This deliverable report describes in detail the test steps that need to be executed in order to certify the final COTECH demonstrators for the specific application areas like health, biomedical, automotive, energy and information technology. It also defines and lists the capabilities and properties that need to be attained for successful characterization of the planned demonstrators and it deals with the material characterization and prototype testing for the COTECH demonstrators. The summary of this report includes: General description of COTECH industrial demonstrators, COTECH materials and material characterization techniques, Characterization techniques of the COTECH demonstrators, Functionality and lifecycle testing of the COTECH demonstrators. Besides the general introduction and conclusion each section of the report is dedicated to the characterization techniques and test procedure requirements for a specific demonstrator production, namely: Section 2. Characterization techniques and test procedure requirements for innovative accommodable intra-ocular lens (BI) Section 3. Characterization techniques and test procedure requirements for artificial skin production (GEMA) Section 4. Characterization techniques and test procedure requirements for innovative self-ligating dental brackets (EO) Section 5. Characterization techniques and test procedure requirements for smart diagnostic chips comprising a microfluidic channel system (GBO) Section 6. Characterization techniques and test procedure requirements for multifunctional integrated lighting rear lamp for cars (CRP) Section 7. Characterization techniques and test procedure requirements for micro-fresnel lenses for cell phone flash lights (HEPTAGON) Section 8. Characterization techniques and test procedure requirements for 5 Pin Ric Connector (PULSE) Section 9. Characterization techniques and test procedure requirements for micro-cooling of electronic components (ATHERM)