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**NIST Special Publication
NIST SP 800-140Br1 2pd**

CMVP Security Policy Requirements

*CMVP Validation Authority Updates to
ISO/IEC 24759 and ISO/IEC 19790 Annex B*

Second Public Draft

David Hawes
Alexander Calis
Roy Crombie

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Information Technology Laboratory*

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Gina M. Raimondo, Secretary

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82 **All comments are subject to release under the Freedom of Information Act (FOIA).**

83 **Abstract**

84 NIST Special Publication (SP) 800-140Br1 is to be used in conjunction with ISO/IEC 19790
85 Annex B and ISO/IEC 24759 section 6.14. The special publication modifies only those
86 requirements identified in this document. SP 800-140Br1 also specifies the content of the
87 information required in ISO/IEC 19790 Annex B. As a validation authority, the Cryptographic
88 Module Validation Program (CMVP) may modify, add, or delete Vendor Evidence (VE) and/or
89 Test Evidence (TE) specified under paragraph 6.14 of the ISO/IEC 24759 and specify the order
90 of the security policy as specified in ISO/IEC 19790:2012 B.1.

91 **Keywords**

92 Cryptographic Module Validation Program; CMVP; FIPS 140 testing; FIPS 140; ISO/IEC
93 19790; ISO/IEC 24759; testing requirement; vendor evidence; vendor documentation; security
94 policy.

95 **Reports on Computer Systems Technology**

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103 federal information systems. The Special Publication 800-series reports on ITL's research,
104 guidelines, and outreach efforts in information system security, and its collaborative activities
105 with industry, government, and academic organizations.

106 **Audience**

107 This document is focused toward the vendors, testing labs, and CMVP for the purpose of
108 addressing issues in ISO/IEC 19790, Information technology – Security techniques - Security
109 requirements for cryptographic modules, and ISO/IEC 24759, Information technology – Security
110 techniques - Test requirements for cryptographic modules.

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154 **Table 29.** Error States48

155

156 **1. Scope**

157 This document specifies the Cryptographic Module Validation Program (CMVP) modifications
158 of the methods to be used by a Cryptographic and Security Testing Laboratory (CSTL) to
159 demonstrate conformance. This document also specifies the modification of documentation for
160 providing evidence to demonstrate conformity. Unless otherwise specified in this document, the
161 test requirements are specified in ISO/IEC 19790 Annex B and ISO/IEC 24759 section 6.14.

162 **2. Normative references**

163 This section identifies the normative references cited as ISO/IEC 19790 and ISO/IEC 24759. The
164 specific editions to be used are ISO/IEC 19790:2012 and ISO/IEC 24759:2017. Please note that
165 the version 19790:2012 referenced here includes the corrections made in 2015.

166 National Institute of Standards and Technology (2019) Security Requirements for
167 Cryptographic Modules. (U.S. Department of Commerce, Washington, DC), Federal
168 Information Processing Standards Publication (FIPS) 140-3.
169 <https://doi.org/10.6028/NIST.FIPS.140-3>

170 **3. Terms and definitions**

171 The following terms and definitions supersede or are in addition to those defined in ISO/IEC
172 19790 and ISO/IEC 24759:

173 *None added at this time.*

174 **4. Symbols and abbreviated terms**

175 The following symbols and abbreviated terms supersede or are in addition to ISO/IEC 19790
176 throughout this document:

177	CAVP	Cryptographic Algorithm Validation Program
178	CCCS	Canadian Centre for Cyber Security
179	CMVP	Cryptographic Module Validation Program
180	CSD	Computer Security Division
181	CSTL	Cryptographic and Security Testing Laboratory
182	EFP	Environmental Failure Protection
183	EFT	Environmental Failure Testing
184	FIPS	Federal Information Processing Standard
185	FISMA	Federal Information Security Management/Modernization Act
186	NIST	National Institute of Standards and Technology
187	SP 800-XXX	NIST Special Publication 800 series document
188	TE	Test Evidence

189 VE Vendor Evidence

190 **5. Document organization**

191 **5.1. General**

192 Section 6.1 of this document specifies any modifications to ISO/IEC 19790 Annex B and
193 ISO/IEC 24759 section 6.14. Section 6.2 identifies any additional requirements for the Security
194 Policy that are documented in other publications. Section 6.3 provides descriptions of the
195 structure of the Security Policy and how the requirements in sections 6.1 and 6.2 map into that
196 structure. Appendix A indicates specific details for the module information that will be entered
197 in table format within the Web Cryptik application.

198 **5.2. Modifications**

199 Modifications to ISO/IEC 24759 section 6.14 - Cryptographic module security policy - will
200 follow a similar format as in ISO/IEC 24759. For additions to test requirements, new Test
201 Evidence (TEs) or Vendor Evidence (VEs) will be listed by increasing the “sequence_number.”
202 Modifications can include a combination of additions using underline and deletions using
203 ~~striketrough~~. If no changes are required, the paragraph will indicate “No change.”

204 ISO/IEC 19790 Annex B includes security policy requirements in bulleted form but does not
205 include ways to format the required information. Modifications are addressed by adding
206 formatting guidance (e.g., tables, images, etc.), adding underlined text, or using ~~striketrough~~ for
207 deletion. If no changes are required, the paragraph will indicate “No change.” Additional
208 guidance may also be included to address requirements presented in SP 800-140, SP 800-140A,
209 SP 800-140C, SP 800-140D, SP 800-140E, and SP 800-140F.

210 **6. Security requirements**

211 **6.1. Changes to ISO/IEC 24759 section 6.14 and ISO/IEC 19790 Annex B**
212 **Requirements**

213 All requirements from ISO/IEC 24759 section 6.14 and ISO/IEC 19790 Annex B apply and are
214 required in the security policy as applicable.

215 ISO/IEC 19790 Annex B uses the same section naming convention as ISO/IEC 19790 section 7 -
216 Security requirements. For example, Annex B section B.2.1 is named “General” and B.2.2 is
217 named “Cryptographic module specification,” which is the same as ISO/IEC 19790 section 7.1
218 and section 7.2, respectively. Therefore, the format of the security policy **shall** be presented in
219 the same order as indicated in Annex B, starting with “General” and ending with “Mitigation of
220 other attacks.” If sections are not applicable, they **shall** be marked as such in the security policy.

221 ISO/IEC 24759 section 6.14 – Cryptographic module security policy requirements are modified
222 as indicated below:

223 No Change.

224 ISO/IEC 19790 Annex B requirements are modified as indicated below:

225 **B.2.1 General**

226

227 No Change.

228

229 **B.2.2 Cryptographic module specification**

230

231 • Illustrative diagram, schematic or photograph of the module. A photograph included for
232 hardware modules. If the security policy encompasses multiple versions of the module,
233 each version is represented separately or annotated that the representation is illustrated
234 for all versions. For a software ~~or~~, firmware, hybrid, or a sub-chip cryptographic module,
235 the security policy includes a block diagram that illustrates:

236 ○ the location of the logical object of the software or firmware module with respect
237 to the operating system, other supporting applications and the cryptographic
238 boundary so that all the logical and physical layers between the logical object and
239 the cryptographic boundary are clearly defined; and

240 ○ the interactions of the Logical Object - the interactions of the logical object of the
241 software or firmware module with the operating system and other supporting
242 applications resident within the cryptographic boundary.

243 ○ Tested Operational Environment's Physical Perimeter (TOEPP) – location of the
244 cryptographic module with respect to the TOEPP that is part of the module's
245 tested configuration but may be outside the module's cryptographic boundary, so
246 that all the logical and physical layers between the cryptographic module and the
247 TOEPP are clearly defined. This also includes a description and components list
248 of the TOEPP.

249 • Precise definition of the module's ~~physical~~ TOEPP and cryptographic boundaries:

250

251 **B.2.3 Cryptographic module interfaces**

252

253 No Change.

254

255 **B.2.4 Roles, services, and authentication**

256

257 No Change.

258

259 **B.2.5 Software/Firmware security**

260

261 No Change.

262

263 **B.2.6 Operational environment**

264

265 No Change.

266

267 **B.2.7 Physical security**

268

269 No Change.

270

271 **B.2.8 Non-invasive security**

272

273 No Change.

274

275 **B.2.9 Sensitive security parameters management**

276

277 • Provide a ~~key~~ SSP table specifying the ~~key~~ SSP type(s), strength(s) in bits, security
278 function(s), security function certification number(s), where and how the ~~key(s)~~ SSP(s) is
279 generated, ~~whether the key(s) SSP(s) is imported or exported~~ what method(s) is used to
280 input or output the SSP(s), any SSP generation and establishment method used and
281 indicate any related ~~keys~~ SSPs.

282 • Specify the electronic and manual ~~key~~ SSP I/O method(s).

283 • Specify the SSP storage ~~technique(s)~~ areas, formats (encrypted or plaintext), and
284 persistence types (dynamic or static).

285

286 **B.2.10 Self-tests**

287

288 No Change.

289

290 **B.2.11 Life-cycle assurance**

291

292 No Change.

293

294 **B.2.12 Mitigation of other attacks**

295

296 No Change.

297

298 **6.2. Documentation requirement additions**

299 In addition to ISO/IEC 24759 section 6.14 and ISO/IEC 19790 Annex B, other publications and
300 documents specify documentation requirements for the Security Policy. Many of these
301 requirements relate to specific conditions and configurations of modules and would not be
302 applicable in many cases.

303 These additional requirements are listed for each section of the Security Policy, grouped by the
304 source publication or document and reference the specific section from the document where the
305 requirement is stated. Where possible, they are direct statements from the source documents and
306 would often require the original context to best understand the requirement.

307

308 **B.2.1 General**

309

310 No Additions.

311

312 **B.2.2 Cryptographic module specification**

313

314 **SP800-140:VE02.20.04**

315 1. Vendor Affirmed Security Methods - The vendor provided non-proprietary security
316 policy shall include a list of all vendor affirmed security methods.

317

318 **B.2.3 Cryptographic module interfaces**

319

320 No Additions.

321

322 **B.2.4 Roles, services, and authentication**

323

324 No Additions.

325

326 **B.2.5 Software/Firmware security**

327

328

329 **B.2.6 Operational environment**

330

331 No Additions.

332

333 **B.2.7 Physical security**

334

335 **SP800-140:VE07.26.02**

- 336 1. High and Low Temperature - The vendor provided security policy shall specify the
337 nominal and high/low temperature range.

338

339 **SP800-140:VE07.77.02**

- 340 1. Temperature Shutdown/Zeroise - The security policy shall address whether the employed
341 EFP feature forces module shutdown or zeroises all unprotected SSPs and shall specify
342 the temperature range met.

343

344 **SP800-140:VE07.81.02**

- 345 1. EFT Shutdown/Zeroise - The security policy shall address whether the employed EFT
346 feature forces module shutdown or zeroises all unprotected SSPs and shall specify the
347 temperature range met.

348

349 **B.2.8 Non-invasive security**

350

351 No Additions.

352

353 **B.2.9 Sensitive security parameters management**

354

355 **SP800-140:VE09.28.03**

- 356 1. SSP Procedural Zeroisation - If SSPs are zeroised procedurally while under the control of
357 the operator (i.e., present to observe the method has completed successfully or controlled
358 via a remote management session), vendor documentation and the module security policy
359 must specify how the methods shall be performed.

360

361 **B.2.10 Self-tests**

362

363 No Additions.

364

365 **B.2.11 Life-cycle assurance**

366

367 No Additions.

368

369 **B.2.12 Mitigation of other attacks**

370

371 No Additions.

372

373 **6.3. Documentation input, structure, and formatting**

374 This section is intended to provide further guidance on what type of information is expected for a
375 specific requirement or set of requirements from Annex B and the additional requirements listed
376 in Section 6.2. All of the requirement statements are organized into appropriately named and
377 numbered sub-sections (i.e. 1.2- Security Levels, 2.1 – Purpose or Use). Each sub-section
378 identifies the applicable requirements and provides any clarifying and explanatory notes for that
379 sub-section.

380 A significant portion of the security policy information will be structured and interrelated. These
381 tables can be input through Web Cryptik or uploaded in JSON format which would follow a
382 provided schema and table relationship constraints.

383 The text/picture portions of the security policy will be entered into a provided Microsoft Word
384 template document, which follows a specific structure. Within this document are content controls
385 serving as placeholders for the structured content in Web Cryptik and/or the uploaded JSON file.

386 In this update to 140B and the corresponding update to Web Cryptik, the labs/vendors will be
387 selecting algorithms, modes, and properties from the sets that have been tested through the
388 CAVP process. This will replace the previous process of separately enter that information.

389 Part of the initial information labs/vendors enter into Web Cryptik will be the CAVP Certificate
390 numbers associated with the algorithm tests for that particular module. Web Cryptik will then
391 retrieve and display the relevant information from the CAVP system. Each algorithm/operational
392 environment entry will be listed, along with the set of properties for that test. The lab/vendor will
393 then select the specific items that are implemented in the module. When algorithms are tested in
394 multiple operating environments, they will each have a separate entry in the list.

395 The selected subset will be saved, maintained with the rest of the module's information, and used
396 to generate the Tested Algorithm table in the Security Policy.

397 All this information (the structured JSON, the uploaded document, and the selected CAVP test
398 information) will be combined into the final security policy and provided as a PDF file. Any
399 changes to the security policy would require making changes to the corresponding source and
400 generating a new version.

401

402 **1.0 General**

403

404 **1.1 Overview**

405

406 **Notes:** Overview information desired by the vendor

407

408 **Input Method:** Template Document

409

410 **1.2 Security Levels**

411 Annex B Requirement Statements

412 1. Security Level Table - A table indicating the individual clause levels and overall level.

413 2. Security Rating - Overall Security Rating of the module and the Security Levels of
414 individual areas

415

416 **Notes:** Table generated from previously entered information

417

418 **Input Method:** Web Cryptik/JSON

419

420 **1.3 Additional Information [O]**

421

422 **Notes:** Additional Vendor Information

423

424 **Input Method:** Template Document

425

426 **2.0 Cryptographic module specification**

427

428 **2.1 Module Information**

429

430 **2.1.1 Description**

431 Annex B Requirement Statements

432 1. Description - Description of Module

433

434 **Notes:** None

435

436 **Input Method:** Template Document

437

438 **2.1.2 Purpose or Use**

439 Annex B Requirement Statements

- 440 1. Purpose - Intended purpose or use of the module including intended use environment

441

442 **Notes:** None

443

444 **Input Method:** Template Document

445

446 **2.1.3 Module Type**

447 Annex B Requirement Statements

- 448 1. Module Type - Hardware, Software, Firmware, or Hybrid designation:

449

450 **Notes:** None

451

452 **Input Method:** Web Cryptik/JSON

453

454 **2.1.4 Module Embodiment**

455 Annex B Requirement Statements

- 456 1. Embodiment - Specify the embodiment (single-chip, multi-chip embedded or multi-chip
457 standalone).

458

459 **Notes:** None

460

461 **Input Method:** Web Cryptik/JSON

462

463 **2.1.5 Module Characteristics**

464

465 **Notes:** None

466

467 **Input Method:** Web Cryptik/JSON

468

469 **2.1.6 Cryptographic Boundary**

470 Annex B Requirement Statements

- 471 1. TOEPP and Cryptographic Boundary - Precise definition of the module's TOEPP and
472 cryptographic boundary:

473

474 **Notes:** None

475

476 **Input Method:** Template Document

477

478 **2.1.7 TOEPP [O]**

479 Annex B Requirement Statements

- 480 1. TOEPP and Cryptographic Boundary - Precise definition of the module's TOEPP and
481 cryptographic boundary:

- 482 2. Tested Operational Environment's Physical Perimeter (TOEPP) - location of the
483 cryptographic module with respect to the TOEPP that is part of the module's tested
484 configuration but may be outside the module's cryptographic boundary, so that all the
485 logical and physical layers between the cryptographic module and the TOEPP are clearly
486 defined. This also includes a description and components list of the TOEPP.

487

488 **Notes:** None

489

490 **Input Method:** Template Document

491

492 **2.1.8 Diagram, Schematic, or Photograph**

493 Annex B Requirement Statements

- 494 1. Diagram, Schematic, or Photograph - Illustrative diagram, schematic or photograph of the
495 module. A photograph included for hardware modules. If the security policy
496 encompasses multiple versions of the module, each version is represented separately or
497 annotated that the representation is illustrated for all versions. For a software, firmware,
498 hybrid, or a sub-chip cryptographic module, the security policy includes a block diagram
499 that illustrates

- 500 2. Location of Logical Object - the location of the logical object of the software or firmware
501 module with respect to the operating system, other supporting applications and the
502 cryptographic boundary so that all the logical and physical layers between the logical
503 object and the cryptographic boundary are clearly defined

- 504 3. Interactions of the Logical Object - the interactions of the logical object of the software
505 or firmware module with the operating system and other supporting applications resident
506 within the cryptographic boundary.

507 4. Block Diagram - Block Diagram, as applicable.

508

509 **Notes:** The image will show the disjoint hardware component of the hybrid module.

510

511 **Input Method:** Template Document

512

513 **2.2 Version Information**

514 Annex B Requirement Statements

515 1. Version Information - Provide version/identification of the module(s) and all components
516 (hardware, software or firmware).

517

518 **Notes:** Table generated from previously entered information

519

520 **Input Method:** Web Cryptik/JSON

521

522 **2.3 Operating Environments**

523

524 **2.3.1 Hardware OEs**

525 Annex B Requirement Statements

526 1. Operational Environment List - Identify the operating system(s) and tested platform(s).

527

528 **Notes:** See Appendix A - SP Detailed Information Description

529

530 **Input Method:** Web Cryptik/JSON

531

532 **2.3.2 Software, Firmware, Hybrid OEs**

533 Annex B Requirement Statements

534 1. Operating Systems - for software, firmware and hybrid cryptographic modules, list the
535 operating system(s) the module was tested on and list the operating system(s) that the
536 vendor affirms can be used by the module.

537

538 **Notes:** None

539

540 **Input Method:** Web Cryptik/JSON

541

542 **2.3.3 Executable Code List [O]**

543 Annex B Requirement Statements

544 1. Executable Code - Specify the form and each component of executable code provided.

545

546 **Notes:** List of executable code

547

548 **Input Method:** Web Cryptik/JSON

549

550 **2.3.4 Vendor Affirmed Operating Environments**

551 Annex B Requirement Statements

552 1. Operating Systems - for software, firmware and hybrid cryptographic modules, list the
553 operating system(s) the module was tested on and list the operating system(s) that the
554 vendor affirms can be used by the module.

555 2. Vendor Affirmed OE Claim - The vendor may provide claims of porting to other OS's
556 not specifically tested yet vendor affirmation of correct operation is claimed.

557

558 **Notes:** See Appendix A - SP Detailed Information Description

559

560 **Input Method:** Web Cryptik/JSON

561

562 **2.4 Excluded Components**

563 Annex B Requirement Statements

564 1. Excluded Components - the hardware, software or firmware excluded from the
565 cryptographic boundaries specified in the security policy.

566

567 **Notes:** Enter "None" instead of leaving blank

568

569 **Input Method:** Template Document

570

571 **2.5 Modes of Operation**

572

573 **2.5.1 Modes List and Description**

574 Annex B Requirement Statements

575 1. Modes of Operation - Modes of operation and how to enter/exit each mode. The security
576 policy describes each approved mode of operation implemented in the cryptographic
577 module and how each mode is configured.

578 2. Modes of Operation - Modes of operation and how to enter/exit each mode. The security
579 policy describes each approved mode of operation implemented in the cryptographic
580 module and how each mode is configured.

581

582 **Notes:** Text accompanying the Mode List

583

584 **Input Method:** Template Document

585

586 **Notes:** List of the Modes of Operation

587

588 **Input Method:** Web Cryptik/JSON

589

590 **2.5.2 Mode Change Instructions [O]**

591

592 **Notes:** None

593

594 **Input Method:** Template Document

595

596 **2.5.3 Degraded Mode [O]**

597 Annex B Requirement Statements

598 1. Degraded Mode - Description of degraded operation

599

600 **Notes:** Enter "None" instead of leaving blank

601

602 **Input Method:** Template Document

603

604 **2.6 Algorithms**

605

606 **2.6.1 Approved Algorithms**

607 Annex B Requirement Statements

- 608 1. Security Functions Table - Table of all security functions, with specific key strengths
609 employed for approved services, as well as the implemented modes of operation (e.g.
610 CBC, CCM), if appropriate.

611

612 **Notes:** This table is generated from the selected CAVP Tested algorithms, modes, and properties

613

614 **Input Method:** CAVP Algorithm-Mode-Property Selection

615

616 **2.6.2 Vendor Affirmed Algorithms**

617 Annex B Requirement Statements

- 618 1. Security Functions Table - Table of all security functions, with specific key strengths
619 employed for approved services, as well as the implemented modes of operation (e.g.
620 CBC, CCM), if appropriate.

621

622 SP800-140 Requirement Statements

- 623 1. Vendor Affirmed Security Methods - The vendor provided non-proprietary security
624 policy shall include a list of all vendor affirmed security methods. [VE02.20.04]

625

626 **Notes:** A list of the vendor affirmed algorithms allowed in the approved mode of operation - See
627 Appendix A - SP Detailed Information Description

628

629 **Input Method:** Web Cryptik/JSON

630

631 **2.6.3 Non-Approved, Allowed Algorithms**

632 Annex B Requirement Statements

- 633 1. Security Functions Table - Table of all security functions, with specific key strengths
634 employed for approved services, as well as the implemented modes of operation (e.g.
635 CBC, CCM), if appropriate.

636

637 **Notes:** A list of the non-approved algorithms allowed in the approved mode of operation - See
638 Appendix A - SP Detailed Information Description

639

640 **Input Method:** Web Cryptik/JSON

641

642 **2.6.4 Non-Approved, Allowed Algorithms with No Security Claimed**

643 Annex B Requirement Statements

- 644 1. Security Functions Table - Table of all security functions, with specific key strengths
645 employed for approved services, as well as the implemented modes of operation (e.g.
646 CBC, CCM), if appropriate.

647

648 **Notes:** A list of the non-approved algorithms allowed in the approved mode of operation with no
649 security claimed. These algorithms do not claim any security and are not used to meet FIPS 140-
650 3 requirements. Therefore, SSPs do not map to these algorithms. - See Appendix A - SP Detailed
651 Information Description

652

653 **Input Method:** Web Cryptik/JSON

654

655 **2.6.5 Non-Approved, Not Allowed Algorithms**

656

657 **Notes:** See Appendix A - SP Detailed Information Description

658

659 **Input Method:** Web Cryptik/JSON

660

661 **2.7 Security Function Implementations**

662 Annex B Requirement Statements

- 663 1. Security Functions Table - Table of all security functions, with specific key strengths
664 employed for approved services, as well as the implemented modes of operation (e.g.
665 CBC, CCM), if appropriate.

666

667 **Notes:** See Appendix A - SP Detailed Information Description

668

669 **Input Method:** Web Cryptik/JSON

670

671 **2.8 Algorithm Specific Information**

672

673 **Notes:** Documentation Requirements for Specific Algorithms and Conditions

674

675 **Input Method:** Template Document

676

677 **2.9 RNG and Entropy**

678

679 **2.9.1 Entropy Information**

680 Annex B Requirement Statements

- 681 1. Entropy Sources - Specify the RBG entropy source(s).

682

683 **Notes:** None

684

685 **Input Method:** Template Document

686

687 **2.9.2 RNG Information**

688 Annex B Requirement Statements

- 689 1. RNGs - Specify the approved and non-approved random bit generators

- 690 2. RNG Output - Describe the uses of RBG output(s).

691

692 **Notes:** None

693

694 **Input Method:** Template Document

695

696 **2.10 Key Generation**

697

698 **Notes:** None

699

700 **Input Method:** Template Document

701

702 **2.11 Key Establishment**

703

704 **2.11.1 Key Agreement Information**

705

706 **Notes:** None

707

708 **Input Method:** Template Document

709

710 **2.11.2 Key Transport Information**

711

712 **Notes:** None

713

714 **Input Method:** Template Document

715

716 **2.12 Industry Protocols**

717

718 **Notes:** None

719

720 **Input Method:** Template Document

721

722 **2.13 Design and Rules**

723 Annex B Requirement Statements

724 1. Design and Rules - Overall security design and the rules of operation

725

726 **Notes:** As part of this requirement, algorithm-specific guidance, rules, and security policy-
727 specific requirements shall be included.

728

729 **Input Method:** Template Document

730

731 **2.14 Initialisation**

732 Annex B Requirement Statements

733 1. Initialisation - Initialisation requirements, as applicable.

734

735 **Notes:** None

736

737 **Input Method:** Template Document

738

739 **2.15 Additional Information [O]**

740

741 **Notes:** Additional Vendor Information

742

743 **Input Method:** Template Document

744

745 **3.0 Cryptographic module interfaces**

746

747 **3.1 Ports and Interfaces**

748 Annex B Requirement Statements

749 1. Ports and Interfaces Table - Table listing of all ports and interfaces (physical and logical).

750 2. Information Passing - Define the information passing over the five logical interfaces.

751 3. Physical Ports - Specify physical ports and data that pass over them

752

753 **Notes:** The physical ports here should map to the physical ports shown in the module
754 images/diagrams. If the ports are different per module within the same submission, then this
755 table should indicate the differences. - See Appendix A - SP Detailed Information Description

756

757 **Input Method:** Web Cryptik/JSON

758

759 **3.2 Trusted Channel Specification [O]**

760 Annex B Requirement Statements

761 1. Trusted Channel - Specify Trusted Channel

762

763 **Notes:** None

764

765 **Input Method:** Template Document

766

767 **3.3 Control Interface Not Inhibited [O]**

768 Annex B Requirement Statements

769 1. Control Interface Not Inhibited - Specification of the exceptions and rationale if the
770 control output interface is not inhibited during the error state,

771

772 **Notes:** None

773

774 **Input Method:** Template Document

775

776 **3.4 Additional Information [O]**

777

778 **Notes:** Additional Vendor Information

779

780 **Input Method:** Template Document

781

782 **4.0 Roles, services, and authentication**

783

784 **4.1 Authentication Methods**

785 Annex B Requirement Statements

786 1. Authentication Methods - Specify each authentication method, whether the method is
787 Identity or Role-based and the method is required.

788 2. Strength of Authentication - How is the strength of authentication requirement met?

789 3. Service Info - For each service, the service name, a concise description of the service
790 purpose and/or use (the service name alone may, in some instances, provide this
791 information), a list of approved security functions (algorithm(s), key management
792 technique(s) or authentication technique) used by, or implemented through, the
793 invocation of the service, and a list of the SSPs associated with the service or with the
794 approved security function(s) it uses. For each operator role authorised to use the service
795 info

796

797 **Notes:** See Appendix A - SP Detailed Information Description

798

799 **Input Method:** Web Cryptik/JSON

800

801 **4.2 Roles**

802 Annex B Requirement Statements

803 1. Roles List - Specify all roles

804 2. Roles Table - Table of Roles, with corresponding service commands with input and
805 output

806

807 **Notes:** See Appendix A - SP Detailed Information Description

808

809 **Input Method:** Web Cryptik/JSON

810

811 **4.3 Approved Services**

812 Annex B Requirement Statements

813 1. Approved and Non-Approved Services - Separately list the security and non-security
814 services, both approved and non-approved.

815 2. Service Info - For each service, the service name, a concise description of the service
816 purpose and/or use (the service name alone may, in some instances, provide this
817 information), a list of approved security functions (algorithm(s), key management
818 technique(s) or authentication technique) used by, or implemented through, the
819 invocation of the service, and a list of the SSPs associated with the service or with the
820 approved security function(s) it uses. For each operator role authorised to use the service
821 info

822 3. Roles List - Specify all roles

823

824 **Notes:** See Appendix A - SP Detailed Information Description

825

826 **Input Method:** Web Cryptik/JSON

827

828 **4.4 Non-Approved Services**

829 Annex B Requirement Statements

830 1. Approved and Non-Approved Services - Separately list the security and non-security
831 services, both approved and non-approved.

832 2. Service Info - For each service, the service name, a concise description of the service
833 purpose and/or use (the service name alone may, in some instances, provide this
834 information), a list of approved security functions (algorithm(s), key management
835 technique(s) or authentication technique) used by, or implemented through, the
836 invocation of the service, and a list of the SSPs associated with the service or with the
837 approved security function(s) it uses. For each operator role authorised to use the service
838 info

839

840 **Notes:** See Appendix A - SP Detailed Information Description

841

842 **Input Method:** Web Cryptik/JSON

843

844 **4.5 External Software/Firmware Loaded**

845 Annex B Requirement Statements

846 1. External Software/Firmware Loaded - If external software or firmware is loaded, specify
847 the controls on loading and the isolation of code that deter unauthorised access to and use
848 of the module.

849

850 **Notes:** None

851

852 **Input Method:** Template Document

853

854 **4.6 Bypass Actions and Status [O]**

855 Annex B Requirement Statements

- 856 1. Bypass Actions - If there is a bypass capability, what are the two independent actions and
857 how is the status checked?

858

859 **Notes:** None

860

861 **Input Method:** Template Document

862

863 **4.7 Cryptographic Output Actions and Status [O]**

864 Annex B Requirement Statements

- 865 1. Cryptographic Output - If there is a self-initiated cryptographic output capability, what
866 are the two independent actions how is the status indicated?

867

868 **Notes:** None

869

870 **Input Method:** Template Document

871

872 **4.8 Additional Information [O]**

873

874 **Notes:** Additional Vendor Information

875

876 **Input Method:** Template Document

877 **5.0 Software/Firmware security**

878

879 **5.1 Integrity Techniques**

880 Annex B Requirement Statements

- 881 1. Integrity Techniques - Specify the approved integrity techniques or EDC
882 employed

883

884 **Notes:** None

885

886 **Input Method:** Template Document

887

888 **5.2 Initiate on Demand**

889 Annex B Requirement Statements

- 890 1. Initiate on Demand - Specify how the operator can initiate the integrity test on
891 demand.

892

893 **Notes:** None

894

895 **Input Method:** Template Document

896

897 **5.3 Open Source Parameters [O]**

898 Annex B Requirement Statements

- 899 1. Open Source Parameters - If the module is open source, specify the compilers and
900 control parameters required to compile the code into an executable format.

901

902 **Notes:** None

903

904 **Input Method:** Template Document

905

906 **5.4 Non-Reconfigurable Memory End of Life Procedures [O]**

907

908 **Notes:** None

909

910 **Input Method:** Template Document

911

912 **5.5 Additional Information [O]**

913

914 **Notes:** Additional Vendor Information

915

916 **Input Method:** Template Document

917

918 **6.0 Operational environment**

919

920 **6.1 Operational Environment Type and Requirements**

921

922 **6.1.1 Operational Environment Type**

923 Annex B Requirement Statements

- 924 1. Operational Environment Type - Identify the operational environment (e.g. non-
925 modifiable, limited, or modifiable).

926

927 **Notes:** Include an explanation supporting the OE type

928

929 **Input Method:** Template Document

930

931 **6.1.2 Operational Environment Requirements [O]**

932 Annex B Requirement Statements

- 933 1. Op Env Requirements - For each applicable level, explain how requirements are
934 satisfied.

935

936 **Notes:** None

937

938 **Input Method:** Template Document

939

940 **6.2 Configuration Settings and Restrictions [O]**

941 Annex B Requirement Statements

- 942 1. Config Settings - Specification of the security rules, settings or restrictions to the
943 configuration of the operational environment.

- 944 2. Restrictions - Specification of any restrictions to the configuration of the
945 operational environment.

946

947 **Notes:** None

948

949 **Input Method:** Template Document

950

951 **6.3 Additional Information [O]**

952

953 **Notes:** Additional Vendor Information

954

955 **Input Method:** Template Document

956

957 **7.0 Physical security**

958

959 **7.1 Mechanisms and Actions Required**

960 Annex B Requirement Statements

961 1. Mechanisms - Specify the physical security mechanisms that are implemented in
962 the module (e.g. tamper evident seals, locks, tamper response and zeroisation
963 switches, and alarms).

964 2. Actions Required - Specify the actions required by the operator(s) to ensure that
965 the physical security is maintained (e.g. periodic inspection of tamper-evident
966 seals or testing of tamper response and zeroisation switches).

967

968 **Notes:** See Appendix A - SP Detailed Information Description

969

970 **Input Method:** Web Cryptik/JSON

971

972 **7.2 Tamper Seals [O]**

973

974 **7.2.1 Total Number to Place [O]**

975 Annex B Requirement Statements

976 1. Total Number to Place - The total number of tamper evident seals or security
977 appliances that are needed will be indicated (e.g. 5 tamper evident seals and 2
978 opacity screens). The photos or illustrations which provide instruction on the
979 precise placement will have each item numbered in the photo or illustration and
980 will equal the total number indicated (the actual tamper evident seals or security
981 appliances are not required to be numbered).

982

983 **Notes:** None

984

985 **Input Method:** Template Document

986

987 **7.2.2 Tamper Seal Placement [O]**

988 Annex B Requirement Statements

989 1. Reference Photos Include Tamper Seals - Specify the following information if the
990 module requires operator applied tamper evident seals or security appliances that
991 the operator will apply or modify over the lifecycle of the module: The reference
992 photo or illustrations required in B 2.2 will reflect the module configured or
993 constructed as specified. Additional photos/illustrations may be provided to
994 reflect other configurations.

995 2. Photos of Tamper Seal Placement - Photos or illustrations will indicate the precise
996 placement of any tamper evident seal or security appliance needed to meet the
997 physical security requirements.

998

999 **Notes:** None

1000

1001 **Input Method:** Template Document

1002

1003 **7.2.3 Prepare Surface [O]**

1004 Annex B Requirement Statements

1005 1. Prepare Surface - If tamper evident seals or security appliances can be removed or
1006 installed, clear instructions will be included regarding how the surface or device
1007 shall be prepared to apply a new tamper evident seal or security appliance.

1008

1009 **Notes:** None

1010

1011 **Input Method:** Template Document

1012

1013

1014 **7.2.4 Unused Seals [O]**

1015 Annex B Requirement Statements

1016 1. Unused Seals - Specify the operator role responsible for securing and having
1017 control at all times of any unused seals, and the direct control and observation of
1018 any changes to the module such as reconfigurations where the tamper evident

1019 seals or security appliances are removed or installed to ensure the security of the
1020 module is maintained during such changes and the module is returned to an
1021 Approved mode of operation.

1022

1023 **Notes:** None

1024

1025 **Input Method:** Template Document

1026

1027 **7.2.5 Part Numbers [O]**

1028 Annex B Requirement Statements

1029 1. Part Numbers - If the tamper evident seals or security appliances are parts that can
1030 be reordered from the module vendor, the security policy will indicate the module
1031 vendor part number of the seal, security appliance or applicable security kit. After
1032 reconfiguring, the operator of the module may be required to remove and
1033 introduce new tamper evident seals or security appliances.

1034

1035 **Notes:** None

1036

1037 **Input Method:** Template Document

1038

1039 **7.3 Filler Panels [O]**

1040 Annex B Requirement Statements

1041 1. Filler Panel Info - If filler panels are needed to cover unpopulated slots or
1042 openings to meet the opacity requirements, they will be included in the photo or
1043 illustrations with tamper seals affixed as needed. The filler panels will be included
1044 in the list of parts.

1045

1046 **Notes:** None

1047

1048 **Input Method:** Template Document

1049

1050 **7.4 Fault Induction Mitigation [O]**

1051 Annex B Requirement Statements

1052 1. Fault Induction Mitigation - Specify the fault induction mitigation methods
1053 implemented.

1054

1055 **Notes:** None

1056

1057 **Input Method:** Template Document

1058

1059 **7.5 EFP/EFT Information [O]**

1060 SP800-140 Requirement Statements

1061 1. Temperature Shutdown/Zeroise - The security policy shall address whether the
1062 employed EFP feature forces module shutdown or zeroises all unprotected SSPs
1063 and shall specify the temperature range met. [VE07.77.02]

1064 2. EFT Shutdown/Zeroise - The security policy shall address whether the employed
1065 EFT feature forces module shutdown or zeroises all unprotected SSPs and shall
1066 specify the temperature range met. [VE07.81.02]

1067

1068 **Notes:** For physical Security Level 3 and above - See Appendix A - SP Detailed Information
1069 Description

1070

1071 **Input Method:** Web Cryptik/JSON

1072

1073 **7.6 Hardness Testing Temperature Ranges [O]**

1074 SP800-140 Requirement Statements

1075 1. High and Low Temperature - The vendor provided security policy shall specify
1076 the nominal and high/low temperature range. [VE07.26.02]

1077

1078 **Notes:** For modules covered by strong or hard conformal or non-conformal enclosures, coatings,
1079 or potting materials - See Appendix A - SP Detailed Information Description

1080

1081 **Input Method:** Template Document

1082

1083 **7.7 Additional Information [O]**

1084

1085 **Notes:** Additional Vendor Information

1086

1087 **Input Method:** Template Document

1088

1089 **8.0 Non-invasive security**

1090

1091 **8.1 Mitigation Techniques [O]**

1092 Annex B Requirement Statements

- 1093 1. Mitigation Techniques - Specify all of the non-invasive mitigation techniques
1094 referenced in Annex F employed by the module to protect the module's CSPs
1095 from non-invasive attacks.

1096

1097 **Notes:** Per IG 12.A: Until requirements of SP 800-140F are defined, non-invasive mechanisms
1098 fall under ISO/IEC 19790:2012 Section 7.12 Mitigation of other attacks

1099

1100 **Input Method:** Template Document

1101

1102 **8.2 Effectiveness [O]**

1103 Annex B Requirement Statements

- 1104 1. Effectiveness - Describe the effectiveness of the non-invasive mitigation
1105 techniques referenced in Annex F employed by the module to protect the
1106 module's CSPs from non-invasive attacks.

1107

1108 **Notes:** See B.2.8.1 above.

1109

1110 **Input Method:** Template Document

1111

1112 **8.3 Additional Information [O]**

1113

1114 **Notes:** Additional Vendor Information

1115

1116 **Input Method:** Template Document

1117

1118 **9.0 Sensitive security parameters management**

1119

1120 **9.1 Storage Areas**

1121 Annex B Requirement Statements

- 1122 1. SSP Storage - Specify the SSP storage areas, formats (encrypted or plaintext), and
1123 persistence types (dynamic or static).

1124

1125 **Notes:** See Appendix A - SP Detailed Information Description

1126

1127 **Input Method:** Web Cryptik/JSON

1128

1129 **9.2 SSP Input-Output Methods**

1130 Annex B Requirement Statements

1131 1. SSP I/O Methods - Specify the electronic and manual SSP I/O method(s).

1132

1133 **Notes:** See Appendix A - SP Detailed Information Description

1134

1135 **Input Method:** Web Cryptik/JSON

1136

1137 **9.3 SSP Zeroization Methods**

1138 Annex B Requirement Statements

1139 1. SSP Zeroization - Specify the unprotected SSP zeroisation method(s) and
1140 rationale, and operator initiation capability.

1141

1142 SP800-140 Requirement Statements

1143 1. SSP Procedural Zeroisation - If SSPs are zeroised procedurally while under the
1144 control of the operator (i.e., present to observe the method has completed
1145 successfully or controlled via a remote management session), vendor
1146 documentation and the module security policy must specify how the methods
1147 shall be performed. [VE09.28.03]

1148

1149 **Notes:** See Appendix A - SP Detailed Information Description

1150

1151 **Input Method:** Web Cryptik/JSON

1152

1153 **9.4 SSPs**

1154 Annex B Requirement Statements

1155 1. SSP Key Table - Provide a SSP table specifying the SSP type(s), strength(s) in
1156 bits, security function(s), security function certification number(s), where and
1157 how the SSP(s) is generated, what method(s) is used to input or output the SSP(s),
1158 any SSP generation and establishment method used and indicate any related SSPs.

- 1159 2. SSP Other Table - Present a table of other SSPs and how they are generated.
1160 3. SSP Zeroization - Specify the unprotected SSP zeroisation method(s) and
1161 rationale, and operator initiation capability.

1162

1163 **Notes:** See Appendix A - SP Detailed Information Description

1164

1165 **Input Method:** Web Cryptik/JSON

1166

1167 **9.5 Transitions [O]**

1168 Annex B Requirement Statements

- 1169 1. Transitions - Specify applicable transition periods or timeframes where an
1170 algorithm or key length transitions from approved to non-approved

1171

1172 **Notes:** None

1173

1174 **Input Method:** Template Document

1175

1176 **9.6 Additional Information [O]**

1177

1178 **Notes:** Additional Vendor Information

1179

1180 **Input Method:** Template Document

1181

1182 **10.0 Self-tests**

1183

1184 **10.1 Pre-Operational Self-Tests**

1185 Annex B Requirement Statements

- 1186 1. Pre-Operational and Conditional List - Provide the list of pre-operational and
1187 conditional self-tests with defined parameters and list conditions under which the
1188 tests are performed.

1189

1190 **Notes:** Separate the Pre-Operational from the Conditional - See Appendix A - SP Detailed
1191 Information Description

1192

1193 **Input Method:** Web Cryptik/JSON

1194

1195 **10.2 Conditional Self-Tests**

1196 Annex B Requirement Statements

- 1197 1. Pre-Operational and Conditional List - Provide the list of pre-operational and
1198 conditional self-tests with defined parameters and list conditions under which the
1199 tests are performed.

1200

1201 **Notes:** Separate the Pre-Operational from the Conditional - See Appendix A - SP Detailed
1202 Information Description

1203

1204 **Input Method:** Web Cryptik/JSON

1205

1206 **10.3 Periodic Self-Test Information**

1207 Annex B Requirement Statements

- 1208 1. Self-test Interruption - Specify the time period and the policy regarding any
1209 conditions that may result in the interruption of the module's operations during
1210 the time to repeat the period self-tests.

1211

1212 **Notes:** None

1213

1214 **Input Method:** Template Document

1215

1216 **Notes:** List of the periodic info for the PreOp Tests

1217

1218 **Input Method:** Web Cryptik/JSON

1219

1220 **Notes:** List of the periodic info for the conditional tests

1221

1222 **Input Method:** Web Cryptik/JSON

1223

1224 **10.4 Error States**

1225 Annex B Requirement Statements

- 1226 1. Error State List - Describe all error states and status indicators

1227

1228 **Notes:** See Appendix A - SP Detailed Information Description

1229

1230 **Input Method:** Web Cryptik/JSON

1231

1232 **10.5 Operator Initiation Self-test [O]**

1233 Annex B Requirement Statements

1234 1. Operator Initiation Self-test - Describe operator initiation, if applicable.

1235

1236 **Notes:** None

1237

1238 **Input Method:** Template Document

1239

1240 **10.6 Additional Information [O]**

1241

1242 **Notes:** None

1243

1244 **Input Method:** Template Document

1245

1246 **11.0 Life-cycle assurance**

1247

1248 **11.1 Startup Procedures**

1249 Annex B Requirement Statements

1250 1. Startup Procedures - Specify the procedures for secure installation, initialization,
1251 startup and operation of the module.

1252 2. Installation Process and Authentication Mechanisms - Describe the installation
1253 process and the cryptographic authentication mechanism(s).

1254

1255 **Notes:** None

1256

1257 **Input Method:** Template Document

1258

1259 **11.2 Administrator Guidance**

1260 Annex B Requirement Statements

1261 1. Administrator and non-Administrator Guidance - Provide the Administrator and
1262 non-Administrator guidance (may be a separate document).

1263

1264 **Notes:** None

1265

1266 **Input Method:** Template Document

1267

1268 **11.3 Non-Administrator Guidance**

1269 Annex B Requirement Statements

1270 1. Administrator and non-Administrator Guidance - Provide the Administrator and
1271 non-Administrator guidance (may be a separate document).

1272

1273 **Notes:** None

1274

1275 **Input Method:** Template Document

1276

1277 **11.4 Maintenance Requirements [O]**

1278 Annex B Requirement Statements

1279 1. Maintenance Requirements - Specify any maintenance requirements

1280

1281 **Notes:** None

1282

1283 **Input Method:** Web Cryptik

1284

1285 **11.5 End of Life [O]**

1286

1287 **Notes:** End of life procedures

1288

1289 **Input Method:** Template Document

1290

1291 **11.6 Additional Information [O]**

1292

1293 **Notes:** Additional Vendor Information

1294

1295 **Input Method:** Template Document

1296

1297 **12.0 Mitigation of other attacks**

1298

1299 **12.1 Attack List [O]**

1300 Annex B Requirement Statements

1301 1. Attack List - Specify what other attacks are mitigated.

1302

1303 **Notes:** The level of detail describing the security mechanism(s) implemented to mitigate other
1304 attacks must be similar to what is found on advertisement documentation (product glossies).

1305

1306 **Input Method:** Template Document

1307

1308 **12.2 Mitigation Effectiveness [O]**

1309 Annex B Requirement Statements

1310 1. Mitigation Effectiveness - Describe the effectiveness of the mitigation techniques
1311 listed.

1312

1313 **Notes:** None

1314

1315 **Input Method:** Template Document

1316

1317 **12.3 Guidance and Constraints [O]**

1318 Annex B Requirement Statements

1319 1. Guidance and Constraints - List security-relevant guidance and constraints.

1320

1321 **Notes:** Non-Approved Algorithms Not Allowed in the Approved Mode of Operation

1322

1323 **Input Method:** Template Document

1324

1325 **12.4 Additional Information [O]**

1326

1327 **Notes:** Additional Vendor Information

1328

1329 **Input Method:** Template Document

1330

1331 **Appendix A. Security Policy Detailed Information Description**

1332 This appendix to SP800-140B contains detailed descriptions of the tables of information
 1333 required. The columns represent information that will be entered into Web Cryptik or included in
 1334 the json file. “[O]” designates that information for the column is optional and may be left blank.
 1335 If the module doesn’t have relevant information for a required column, enter “N/A”.

1336

1337 **Operating Environments – Hardware (2.3)**

1338

1339 **Table 1. Operating Environments – Hardware**

Model/Part Number(s)	Hardware Version(s)	Firmware Version(s)	Processor(s)	Non-Security Relevant Distinguishing Features [O]

1340

1341 Notes

- 1342 • Number of rows should correspond to module count
- 1343 • Processor(s) – Needs to match processor information identified in OEs for corresponding
 1344 CAVP testing
- 1345 • Examples of distinguishing features may be ports and interfaces, memory storage devices
 1346 and sizes, field replaceable and stationary accessories (power supplies, fans), etc.

1347

1348 **Operating Environments – Software/Firmware/Hybrid (2.3)**

1349

1350 **Table 2. Operating Environments – Software/Firmware/Hybrid**

Operating System (Guest OS if Hypervisor)	Hardware Platform	Processor(s)	PAA/PAI	Hypervisor and Host OS [O]

1351

1352 Notes

- 1353 • One row for each Tested OE
- 1354 • Processor(s) – Needs to match processor information identified in OEs for corresponding
 1355 CAVP testing
- 1356 • PAA/PAI – Enter Yes or No

1357

1358 **Executable Code Sets - – Software/Firmware/Hybrid (2.3)**

1359

1360 **Table 3. Executable Code Sets - - Software/Firmware/Hybrid**

Package/File Names	Software/Firmware Version	Non-Security Relevant Distinguishing Features [O]	Hardware Version if Hybrid [O]	Integrity Test Implemented

1361

1362 Notes

- Number of rows corresponds to module count

1364

1365 **Vendor Affirmed Operating Environments (2.3)**

1366

1367 **Table 4. Vendor Affirmed Operating Environments**

Operating System	Hardware Platform

1368

1369 Notes

- No links to other tables

1371

1372 **Modes of Operation (2.5)**

1373

1374 **Table 5. Modes of Operation**

Name	Description	FIPS	Status Indicator

1375

1376 Notes

- Name – Unique name used as identifier
- Description
- FIPS (nonFIPS or FIPS)
- Status Indicator – Description of the source of the status indicator, for example from service or global indicator.
- Details related to entering and exiting the modes and/or configuration information should be included section 2.6 of the Security Policy

1384

1385 **Vendor Affirmed Algorithms (2.6)**

1386

1387

Table 6. Vendor Affirmed Algorithms

Algorithm	Algorithm Properties	OE	Reference
	Name: Value Name: Value Sub Properties: Name: Value Name: Value		

1388

1389 Notes

- 1390 • Algorithm – Selected from list of possible entries
- 1391 • Algorithm Properties – Follow the same structure that is used for Approved Algorithms
 - 1392 ○ Over time, specific properties will be identified for the possible entries
 - 1393 ○ CKG – list the type of key(s) (symmetric, asymmetric) and the specific
 - 1394 reference(s) from SP800-133r2 that applies.
- 1395 • OE – Selected from list of OEs represented by CAVP Tests
- 1396 • Reference – Describe and provide reference to justification, a publication or IG reference,
- 1397 for example.

1398

1399 **Non-Approved, Allowed Algorithms (2.6)**

1400

1401

Table 7. Non-Approved, Allowed Algorithms

Algorithm	Algorithm Properties	OE	Reference
	Name: Value Name: Value Sub Properties: Name: Value Name: Value		

1402

1403 Notes

- 1404 • Algorithm – Selected from list of possible entries
- 1405 • Algorithm Properties – Follow the same structure that is used for Approved Algorithms
 - 1406 ○ Over time, specific properties will be identified for the possible entries
- 1407 • OE – Selected from list of OEs represented by CAVP Tests
- 1408 • Reference – describe and provide reference to justification, a pub or IG reference, for
- 1409 example

1410

1411 **Non-Approved, Allowed Algorithms with No Security Claimed (2.6)**

1412

1413 **Table 8. Non-Approved, Allowed Algorithms with No Security Claimed**

Algorithm	Caveat	Use/Function

1414

1415 Notes

- 1416 • No links to other tables

1417

1418 **Non-Approved, Not Allowed Algorithms (2.6)**

1419

1420 **Table 9. Non-Approved, Not Allowed Algorithms**

Algorithm	Use/Function

1421

1422 Notes

- 1423 • No links to other tables

1424

1425 **Security Function Implementations (SFI) (2.7)**

1426

1427 **Table 10. Security Function Implementations**

Name	Type	Description	SF Properties [O]	Algorithms	Algorithm Properties
			Name: Value Name: Value Sub Properties: Name: Value Name: Value	Algo 1	Name: Value Name: Value Sub Properties: Name: Value Name: Value
				Algo 2	Name: Value Name: Value
				Algo 3	Name: Value

1428

1429 Notes

- 1430 • Column Information
 - 1431 ○ Name – a unique name that relates to the Security Function. It can be KTS1, or
 - 1432 KTS xxx
 - 1433 ○ Type – a value from the defined set of Security Functions
 - 1434 ○ Description – how this is used
 - 1435 ○ SF Properties – If there are specific properties or characteristics associated with
 - 1436 this SF implementation. This could include a reference to a specific Publication

- 1437 Section, IG, etc. This is where appropriate bit strength caveats should be included
1438 for KAS and KTS.
- 1439 ○ Algorithms – what Algorithms from the tested and allowed lists are part of the
1440 implementation. Include prerequisites.
 - 1441 ○ Algorithm Properties – If a subset of the available properties are used, specify.
 - 1442 ● What is meant by Implementations of Security Functions
 - 1443 ○ A module can (and often does) have more than one implementation for a given
1444 Security Function type
 - 1445 ■ A KTS that uses an authenticated encryption mode vs. separate encryption
1446 and authentication would both be KTS but would have two
1447 implementation entries
 - 1448 ■ A SigVer could be used for role/identity authentication and also for an
1449 integrity test
 - 1450 ■ Block Cipher could include modes for storage (XTS) or as part of a KTS
 - 1451 ■ The same algorithm could be used with different key sizes to support
1452 different sizes
 - 1453 ○ For many modules, there would likely be one SFI for a SF type.
 - 1454 ● Why these wouldn't just map directly to Services
 - 1455 ○ At times, these could map directly to services, particularly for modules like
1456 software libraries.
 - 1457 ○ Documenting in this manner will clarify which algorithms are actual services
1458 provided and which are supporting or prerequisite
 - 1459 ○ When the same category SF algorithms are used for different functions and
1460 therefore different services, there should be separate SFIs. Many modules have
1461 multiple DigSigVer implementations. For example, one for authentication during
1462 an SSH connection and one for the module startup integrity test. These should be
1463 separately defined as implementations and then mapped to different services.
 - 1464 ○ Requiring the Services to map directly to the Security Functions seems to
1465 overreach into the vendor's design of their module. The Services and
1466 corresponding level of granularity should be left to the vendor to determine.
 - 1467 ● There should only be entries for top-level functions. For example, if SHA2-256 is only
1468 used for Hash DRBG, then it shouldn't be included as a separate Secure Hash entry. And,
1469 if the DRBG is only a supporting function (for example, just a prerequisite to Symmetric
1470 Key Generation), then DRBG shouldn't be a separate entry in this table. The Services
1471 table will include the Security Function Implementations, so often that will likely
1472 determine what is a top-level entry.
 - 1473 ● All the supporting and prerequisite algorithms for that implementation would be included
1474 in the Algorithms column.
 - 1475 ● Every tested and allowed algorithm should be included somewhere in this table.

- Every SFI should be included in the Services table.

1477

1478 **Entropy Sources (2.9)**

1479

1480 **Table 11. Entropy Sources**

Name	Type	Operating Environment	Sample Size	Entropy per sample	Conditioning Components (CAVP number if vetted)

1481

1482 Notes

- Type - Physical or Non-Physical
- In the future, this information will be gathered from the ESV system

1485

1486 **Ports and Interfaces (3.1)**

1487

1488 **Table 12. Ports and Interfaces**

Physical Port	Logical Interface	Data that passes over the port/interface

1489

1490 Notes

- No links to other tables

1492

1493 **Authentication Methods (4.1)**

1494

1495 **Table 13. Authentication Methods**

Name	Description	Mechanism	Strength Each	Strength Per Minute [O]

1496

1497 Notes

- Mechanism can be module algorithm, SFI, or alternative

1499

1500 **Roles (4.2)**

1501

1502

Table 14. Roles

Name	Type	Operator Type	Authentication Methods

1503

1504 Notes

- 1505 • Type – Role, Identity, or Multi-Factor Identity
- 1506 • Operator Type – CO, Owner, or other
- 1507 • Authentication Methods selected from existing table entries

1508

1509 **Approved Services (4.3)**

1510

1511

Table 15. Approved Services

Name	Description	Indicator	Inputs	Outputs	Security Function Implementations	Roles	Roles SSP Access

1512

1513 Notes

- 1514 • Security Function Implementations - selected from existing SFI table entries
- 1515 • Roles
 - 1516 ○ selected from existing Roles table entries
 - 1517 ○ could have multiple entries
 - 1518 ○ could also be “Unauthenticated”
- 1519 • Roles SSP Access
 - 1520 ○ For each role entry, this column has entries for each SSP accessed by that role
 - 1521 using that service with the appropriate access indicators
 - 1522 ▪ Generate: The module generates or derives the SSP.
 - 1523 ▪ Read: The SSP is read from the module (e.g. the SSP is output).
 - 1524 ▪ Write: The SSP is updated, imported, or written to the module.
 - 1525 ▪ Execute: The module uses the SSP in performing a cryptographic
 - 1526 operation.
 - 1527 ▪ Zeroise: The module zeroises the SSP.
 - 1528 ○ SSPs are selected from entries in SSP Table

1529

1530 Example of the “Roles” and “Role SSP Access” columns:

1531

1532

Table 16. Role SSP Access

Name	Roles	Roles SSP Access
AES encryption	CO	AES cryptographic keys: Execute
	User	AES cryptographic keys: Execute
Configure secret information	CO	Authentication ID: Write AES cryptographic keys: Write DRBG internal state: Execute, Write
Output secret information	CO	Key seed: Read CO authentication Information: Execute
	User	Key seed: Write CO authentication Information: Write

1533

1534 **Non-Approved Services (4.4)**

1535

1536

Table 17. Non-Approved Services

Name	Description	Algorithms Accessed	Role	Indicator

1537

1538 Notes

- 1539 • Algorithms Accessed are selected from existing table (Non-Approved Algorithms)
- 1540 entries

1541

1542 **Mechanisms and Actions Required (7.1)**

1543

1544

Table 18. Mechanisms and Actions Required

Physical Security Mechanism	Recommended Frequency of Inspection/Test	Inspection/Test Guidance Details

1545

1546 Notes

- 1547 • None

1548

1549 **EFP/EFT Information (7.5)**

1550

1551

Table 19. EFP/EFT Information

	Temperature or voltage measurement	Specify EFP or EFT	Specify if this condition results in a shutdown or zeroisation
Low Temperature			

High Temperature			
Low Voltage			
High Voltage			

1552

1553 Notes

- EFP is required for modules with physical Security Level 4.

1555

1556 **Hardness Testing Temperature Ranges (7.6)**

1557

1558 **Table 20.** Hardness Testing Temperature Ranges

	Hardness tested temperature measurement
Low Temperature	
High Temperature	

1559

1560 Notes

- The module is hardness tested at the lowest and highest temperatures within the module's intended temperature range of operation

1563

1564 **Storage Areas (9.1)**

1565

1566 **Table 21.** Storage Areas

Name	Description	Persistence Type

1567

1568 Notes

- Persistence Type – Dynamic or Static
- Name should correspond to a specific item in the block diagram

1571

1572 **SSP Input-Output Methods (9.2)**

1573

1574 **Table 22.** SSP Input-Output Methods

Name	From	To	Format Type	Distribution Type	Entry Type	SFI or Algorithm [O]

1575

1576 Notes

- 1577 • Name – Unique, descriptive name
- 1578 • From/To
 - 1579 ○ Clearly indicate one as inside and the other as outside the cryptographic boundary
 - 1580 ○ Include any input/output devices
 - 1581 ○ For internal references, provide a component/structure that is clearly identified in
 - 1582 the block diagram and/or a storage area from the list
- 1583 • Format Type - Encrypted or Plaintext
- 1584 • Distribution Type – Manual, Automated, Wireless (Reference IG 9.5.A)
- 1585 • Entry Type – Direct, Electronic (Reference IG 9.5.A)
- 1586 • SFI or Algorithm – If one of these are used in the input/output action
- 1587 • Though not strictly an input/output method for modules, an entry should be made in this
- 1588 table if an SSP is pre-loaded. In that case, “From” would be manufacturer and several
- 1589 columns would be “N/A”

1590

1591 **SSP Zeroization Methods (9.3)**

1592

1593 **Table 23. SSP Zeroization Methods**

Method	Description	Rationale	Operator Initiation Capability

1594

1595 Notes

- 1596 • These would be options for the Zeroization column in the SSPs table

1597

1598 **SSPs (9.4)**

1599

1600 **Table 24. SSPs - Part 1**

Name	Description	Size	Strength	Type	Generated By	Established By

1601

1602 **Table 25. SSPs - Part 2**

Used By	Inputs/Outputs	Storage	Temporary Storage Duration [O]	Zeroization	Category	Related SSPs

1603

1604 Notes

- 1605 • Size – in bits
- 1606 • Strength – in bits
- 1607 • Type
 - 1608 ○ Symmetric Key, Public/Private, Authentication, Signature Type, etc.
 - 1609 ○ In the future there will be a specific list of options
- 1610 • Generated or Established By and Used By
 - 1611 ○ Selected from existing tables (Algorithms and/or SFI)
 - 1612 ○ Indicate if the generation is internal or external
- 1613 • Input/Output - Selected from options in Input/Output list
- 1614 • Storage
 - 1615 ○ Selected from options in Storage Areas List
 - 1616 ○ Indicate if the SSP is stored as Plaintext, Encrypted, or Obfuscated
 - 1617 ■ If encrypted, what algorithm/mechanism is used, selected from
 - 1618 tested/approved algorithms
- 1619 • Temporary Storage Duration – If the SSP is stored temporarily, enter the length of time it
- 1620 is stored. If it is not stored temporarily, leave blank.
- 1621 • Zeroization
 - 1622 ○ Selected from the zeroization table
 - 1623 ○ Multiple entries if applicable
- 1624 • Category - CSP, PSP, or Neither
- 1625 • Related SSPs
 - 1626 ○ Selected from existing list
 - 1627 ○ Indicate relationship to current SSP – “Derived From”, “Wrapped By”, “Wraps”,
 - 1628 “Paired With”, etc.

1629

1630 **Pre-Operational Self-Tests (10.1)**

1631

1632 **Table 26.** Pre-Operational Self-Tests

Algorithm	Implementation	Test Properties	Test Method	Type	Indicator	Details

1633

1634 Notes

- 1635 • Algorithm from set of tested/allowed algorithms
- 1636 • Implementation – if there are different implementations of software/firmware
- 1637 • Test Properties – the key length, signature, etc. used for the test
- 1638 • Test Method – KAT, PCT, etc.
- 1639 • Type – Software/Firmware Integrity, Bypass, Critical Functions.
- 1640 • Indicator – the indicator that the test has been run
- 1641 • Details – Encrypt, Decrypt, Sign, Verify
- 1642 • Any relevant information related to the different implementations should be included in
- 1643 the “Notes” section following the table.

1644

1645

1646 **Conditional Self-Tests (10.2)**

1647

1648

Table 27. Conditional Self-Tests

Algorithm	Implementation	Test Properties	Test Method	Type	Indicator	Details	Condition

1649

1650 Notes

- 1651 • Algorithm from set of tested/allowed algorithms
- 1652 • Implementation – if there are different implementations of software/firmware
- 1653 • Test Properties – the key length, signature, etc. used for the test
- 1654 • Test Method – KAT, PCT, etc.
- 1655 • Type – CAST, PCT, Software/Firmware Load, Manual Entry, Bypass, Critical Functions
- 1656 • Indicator – the indicator that the test has been run
- 1657 • Details – Encrypt, Decrypt, Sign, Verify
- 1658 • Condition – under what condition is the test run
- 1659 • Any relevant information related to the different implementations should be included in
- 1660 the “Notes” section following the table.

1661

1662 The following two items are included with the tables from 10.1 and 10.2

1663

1664

Table 28. Periodic Information

Period	Periodic Method

1665

1666 Notes

- 1667 • Period – how often the periodic test is run
- 1668 • Periodic Method – how the periodic test is run, such as manually, programmatically, etc.

1669

1670 **Error States (10.3)**

1671

1672

Table 29. Error States

State Name	Description	Conditions	Recovery Method	Indicator

1673

1674 Notes

- 1675 • No links to other tables

1676

1677 **Appendix B. Document Revisions**

Edition	Date	Change
Revision 1 (r1)	[date]	This revision introduces four significant changes to SP 800-140B: <ol style="list-style-type: none"> 1. Defines a more detailed structure and organization for the Security Policy 2. Captures Security Policy requirements that are defined outside of ISO/IEC 19790 and ISO/IEC 24759 3. Builds the Security Policy document as a combination of the subsection information 4. Generates the approved algorithm table based on lab/vendor selections from the algorithm tests

1678

1679 In October 2022, the following changes were made to the document for the second public draft:

- 1680
- 1681
- 1682 • Section 6.1 – Included additional changes to ISO/IEC 19790 Annex B requirements in the following sub-sections:
 - 1683 ○ B.2.2 Cryptographic module specification – added TOEPP description
 - 1684 ○ B.2.9 Sensitive security parameters management – updated SSP wording and specified SSP storage techniques.
 - 1685 • Section 6.2 – Removed references to security policy requirements included in Implementation Guidance. These will be identified and tracked separately.
 - 1686
 - 1687 • Section 6.3
 - 1688 ○ Simplified security policy document structure by combining and reordering subsections.
 - 1689
 - 1690 ○ Changed input method for rich text sections of the security policy from entering subsections separately in Web Cryptik to including them directly in a template document.
 - 1691
 - 1692
 - 1693 ○ Indicated which subsections and columns are optional
 - 1694 ○ Removed Implementation Guidance requirements specifications (see item above). Note that these requirements remain applicable but will be identified and tracked separately.
 - 1695
 - 1696
 - 1697 ○ Added tables to Appendix A
 - 1698 ▪ Executable Code Sets – Software/Firmware/Hybrid (2.3)
 - 1699 ▪ Modes of Operation (2.5)
 - 1700 ○ Changed tables in Appendix A
 - 1701 ▪ Operating Environments – Hardware (2.3)
 - 1702 ▪ Operating Environments – Software/Firmware/Hybrid (2.3)
 - 1703 ▪ Entropy Sources (2.9)

- 1704 ▪ SSPs (9.4)
- 1705 ▪ Pre-Operational Self-Tests (10.1)
- 1706 ▪ Conditional Self-Tests (10.2)
- 1707 ▪ Error States (10.3)