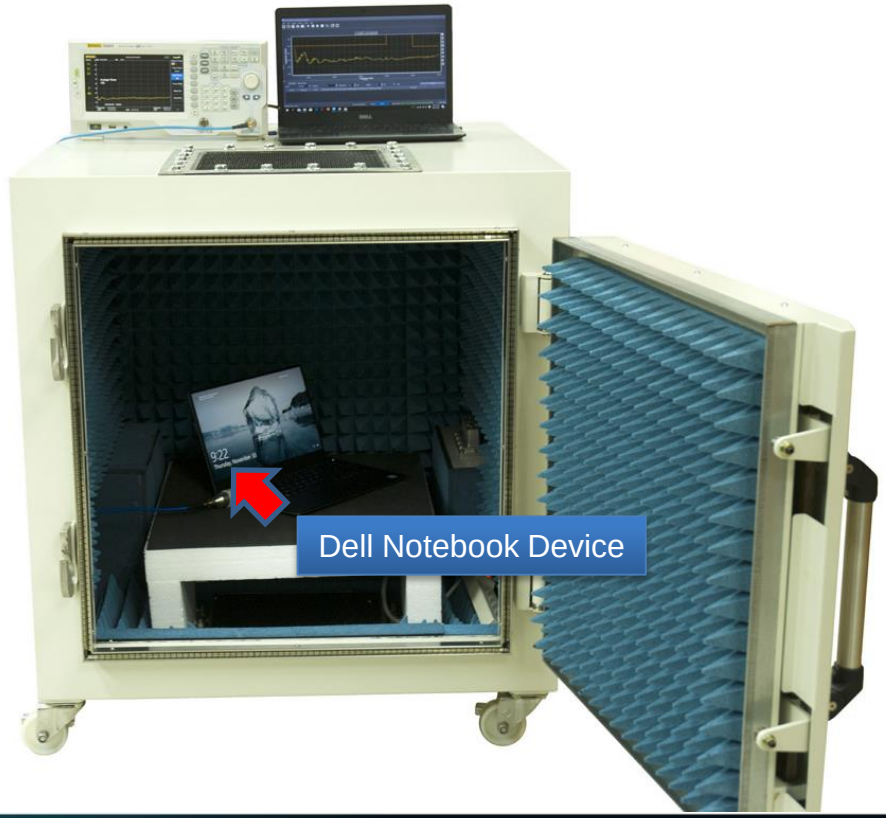
1. Saving measurement cost (High C/P Value)
2. Fast and Accurate measurement result

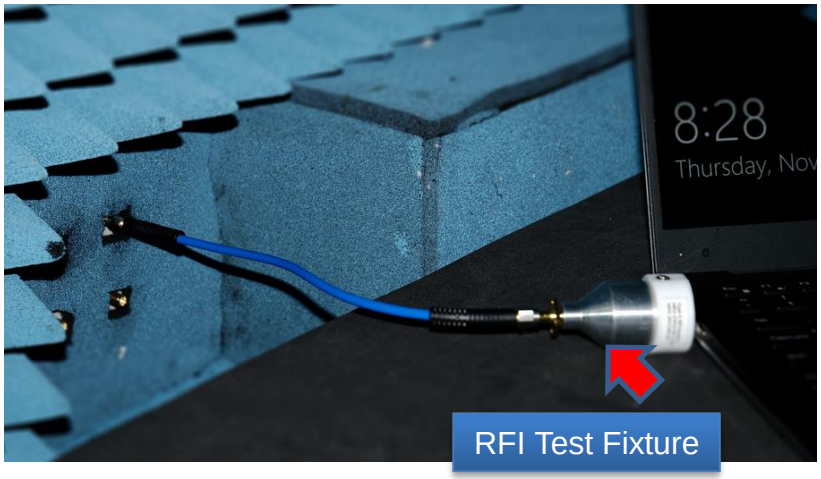
Required Equipment List

1. DSA875/DSA875-TG Spectrum Analyzer
2. S1210 EMI Pre-Compliance Test Software
3. RFI Test Fixture
4. EMI Shielding Chamber
5. Device Under Test (Notebook Laptop with Type-C Connector)
6. DSA Utility Kit

Type-C EMI Test Setup

1. Put the DUT Laptop inside the shielding chamber.
2. Connect the RFI Test Fixture to Laptop and hook up all the Cable inside and outside and back to Spectrum Analyzer



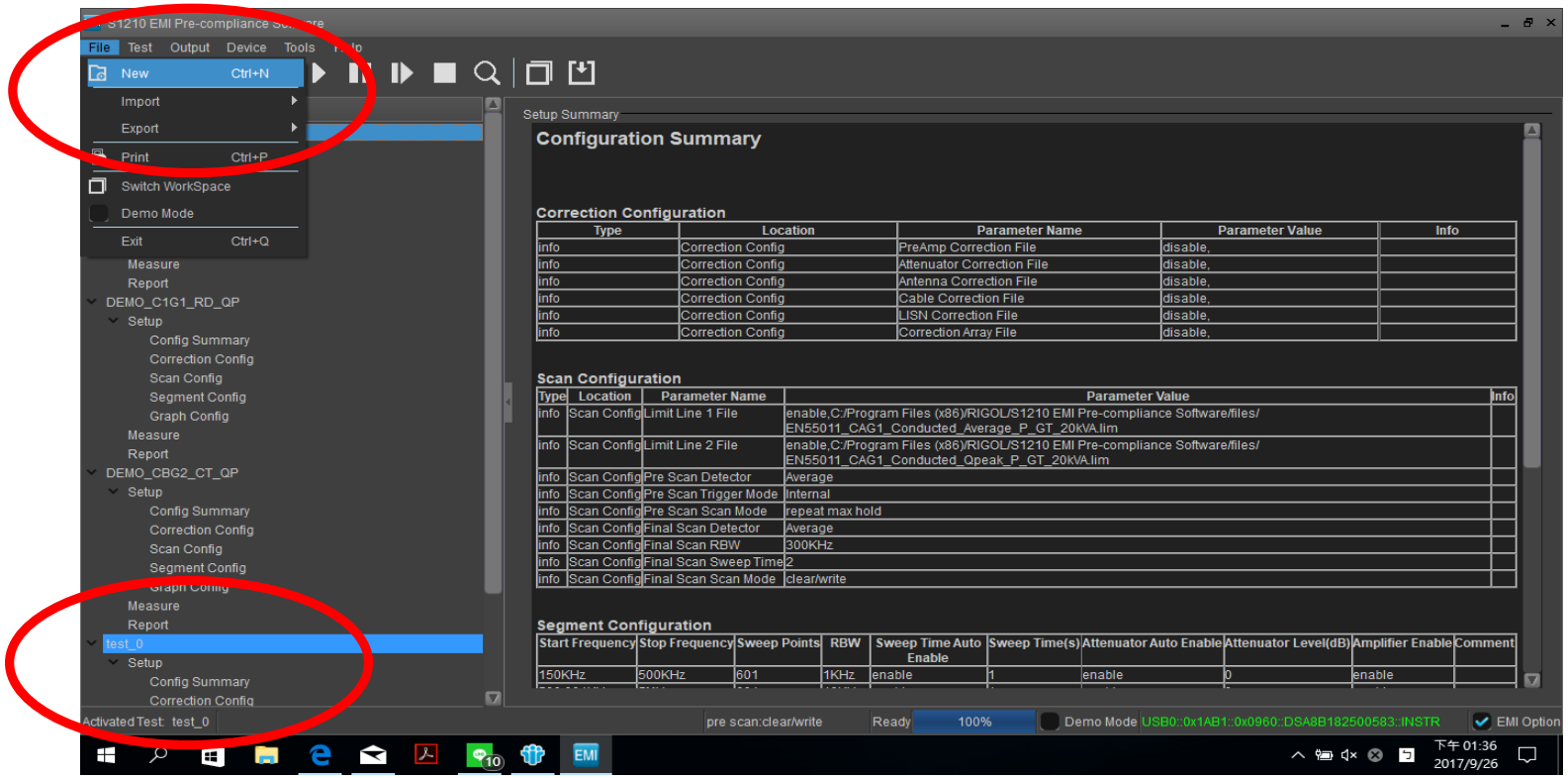


Type-C EMI Test Setup

3. Set the Notebook into “Flight Mode”. (Turn off RF transmitter)
4. Press the “Preset” button on DSA875
5. Press “Amp” on DSA875 and select “Preamp” item to “ON”.
6. Select “Input Attenuation” to “0” Value.
7. Press “BW/Det” button and set the RBW as 100KHz.
8. Press “VBW” button and set VBW value as 100KHz as well.
9. Press “Detector“ and select “Average” mode.
10. Go to “Trace” button and check the Average as “100” counts.
11. Set to “Max Hold” mode.

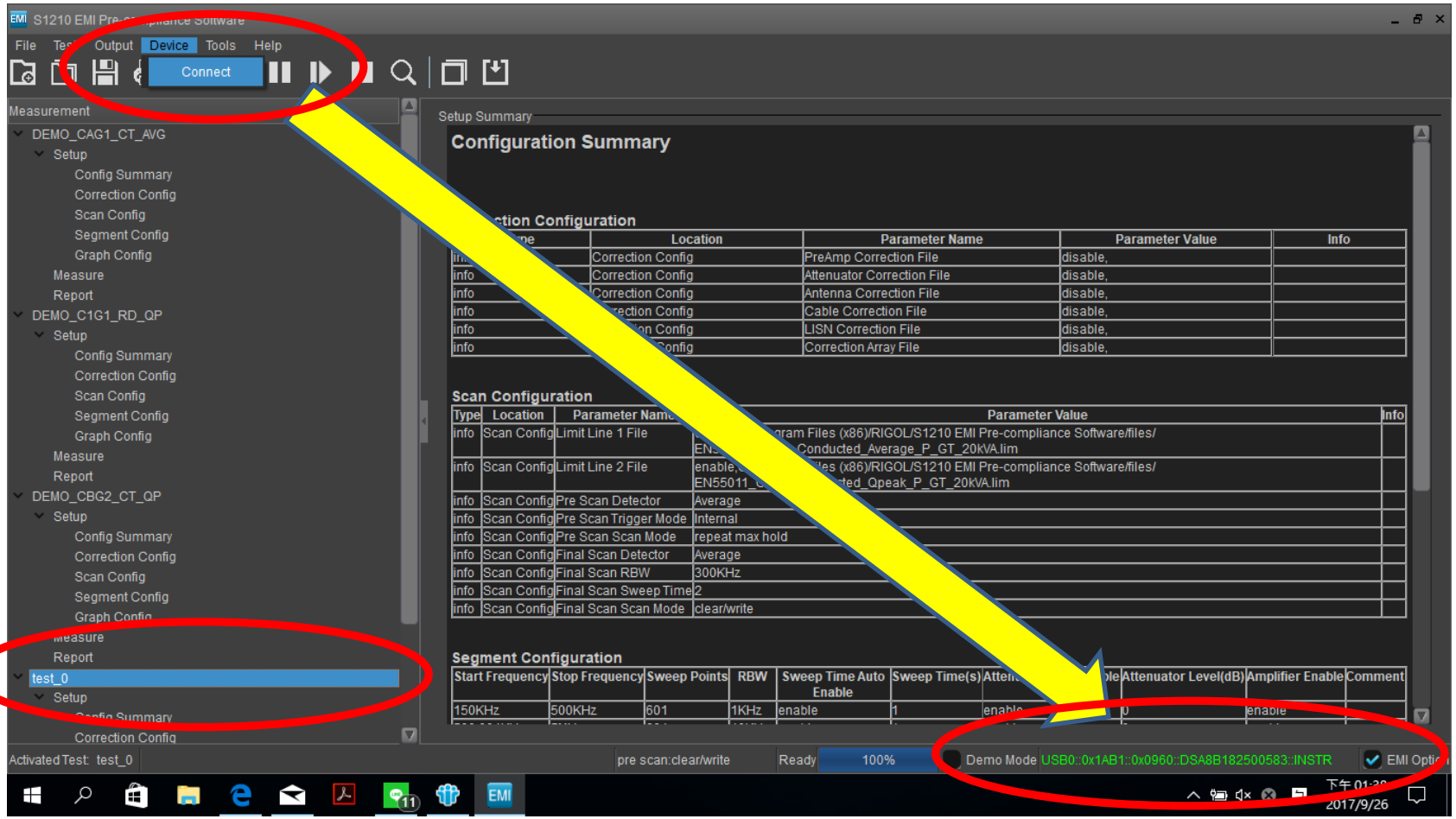
Spectrum Analyzer Setup

11. Start the S1210 EMI Software
12. Press “File” and press ”New” to open a project “test_0”



Spectrum Analyzer Setup

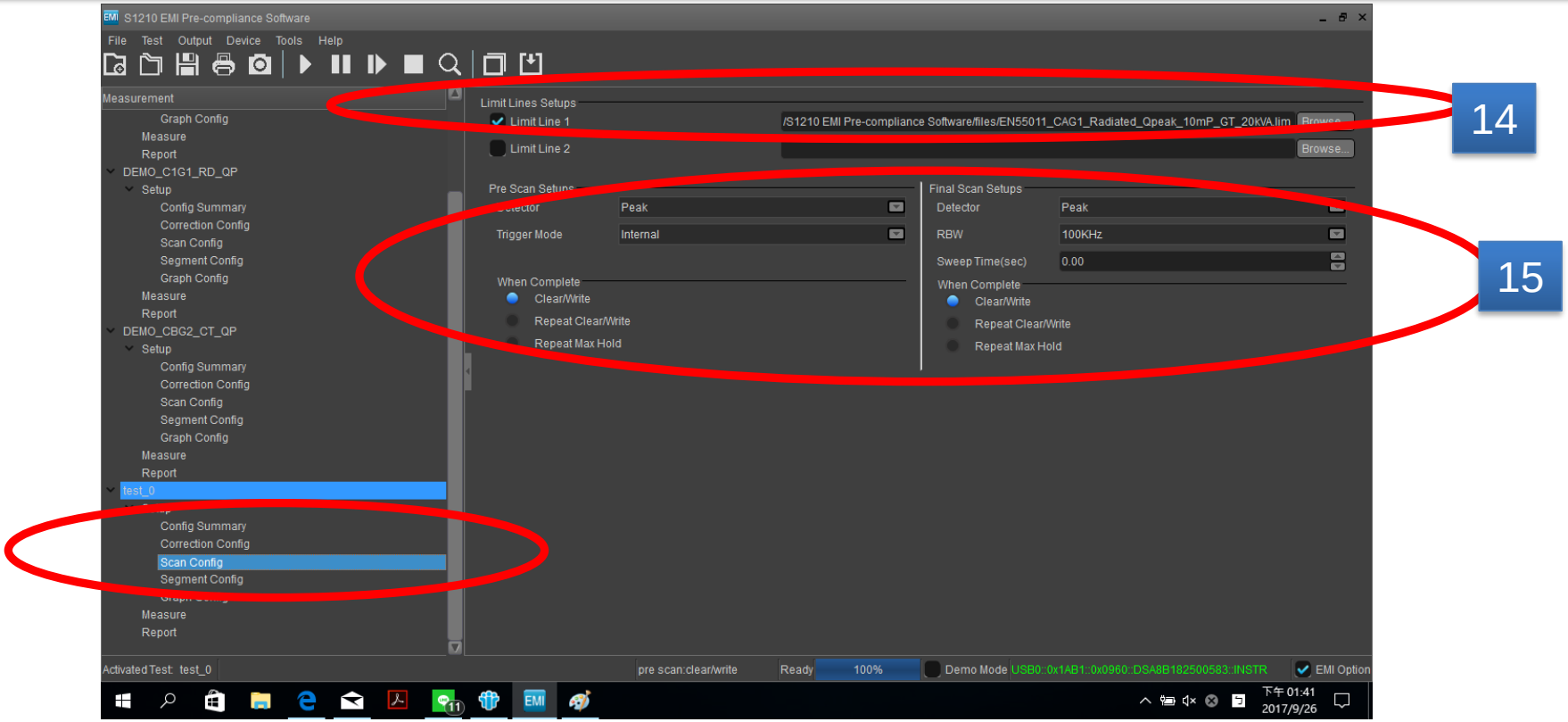
13. Select “test_0” and go to “Device” to connect PC to Spectrum, as you can see the green USB Address will be shown on the bottom side of the screen



Spectrum Analyzer Setup

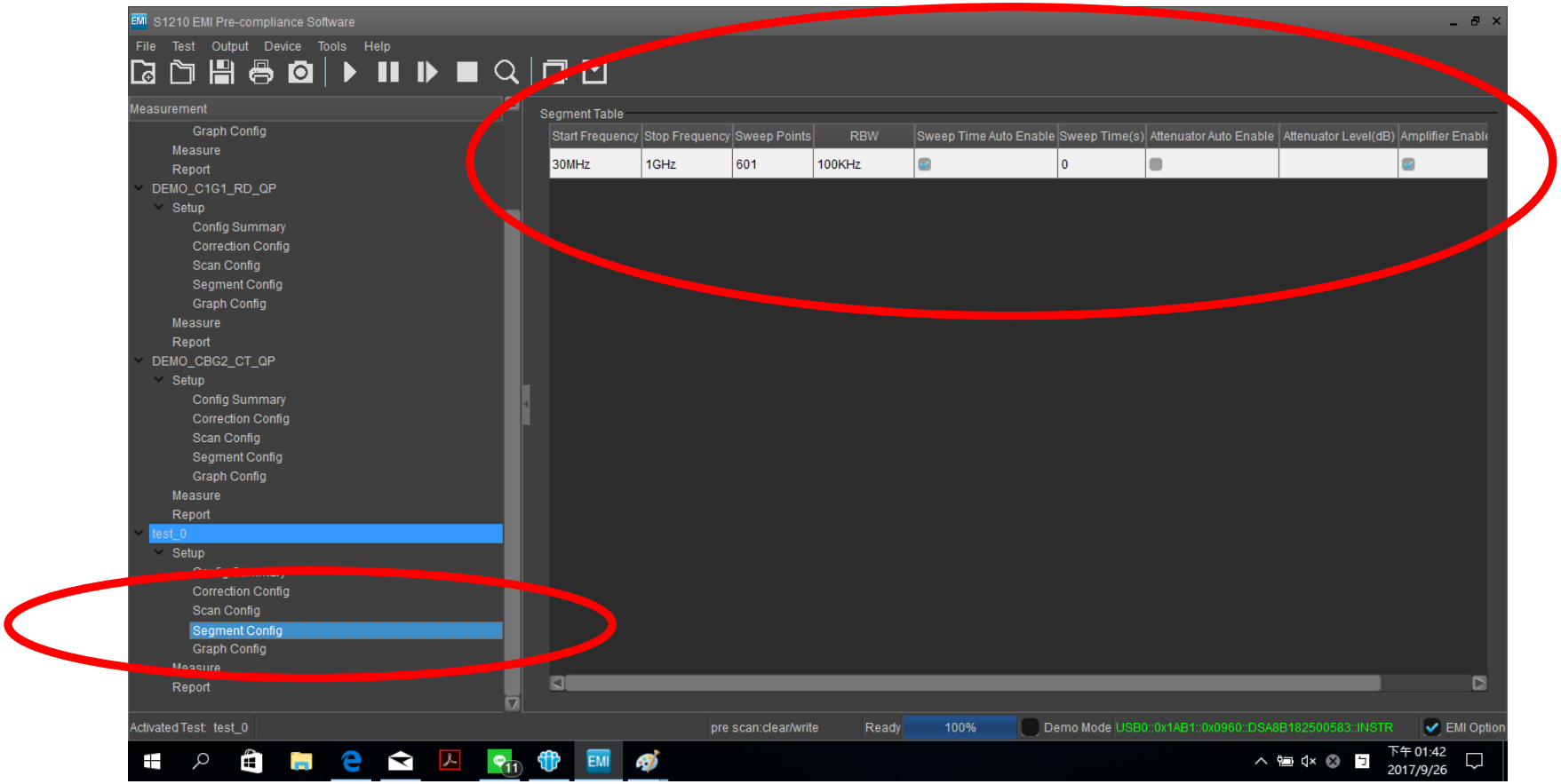
14. Go to “Scan Config” and select the Limited Line 1 file (RFI_500KHz6GHz_1.lim)
15. Set the detector as “Average”, RBW value to “100KHz”, and select “Clear/Write” when complete

RFI_500KHz6GHz_1.lim



Spectrum Analyzer Setup

16. Go to “Segment Config” and Setup the frequency sweeping segment Start from 500MHz to 6GHz, RBW to 100KHz, Sweep time to 0 sec.

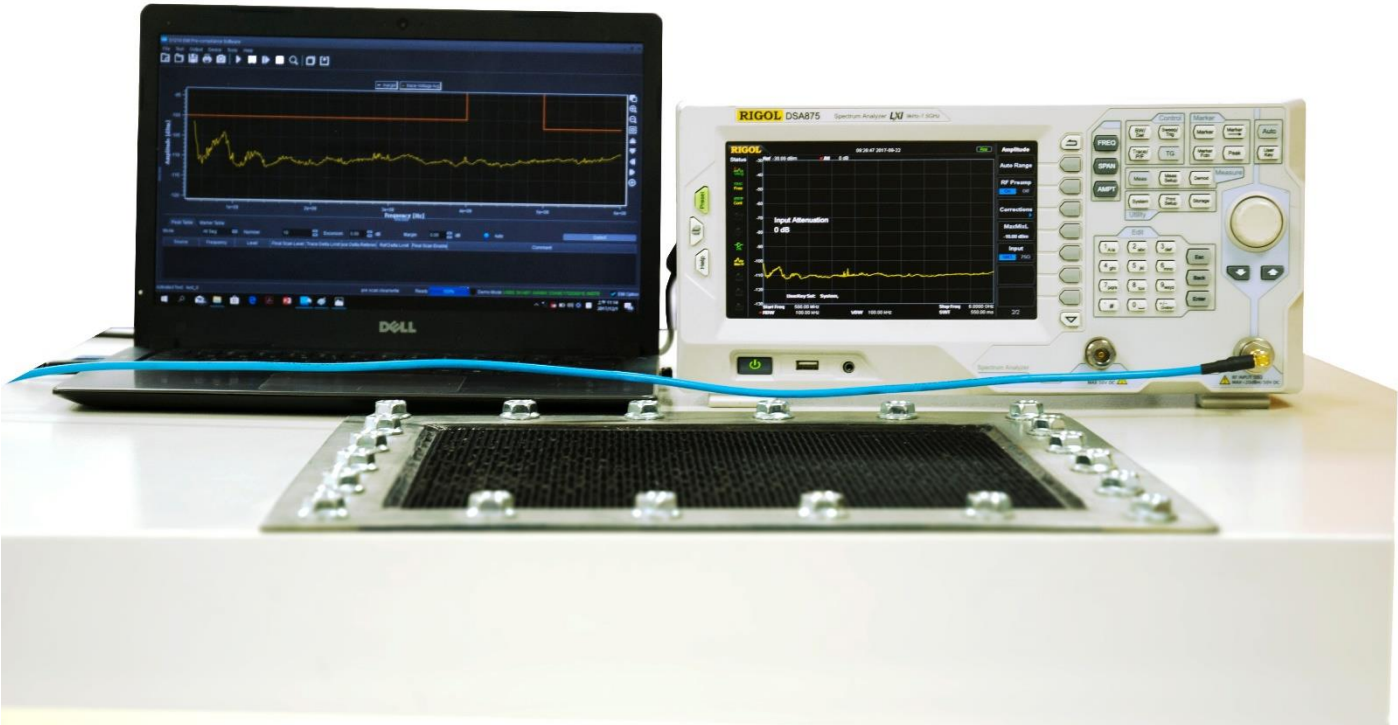


Spectrum Analyzer Setup

17. Press the “RUN” and users can see the spectral diagram as below

Spectrum Analyzer Setup

18. Finally complete the setup and measurement.



THANK YOU