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# Biometric Device Specifications

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# Biometric Device Specifications

## General Considerations:

- i) The device(s) must be **MOSIP SBI 1.0** Compliant
- ii) The vendor must provide Registration client side MDS for the devices to work in MOSIP ecosystem.
- iii) All devices should work **without** a device management server.

## Biometric Registration Kit Specifications

#	Item	Short Description
1	<b>Laptop/ Computer</b>	<ul style="list-style-type: none"> <li>● Intel Core i5 11th generation equivalent or above, 16GB DDR4 3200MHz RAM, 512GB SSD (M.2 PCIe) Storage or better specifications</li> <li>● With Windows 11 Home license, 64-bit, English or better specifications</li> <li>● Screen size should be between 14” and 15.6” inch</li> <li>● Hardware based- Anti-Theft Lock</li> <li>● Inbuilt touchpad and Qwerty Keyboard</li> <li>● External wired USB mouse</li> <li>● External wired QWERTY Keyboard with size not more than the size of inbuilt keyboard.</li> <li>● Minimum 2 (two) USB 3.0 ports and 1 (one) USB 2.0 or higher ports should be provided. Additional connector/hub to be provided to connect all the components, as required.</li> <li>● Speakers are not mandatory</li> <li>● Wi-Fi (IEEE 802.11 b/g/n) and Ethernet RJ45 connectivity (both embedded)</li> <li>● <b>Built-in Trusted Platform Module (TPM 2)</b></li> <li>● 8 hours battery life of the inbuilt battery of the laptop.</li> <li>● Pre-Installed Anti-Virus/ Malware software with latest updates &amp; ability to update virus definitions. 3 years of license from date of installation &amp; operationalisation of registration kits.</li> <li>● A secondary screen:               <ul style="list-style-type: none"> <li>○ Connected to laptop as an accessory to allow the registrant to see his/her information</li> <li>○ Detachable, adjustable, 16:9 aspect ratio, 1080p, full Colored HD</li> <li>○ Screen size between 10” and 14”</li> </ul> </li> </ul>
2	<b>Fingerprint Scanner</b>	<ul style="list-style-type: none"> <li>● 4+4+2 model</li> <li>● Compliant with specifications mentioned in <a href="#">Fingerprint Scanner Specifications</a> below</li> <li>● <b>USB 2.0</b> or above is acceptable for the fingerprint scanner.</li> </ul>
3	<b>IRIS Scanner</b>	<ul style="list-style-type: none"> <li>● Simultaneous dual Capture</li> <li>● Eye Reversible Protection (Firmware level)</li> <li>● Binocular device</li> <li>● Pluggable device with no requirement of unplugging when placed in the carrying case</li> <li>● Compliant with specifications mentioned in <a href="#">Iris Scanner Specifications</a> below</li> </ul>

4	<b>Photo Camera with LED</b>	<ul style="list-style-type: none"> <li>● HD 1080p Photo and Video Quality with USB connectivity</li> <li>● An LED setup with reflections, shadows and one that makes the face look flat should be avoided Must be a separate pluggable device.</li> <li>● Compliant with specifications mentioned in <a href="#">Face Capture Scanner Specifications</a> below</li> </ul>
5	<b>Backdrop Screen</b>	<ul style="list-style-type: none"> <li>● Wrinkle-free, durable fabric, and washable with adjustable stand and/or attachable to a chair/wall to act as background for taking face photograph</li> <li>● 80 cm (width) x 120 cm (height), rectangular, circular or oval in the shape</li> <li>● Colour must be either white or light grey usable for indoor and outdoor use</li> <li>● Foldable.</li> <li>● If it fits inside the carrying case, it is a plus</li> </ul>
6	<b>Portable Document Scanner</b>	<ul style="list-style-type: none"> <li>● Resolution <math>\geq 5</math>MP and <math>\geq 600</math> dpi</li> <li>● High Definition – Autofocus capability</li> <li>● Scan documents up to A4 size a</li> <li>● Engraved Guiding markings on the document holder to facilitate proper scanning</li> <li>● LED flashlight integrated with the scanner</li> <li>● USB 2.0 or higher</li> <li>● Scan speed should be less than one (1) second</li> <li>● Compatible with the operating system of the computer</li> </ul>
7	<b>Portable Monochrome Printer</b>	<ul style="list-style-type: none"> <li>● Monochrome</li> <li>● Printing Speed ISO/IEC 24734 for thermal paper, not mandatory</li> <li>● USB 2.0 or higher.</li> <li>● A6 rolled thermal paper printer</li> <li>● Minimum 8 pages per minute (ppm)</li> <li>● Compatible with the operating system of the computer</li> </ul>
8	<b>MOSIP Compliance</b>	<ul style="list-style-type: none"> <li>● Devices must be compliant with MOSIP SBI 1.0 specifications.</li> </ul>

## Fingerprint Scanner Specifications

#	Factor	Specification
1	<b>Image Specification</b>	FBI Appendix F Certified; and Compliant with ISO/IEC 19794-4:2011;
2	<b>Minimum Resolution</b>	$\geq 500$ native DPI. Higher densities are preferred.
3	<b>Minimum Active Platen Area or Capture area*</b>	FAP 60 $\geq (76\text{mm} \times 80\text{mm})$
4	<b>Greyscale Density</b>	8 bits (256 grey levels)

5	<b>Image Format</b>	JPEG 2000 Lossless
6	<b>Compression Ratio</b>	Lossless
7	<b>Quality Score</b>	NFIQ v2.0
8	<b>Capture Mode</b>	Live auto capture with built-in quality check (NFIQ – NIST Fingerprint Image Quality) Slap segmentation and sequence detection Automatic left-right hand and two-thumb-detection Liveness detection Embedded capture quality feedback indicator lights are a plus
9	<b>Preview</b>	> 3 FPS M-JPEG frames with NFIQ 2.0 score superimposed
10	<b>ESD</b>	>= 8kv
11	<b>EMC Compliance</b>	FCC class A or equivalent
12	<b>Operating Temperature</b>	0 to 50 °C
13	<b>FTM</b>	<a href="#">SBI CL 1.0</a>
14	<b>Connectivity</b>	USB 2.0 or above
15	<b>Power</b>	USB
16	<b>Software API</b>	Compliant with the OS, registration client application to handle device discovery, streaming and capture, and with MOSIP Specification version v0.9.5
17	<b>Durability/ Shock</b>	IP 65
18	<b>Humidity</b>	10-90% non-condensing

## Iris Scanner Specifications

#	Item	Specification
1	<b>Image Specification</b>	Standards: Compliant ANSI NIST and ISO image interchange format ISO/IEC 19794-6 (output iris image) ISO/IEC 29794-6 (quality of the image) FCC Class A or FCC class B RoHS Exempt Group as per IEC 62471:2006-07 (eye safety)
2	<b>Minimum Iris Diameter</b>	>=210 pixels

3	<b>Greyscale Density</b>	8 bits (256 grey levels) minimum
4	<b>Spatial Resolution</b>	>=60% @ 2Lp/mm
5	<b>Pixel Resolution</b>	>10 pixels/mm
6	<b>Capture Distance</b>	>=10CM
7	<b>Imaging Wavelength</b>	Approximately 700-900 nm
8	<b>Illumination</b>	The eye should be illuminated using infrared or any other source that could produce high-quality grayscale image
9	<b>Image Format</b>	IMAGE_TYPE_VGA (K2) OR IMAGE_TYPE_CROPPED (K3)
10	<b>Compression</b>	JPEG 2000 Lossless
11	<b>Compression Ratio</b>	Lossless
12	<b>Aspect Ratio</b>	1:1
13	<b>Capture Mode</b>	Live auto capture with configurable and built-in quality check (incorporates NIST quality considerations) Liveness detection Detect left eyes from right Embedded capture quality feedback indicator lights are a plus
14	<b>Scan Type</b>	Progressive
15	<b>Preview</b>	>= 3 FPS M-JPEG frames with quality score superimposed
16	<b>EMC compliance</b>	FCC Class A or equivalent
17	<b>Operating Temperature*</b>	0 to 50 °C
18	<b>FTM</b>	<a href="#">SBI CL 1.0</a>
19	<b>Number of Simultaneous Captured Eyes</b>	2 (two)
21	<b>Connectivity</b>	USB 2.0 or higher
22	<b>Durability/ Shock</b>	IP 65
23	<b>Humidity</b>	10-90% non-condensing
24	<b>Software API</b>	Compliant with the OS, registration client application to handle device discovery, streaming and capture, and with MOSIP Specification version v0.9.5

## **Face Capture Scanner Specification**

#	Factor	Registration Device Specification
1	<b>Image Specification</b>	ISO/IEC 19794-5:2011

2	<b>Camera Specification</b>	1080p with 90 degree FoV or above
3	<b>Skin Tone</b>	Should be able to capture face of <b>ALL</b> skin tones.
4	<b>Exception Image Specification</b>	Full Frontal with FACE features, two palms next to the face, waist up photo. 60mm(width) X 40mm(height)
5	<b>Image quality</b>	Full Frontal (0x01) as per ISO/IEC 19794-5 in jpeg2000 lossless format and compliant with ICAO 9303 standards
6	<b>Image format</b>	JPEG 2000 Lossless
7	<b>Compression Ratio</b>	Lossless
8	<b>EMC compliance</b>	FCC Class A or equivalent
9	<b>Operation Temperature*</b>	0 to 50 °C
10	<b>FTM</b>	<a href="#">SBI CL 1.0</a>
11	<b>Capture Mode</b>	<ul style="list-style-type: none"> <li>● Plain live capture</li> <li>● Auto capture with autofocus and auto lighting adjustment</li> <li>● Smile, Eye glass, mask and other facial features detection</li> <li>● Automatic image cropping as per configured dimensions</li> <li>● Capture quality feedback indicator</li> </ul>
12	<b>Connectivity</b>	USB 2.0 or higher
13	<b>Power</b>	USB
14	<b>Mounting</b>	With adjustable stand for various height
15	<b>Durability/ Shock</b>	IP 54, but a better IP rating is always a plus.
16	<b>Software API</b>	Compliant with the OS, registration client application to handle device discovery, streaming and capture, and with MOSIP Specification version v0.9.5