**guidance for developing an r2v3 reuse plan**

**Version: 1**

***Guidance is intended to offer further explanation of the requirements in the R2 Standard along with examples and audit recommendations. However, this document is not auditable and cannot be cited in relation to any nonconformances. The explanations are intended to prevent misinterpretation of the R2 Standard, not to add to, subtract from, or modify the R2 Standard. The examples cited may not be the only way to fulfill a requirement of the standard.***

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When developing your R2 Reuse Plan, consider each of the steps and key questions highlighted below to help guide you through the process and ensure the development of a comprehensive plan. Note that each section relates to a specific requirement in the R2v3 Standard, but the requirements below are not listed in the same order as they appear in the Standard, as they have been sequenced in a manner to better facilitate your plan development.

For each section, note in detail how the questions and examples specifically apply to your facility’s operations. Also indicate any associated resources required to implement the R2 requirement or demonstrate conformance with it or the plan. Resources may include procedures, work instructions, checklists and forms (existing or to be developed) that support the test, repair and verification processes.

The sample notes provided in the form demonstrate one method for capturing your responses, but these are examples only and must be expanded upon and revised as applicable to your facility’s operations. Your responses in each of these sections will provide the initial framework for your R2 Reuse Plan, so provide as much detail as possible. And, keep in mind that the plan will periodically need to be reviewed and revised, particularly where there are any changes in processes, devices managed or other applicable test and repair requirements.

| **Step #1: DEVELOP TEST PLANS** | | |
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| **Reference** | **Key Questions & Considerations** | **Notes** |
| C (2)(d) | Detailed plans must be developed for testing and verifying the functions of each specific type of equipment or component that is destined for reuse under Appendix C.  What are the specific types of equipment or components that your facility tests and/or repairs?  Consider not just whole devices such as computers and mobile phones, but also parts and components such as hard drives and memory, and other accessories, like power adaptors, that may also be reused. | *Note each type of equipment, component or accessory that is processed for reuse in your facility. Each item is subject to the test and repair processes developed in accordance with Appendix C. For example:*   |  |  |  | | --- | --- | --- | | ***Whole Units*** | ***Components*** | ***Accessories*** | | * *Cellular phones* | * *Hard drives* | * *Keyboards* | | * *Tablets* | * *Memory* | * *Mice* | | * *Computers* | * *Batteries* | * *Power adaptors* | | * *Monitors* | * *etc.* | * *etc.* | | * *Printers* |  |  | | * *Desk phones* |  |  | | * *Networking equipment* |  |  | | * *etc.* |  |  | |
| C (2)(d)(1) | Each electronic device, component or accessory can have a variety of different functions to be tested.  In some cases, not all functions will be tested, only the key functions – that is, the primary functions that an ordinary user of that item would expect to be working.  What are the functions of each tested item and which of those are key functions?  Which of the functions are tested? Are there any instances where only a subset of the key functions is tested? | *For each item tested, list all associated functions, noting which are key functions, and which of the functions are tested. For example:*   |  |  |  |  | | --- | --- | --- | --- | | ***Item*** | ***Functions*** | ***Key Function?*** | ***Tested?*** | | *Cellular phone* | * *Power on* | *Yes* | *Yes* | | * *Call functionality* | *Yes* | *Yes* | | * *Touch screen* | *Yes* | *Yes* | | * *Microphone* | *Yes* | *Yes* | | * *Speaker* | *Yes* | *Yes* | | * *Camera* | *No* | *Yes* | | * *Wi-Fi* | *No* | *Yes* | | * *etc.* | *…* | *…* | | *Hard drives* | *…* | *…* | *…* | | *etc.* | *…* | *…* | *…* | |
| C (2)(d)(2) | For each function of each item tested, there must be a defined testing method in place, including any necessary testing equipment.  How does your facility test each identified function on an item?  What equipment is required to test each function? | *For each item and the associated functions identified, clearly indicate the applicable test method and any equipment required for testing. For example:*   |  |  |  | | --- | --- | --- | | ***Item*** | ***Functions*** | ***Test Method & Equipment*** | | *Cellular phone* | *Power on* | *Manual test* | | *Call functionality* | *Manual network connection* | | *etc.* | *…* | | *etc.* | *…* | *…* | |
| C (2)(d)(3) | For each test method used, criteria must be established to indicate:   * When the test has successfully confirmed the intended functionality, or * Any status or conditions that would cause the function to be deemed non-working.   What is the pass and/or fail criteria for each test method used? | *For each test method, clearly indicate any pass or fail criteria that determine the success of the functionality test. For example:*   |  |  |  |  | | --- | --- | --- | --- | | ***Functions*** | ***Test Method*** | ***Pass*** | ***Fail*** | | *Power on* | *Manual test* | *Powers on* | *Doesn’t power on* | | *Call functionality* | *Manual network connection* | *Connects to cellular network* | *Doesn’t connect to cellular network* | | *etc.* | *…* | *…* | *…* | |
| C (2)(d)(4) | The results of each test performed must be recorded and maintained as a record of the specific functions tested and the results of each test.  Depending on the test method performed, records may be automatically generated and maintained by a software system that performs the tests, or they can be manually captured by technicians performing tests. Regardless of how the results are captured, the records must be attributable to each specific item and function tested.  How are the results of each test method captured and maintained?  Are the records traceable to the specific items processed? | *For each test method, clearly define how the results of the test will be recorded, traced to the item tested and maintained. For example:*   |  |  |  | | --- | --- | --- | | ***Test Method*** | ***Record*** | ***Storage / Maintenance*** | | *Manual test* | *Test results recorded in tracking spreadsheet or ERP by batch or item serial number* | *Software storage with network backup; Records maintained for X years* | | *Software enabled functionality test* | *Test results recorded in software system by item serial number* | *Software storage with network backup; Records maintained for X years* | | *etc.* | *…* | *…* | |

***Sample Integrated Test Plan Matrix:***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Item*** | ***Functions*** | ***Key Function?*** | ***Tested?*** | ***Test Method & Equipment*** | ***Pass*** | ***Fail*** | ***Record*** | ***Storage / Maintenance*** |
| Cellular phone | *Battery capacity* | Yes | Yes | … | … | … | … | … |
| *Call functionality* | Yes | Yes | … | … | … | … | … |
| *Touch screen* | Yes | Yes | … | … | … | … | … |
| *Microphone* | Yes | Yes | … | … | … | … | … |
| *Speaker* | Yes | Yes | … | … | … | … | … |
| *Camera* | No | Yes | … | … | … | … | … |
| *Wi-Fi* | No | Yes | … | … | … | … | … |
| *etc.* | … | … | … | … | … | … | … |

| **Step #2: DEFINE FUNCTIONALITY CATEGORIES** | | |
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| **Reference** | **Key Questions & Considerations** | **Notes** |
| C (2)(d)(5) | Based on the results of the functionality tests performed, each item or batch of items tested must be assigned an appropriate Functioning Product Category to identify the level of functionality verified for each item.  Functioning Product Categories are defined in Table 4 of the R2 Equipment Categorization (REC). In some cases, an R2 Facility may choose to use other functioning product categories, where a documented correlation of those categories to the applicable REC categories is maintained.  What are the Functioning Product categories used by your facility?  How are the results of the functionality tests used to assign these categories? | *Clearly identify the REC, or other correlated Functioning Product Categories used, and indicate the criteria from each test that are used to classify items in accordance with the established categories.* |

| **Step #3: DEVELOP QUALITY ASSURANCE PLANS** | | |
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| **Reference** | **Key Questions & Considerations** | **Notes** |
| C (2)(e)(1) | Considering the items to be tested and the methods to be used, the next step is to develop detailed quality assurance plans that will be used to verify the effectiveness of the test methods and the accuracy of the results.  For example, quality checks such as inspections and manual verifications can be performed on tested items. In addition, different workers and tests stations can be used to retest items to ensure consistency in the results. And, processes can be audited to ensure that approved procedures are being followed for all testing activities.  What are the methods used by your facility to verify the accuracy to the testing methods? | *Describe in detail the specific methods used to verify the accuracy of your testing methods for each item.* |
| C (2)(e)(1) | In addition to verifying the testing methods, processes must also be in place to verify the accuracy of any testing equipment.  Equipment verification should include activities such as ensuring proper calibration and configuration of the equipment; installation of any software updates; and proper maintenance and care for the equipment to ensure it remains in good working order.  Another method for verifying the effectiveness of testing equipment is through analysis. This can include analyzing test results for trends in types and quantities of item failures, and also, analyzing any failures of the testing equipment itself, including any downtime and the reasons for it.  For any testing equipment used, how does your facility verify its accuracy and effectiveness? | *Describe in detail the specific methods used to verify the accuracy and effectiveness of the testing equipment used for each item.* |
| C (2)(e)(2) | Another aspect of the quality assurance plan is the establishment of measurements to monitor the quality of reusable equipment and components.  Measuring quality of reusable items can include a variety of activities such as sampling and testing, to analysis of failures, returns and customer complaints.  What are the measurements that your facility uses to monitor the quality of tested items? | *Note each type of quality measurement taken and describe how it is used to monitor the quality of the tested items.* |
| C (2)(e)(3) | As part of any test process, there will be some equipment or components that do not meet the established pass criteria. These non-functional items must be clearly identified and managed separately from functioning items.  Often non-functioning items can be repaired and then re-tested, and in some cases where repair is not feasible, the item can be harvested for usable parts. When neither option for reuse is possible, then the item would generally need to be managed for materials recovery.  How does your facility clearly identify and manage any items that fail testing? | *Describe the process used to identify, segregate and manage any items that fail testing in order to prevent their reuse.* |
| C (2)(e)(4) | Following the testing process, functioning equipment and components are assigned applicable REC or equivalent categories based on the results of the tests performed.  Activities such as sampling of tested items, as well as process audits and spot inspections can all be used to verify the accuracy of the assigned categories.  What processes does your facility have to verify that the correct categories have been assigned to all tested items?  How does your facility ensure that testing results are considered when verifying categories? | *Describe the methods used to verify the REC categories and explain how the testing results are used to confirm the correct categories.* |
| C (2)(e)(5) | The final aspect of the quality assurance plan is a process to verify that items have been properly sanitized in accordance with the requirements of Appendix B – Data Sanitization.  Some software that is used to test functionality may also have the ability to perform data sanitization. In cases such as this, the records of both the sanitization activities and the functionality tests would be maintained for each item in the same system, so verification of sanitization can be completed at the same time as the functionality categorization or verification activities take place.  However, if separate sanitization processes are performed, there must be a way to track the sanitization results for each item to enable verification. In this case, the sanitization verification process may be part of planned quality checks or even through sampling of items processed.  What processes does your facility use to verify that data has been sanitized from tested equipment in accordance with Appendix B – Data Sanitization? | *Describe the processes used by your facility to verify that tested equipment has been properly sanitized.* |

| **Step #4: DEVELOP PRODUCT SAFETY PLANS** | | |
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| **Reference** | **Key Questions & Considerations** | **Notes** |
| C (2)(c) | An important aspect of test and repair operations is maintaining detailed product safety plans to verify that all tested and repaired equipment and components are safe to reuse.  These product safety plans start with processes to investigate and assess the conditions of any equipment intended for reuse.  For example, are there common issues associated with a device or component that can be the source of a safety hazard? This may include things like visually inspecting items for damaged or deformed batteries; loose or exposed electrical connections; damaged or open casings; frayed cords; water damage; corrosion; etc.  What are the safety conditions that your facility checks tested items for and what process is used to assess these items to confirm they are safe for reuse? | *For each item tested, note the specific conditions that may affect product safety and indicate how they are assessed in order to determine if the items are safe to reuse.* |
| C (2)(c) | The second aspect to the product safety plan is to maintain a process for responding to any manufacturer recalls of any equipment or components.  Manufacturer recalls can be identified through a variety of ways such as press releases, manufacturer website notices, trade publications and regulatory agency alerts. For example, the *U.S. Consumer Product Safety Commission* provides an exportable list of product recalls: <https://www.cpsc.gov/Recalls>; as well as an email subscription service for recall notifications: <https://www.cpsc.gov/Newsroom/Subscribe>.  Once a recall has been identified, processes should be in place to determine the specific products it applies to; identify all affected products under the control of the facility; segregate and control those items; and determine their appropriate disposition.  What process does your facility use to identify, track and control recalled items? | *Describe the process used by your facility for identifying, tracking and controlling any items that are subject to a recall.* |

| **Step #5: TRAINING AND COMPETENCY** | | |
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| **Reference** | **Key Questions & Considerations** | **Notes** |
| C (2)(b) | All workers that perform test, repair or verification activities must have the necessary skills and knowledge to be able to properly perform any assigned tasks.  Generally, workers can acquire these skills and knowledge through a combination of training, which can be formal or on the job, and work experience.  However, competency requirements can vary depending on the specific jobs or activities performed, so each R2 Facility must identify the training and experience requirements specific to the test, repair and verification activities of its operations.  Have the competency requirements for each test, repair and verification activity or related position been clearly identified?  Consider any necessary training as well as job experience that may provide workers the necessary skills and knowledge to complete the assigned activities. | *For each test, repair and verification activity or the positions assigned to performing those activities, clearly identify the detailed competency requirements. For example:*   |  |  |  | | --- | --- | --- | | ***Job Title*** | ***Training*** | ***Experience*** | | *Mobile Test Technician* |  |  |   *Or,*   |  |  |  | | --- | --- | --- | | ***Test/Repair Activity*** | ***Training*** | ***Experience*** | | *PCB Repair* |  |  | |

| **Step #6: DEVELOP WRITTEN INSTRUCTIONS** | | |
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| **Reference** | **Key Questions & Considerations** | **Notes** |
| C (2)(a) | With the content for the test plans identified and the associated worker competencies defined, specific written instructions must be developed to provide workers the necessary direction on the approved processes for each test activity.  Written test plans should identify the activities to be completed, the process for completing them, the roles or individuals responsible, and any actions to take in event of a failure in the process or deviation from the procedure. Test plans can be supported by job descriptions that define the competencies for each of the identified tasks.  Has your facility developed written test plans for each item tested? | *Document the instructions for testing each item and indicate where the approved instructions are defined. For example:*   |  |  | | --- | --- | | ***Item*** | ***Test Plan*** | | *Cellular phone* | *Cell testing procedures; software operating instructions; etc.* | | *etc.* | *…* | |
| C (2)(a) | With the content for the quality assurance plans identified and the associated worker competencies defined, specific written instructions must be developed to provide workers the necessary direction on the approved processes for each associated activity.  Written quality assurance plans should identify the activities to be completed, the process for completing them, the roles or individuals responsible, and any actions to take in event of a failure in the process or deviation from the procedure. Quality assurance plans can be supported by job descriptions that define the competencies for each of the identified tasks.  Has your facility developed written quality assurance plans for each item tested? | *Document the instructions for the quality assurance activities associated with each item tested and indicate where the approved instructions are defined. For example:*   |  |  | | --- | --- | | ***Item*** | ***Quality Assurance Plan*** | | *Cellular phone* | *Cellular QA procedures; verification work instructions; etc.* | | *etc.* | *…* | |
| C (2)(a) | With the content for the product safety plans identified and the associated worker competencies defined, specific written instructions must be developed to provide workers the necessary direction on the approved processes for each associated activity.  Written product safety plans should identify the activities to be completed, the process for completing them, the roles or individuals responsible, and any actions to take in event of a failure in the process or deviation from the procedure. Product safety plans can be supported by job descriptions that define the competencies for each of the identified tasks.  Has your facility developed written product safety plans for each item tested? | *Document the instructions for the product safety activities for each item tested and indicated where the approved instructions are defined. For example:*   |  |  | | --- | --- | | ***Item*** | ***Product Safety Plan*** | | *Cellular phone* | *Cell phone safety inspection procedures; recall response procedures; work instructions; etc.* | | *etc.* | *…* | |
| C (2)(f) | The final aspects of an R2 Reuse Plan are the product return policy and plan for managing any returns of tested and sold items.  The product return policy should define the allowable period within which a product may be returned, and also outline the conditions for return, such as when the product received is damaged, has functionality issues, or otherwise does not meet the conditions of sale.  The product return plan should then define the process for managing any returns. This may include the process for notifying the R2 Facility of the issue; any process to approve the return; procedures for documenting and tracking the return; and the process for physically managing any returned items.  The product return plan must be appropriate to the locations where the product is sold, so proper disposition of any product not physically returned to the R2 Facility should also be addressed.  Has your facility documented a product return policy that outlines any conditions for a product return, as well as a plan that defines the process for managing returns? | *Clearly define the conditions under which products may be returned and the policy in which these details are outlined. Identify all steps in the return process and provide written instructions for how each step is managed to control returned products.* |