



НТЦ дослідження та аналізу безпеки інфраструктур  
Center for Safety Infrastructure-Oriented Research and Analysis

Project: Radiy FPGA-based Safety Controller (FSC)

## **RPCT Verification Instruction Manual**

**D11.7**

Poltava, Ukraine  
2018

## Contents

<b>1 Scope and Purpose of the Document.....</b>	<b>3</b>
1.1 References .....	4
1.2 Product Documents Referenced by this User Manual .....	4
1.3 Terms and Abbreviations.....	5
<b>2 Regulatory Basis and Brief Description for Verification of RPCT Outputs .....</b>	<b>6</b>
2.1 Nuclear Perspective for RPCT Outputs Verification.....	6
2.2 IEC 61508 Perspective of RPCT Outputs Verification .....	7
2.3 RPCT Outputs Verification Procedure Brief Description .....	9
<b>3 ROVT Installation and Using guide.....</b>	<b>15</b>
3.1 Hardware and Operating System Requirements .....	15
3.2 Additional Dependencies .....	15
3.3 Installation and Removing of ROVT on a Windows Platform.....	15
3.4 ROVT Start Tab Window .....	15
3.5 ROVT Project Tab Window .....	17
3.6 ROVT Summary Tab Window .....	18
3.7 ROVT Settings Window.....	21
3.7.1 Reports settings .....	22
3.7.2 Static Analysis settings .....	24
3.7.3 Names length settings .....	25
3.7.4 Naming convention settings .....	26
3.7.5 Items usage settings .....	27
3.7.6 Calculation complexity settings .....	28
<b>4 Description of ROVT Outputs.....</b>	<b>29</b>
4.1 Build report.....	29
4.1.1 Build date and ID check .....	29
4.1.2 Build errors and warnings check .....	30
4.1.3 Binary file size and checksum check .....	30
4.1.4 LM Resource Requirements check .....	31
4.2 Tuning signals report .....	32
4.3 Hardware equipment report.....	33
4.4 User Application Logic report.....	34
<b>5 Static Analysis of RPCT Outputs .....</b>	<b>38</b>
5.1 Build integrity check .....	38
5.2 Consistency check .....	38
5.3 Usage check of Exceptional Pinouts of AFBs .....	39
5.4 Usage check of Pinouts and Parameters .....	40
5.5 Check of Correct Signal Type at AFB Pinouts .....	41
5.6 Check of Undefined AFB Usage .....	42
5.7 Check of Tuning Values .....	42
5.8 Analysis of Potential Loopbacks .....	43
5.9 Resources usage check .....	44
5.10 Static analysis rules check.....	44
5.11 Binary translation check.....	46
5.12 AFB Number call check .....	46
5.13 AFB Configuration number check .....	47
<b>6 Verifying RPCT Outputs Using ROVT Outputs .....</b>	<b>48</b>
<b>7. Revision History .....</b>	<b>50</b>