

TABLE V  
SINGLE BIOMETRICS WITH THEIR ROBUSTNESS ASSESSMENT.

		Spooling Attacks $\alpha$	$\mathcal{R}(\beta, \alpha)$	$\mathcal{R}(\beta, \mathcal{A})$
Biometrics $\beta$	Body Odor	Stolen clothes [25]	0.5227	0.0792
		Masking sensors [25]	0.0792	
	Breath Recognition	Impersonation [12]	0.8093	0.8093
		Replay [12]	0.8982	
	DNA	Biological Twin [57]	0.647	0.2535
		Stolen hair [7]	0.2535	
		Stolen blood trace [7]	0.9759	
		Stolen nail fragment [7]	0.9789	
		Stolen saliva sample [7]	0.3656	
	Ear - Canal Echo	3-D model [24]	0.5759	0.5759
	Ear - Shape	2-D print [28]	0.0971	0.0971
		3-D model [28]	0.1946	
	ECG	Replay [18]	0.9309	0.31
		Full-fledge [30]	0.31	
	Eye - Iris	2-D print [2]	0.2098	0.2094
		2-D video [2]	0.21	
		Contact lens [2]	0.2094	
		3-D model [2]	0.2094	
	Eye - Retina	X	1	1
	Eye - Sclera Vein	X	1	1
	Face	2-D Print [19]	0.0884	0.0852
		2-D Video-Replay [19]	0.1770	
		3-D model [19]	0.2649	
		Makeup [33]	0.0852	
	Finger - Contactless	2-D print [43]	0.1025	0.1025
		3-D model [43]	0.1041	
	Finger - Geometry	2-D print [13]	0.2113	0.2111
		2-D video [13]	0.2111	
		3-D model [13]	0.2115	
	Fingerprint	2-D print [54]	0.0986	0.0984
		3-D model [54]	0.0987	
		Plastic film [54]	0.0984	
	Finger - Vein	2-D print [64]	0.6292	0.6292
	Handwriting	Impersonation [26]	0.2847	0.2847
	Hand - Geometry	2-D print [13]	0.2147	0.2146
		2-D video [13]	0.2146	
		3-D model [13]	0.215	
	Keystroke	Impersonation [32]	0.2873	0.2873
	Lips Motion	Impersonation [67]	0.1972	0.1972
		Replay [67]	0.2952	
	Palm - Print	2-D print [20]	0.0107	0.0107
	Palm - Vein	2-D print [63]	0.6233	0.6233
	Skin Reflectivity	2-D print [61]	0.8778	0.8679
		2-D video [61]	0.8778	
		3-D model [61]	0.8873	
		Impersonation [61]	0.8679	
	Stylometry	Impersonation [17]	0.4967	0.4967
	Teeth Shape	2-D print [29]	0.0533	0.0533
		2-D video [29]	0.3539	
		3-D model [29]	0.5291	
	Thermography	2-D print [34]	0.5247	0.5236
		3-D model [34]	0.5236	
	Vocal Resonance	Impersonation [37]	0.3105	0.3105
		Replay [37]	0.8621	
	Voice	Impersonation [35]	0.3527	0.3527
		Replay [69]	0.3801	
		Synthesis [31]	0.3788	
		Spectral Conversion [62]	0.3788	
	Walk	Impersonation [22]	0.5644	0.5644