

	A	B	C	D	E	F	G
1	Calculations for Non-Detection Probability of Tampering, In a Constituency With 300 Voting Booths (With One EVM - VVPAT Pair In Each Booth, When VVPAT Counts Are Cross Checked With EVM Counts) (This is "Source Excel File-300 Booths" or "SEF-300 booths", Sheet-10) (Revised By Dr Ramesh Bellamkonda, 2019-02-10)						
2	No. of booths in constituency =		300	Assumed No of Booths Tampered =		10	
3	Random Cross Check No. (for VVPAT-EVM Counts)	Total No. of EVM-VVPAT Pairs in the pool that are yet to be cross checked	Absolute no. of EVMS Assumed to be tampered in the constituency	Absolute no. of non-tampered EVMS that remain, given that no tampered EVMS detected thus far	Probability of not detecting tampering of any EVM, in the particular random cross check of VVPAT-EVM counts	Probability of not detecting tampering of any EVM, in the cumulative random cross checks of VVPAT-EVM counts, till that point	Probability of not detecting tampering of any EVM, in the cumulative random cross checks of VVPAT-EVM counts, till that point, % age
4	1	300	10	290	0.966666667	0.966666667	96.67%
5	2	299	10	289	0.966555184	0.934336678	93.43%
6	3	298	10	288	0.966442953	0.902983098	90.30%
7	4	297	10	287	0.966329966	0.872579627	87.26%
8	5	296	10	286	0.966216216	0.843100585	84.31%
9	6	295	10	285	0.966101695	0.814520904	81.45%
10	7	294	10	284	0.965986395	0.786816112	78.68%
11	8	293	10	283	0.965870307	0.75996232	76.00%
12	9	292	10	282	0.965753425	0.733936213	73.39%
13	10	291	10	281	0.965635739	0.708715037	70.87%
14	11	290	10	280	0.965517241	0.684276587	68.43%
15	12	289	10	279	0.965397924	0.660599197	66.06%
16	13	288	10	278	0.965277778	0.637661725	63.77%
17	14	287	10	277	0.965156794	0.615443546	61.54%
18	15	286	10	276	0.965034965	0.593924541	59.39%
19	16	285	10	275	0.964912281	0.573085084	57.31%
20	17	284	10	274	0.964788732	0.552906031	55.29%
21	18	283	10	273	0.964664311	0.533368716	53.34%
22	19	282	10	272	0.964539007	0.514454931	51.45%
23	20	281	10	271	0.964412811	0.496146927	49.61%
24	21	280	10	270	0.964285714	0.478427394	47.84%
25	22	279	10	269	0.964157706	0.461279458	46.13%
26	23	278	10	268	0.964028777	0.444686672	44.47%
27	24	277	10	267	0.963898917	0.428633002	42.86%
28	25	276	10	266	0.963768116	0.41310282	41.31%
29	26	275	10	265	0.963636364	0.3980809	39.81%
30	27	274	10	264	0.96350365	0.3835524	38.36%
31	28	273	10	263	0.963369963	0.369502861	36.95%
32	29	272	10	262	0.963235294	0.355918197	35.59%
33	30	271	10	261	0.963099631	0.342784684	34.28%
34	31	270	10	260	0.962962963	0.330088955	33.01%
35	32	269	10	259	0.962825279	0.31781799	31.78%
36	33	268	10	258	0.962686567	0.30595911	30.60%
37	34	267	10	257	0.962546816	0.294499968	29.45%
38	35	266	10	256	0.962406015	0.28342854	28.34%
39	36	265	10	255	0.962264151	0.272733124	27.27%
40	37	264	10	254	0.962121212	0.262402323	26.24%
41	38	263	10	253	0.961977186	0.252425049	25.24%
42	39	262	10	252	0.961832061	0.242790505	24.28%
43	40	261	10	251	0.961685824	0.233488187	23.35%
44	41	260	10	250	0.961538462	0.224507872	22.45%
45	42	259	10	249	0.961389961	0.215839614	21.58%
46	43	258	10	248	0.96124031	0.207473738	20.75%
47	44	257	10	247	0.961089494	0.19940083	19.94%
48	45	256	10	246	0.9609375	0.191611735	19.16%
49	46	255	10	245	0.960784314	0.184097549	18.41%
50	47	254	10	244	0.960629921	0.176849614	17.68%
51	48	253	10	243	0.960474308	0.169859511	16.99%
52	49	252	10	242	0.96031746	0.163119054	16.31%
53	50	251	10	241	0.960159363	0.156620287	15.66%
54	51	250	10	240	0.96	0.150355475	15.04%
55	52	249	10	239	0.959839357	0.144317103	14.43%
56	53	248	10	238	0.959677419	0.138497865	13.85%
57	54	247	10	237	0.95951417	0.132890664	13.29%
58	55	246	10	236	0.959349593	0.127488604	12.75%
59	56	245	10	235	0.959183673	0.122284988	12.23%
60	57	244	10	234	0.959016393	0.117273308	11.73%
61	58	243	10	233	0.958847737	0.112447246	11.24%
62	59	242	10	232	0.958677686	0.107800666	10.78%
63	60	241	10	231	0.958506224	0.103327609	10.33%
64	61	240	10	230	0.958333333	0.099022292	9.90%
65	62	239	10	229	0.958158996	0.0948791	9.49%
66	63	238	10	228	0.957983193	0.090892583	9.09%
67	64	237	10	227	0.957805907	0.087057453	8.71%

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1	No. of booths in constituency =		300	Assumed No of Booths Tampered =		10	
2	Random Cross Check No. (for VVPAT-EVM Counts)	Total No. of EVM-VVPAT Pairs in the pool that are yet to be cross checked	Absolute no. of EVMs Assumed to be tampered in the constituency	Absolute no. of non-tampered EVMs that remain, given that no tampered EVMs detected thus far	Probability of not detecting tampering of any EVM, in the particular random cross check of VVPAT-EVM counts	Probability of not detecting tampering of any EVM, in the cumulative random cross checks of VVPAT-EVM counts, till that point	Probability of not detecting tampering of any EVM, in the cumulative random cross checks of VVPAT-EVM counts, till that point, % age
3							
68	65	236	10	226	0.957627119	0.083368578	8.34%
69	66	235	10	225	0.957446809	0.079820979	7.98%
70	67	234	10	224	0.957264957	0.076409826	7.64%
71	68	233	10	223	0.957081545	0.073130434	7.31%
72	69	232	10	222	0.956896552	0.06997826	7.00%
73	70	231	10	221	0.956709957	0.066948898	6.69%
74	71	230	10	220	0.956521739	0.064038077	6.40%
75	72	229	10	219	0.956331878	0.061241654	6.12%
76	73	228	10	218	0.956140351	0.058555617	5.86%
77	74	227	10	217	0.955947137	0.055976074	5.60%
78	75	226	10	216	0.955752212	0.053499257	5.35%
79	76	225	10	215	0.955555556	0.051121512	5.11%
80	77	224	10	214	0.955357143	0.048839302	4.88%
81	78	223	10	213	0.955156951	0.046649198	4.66%
82	79	222	10	212	0.954954955	0.044547883	4.45%
83	80	221	10	211	0.954751131	0.042532142	4.25%
84	81	220	10	210	0.954545455	0.040598863	4.06%
85	82	219	10	209	0.9543379	0.038745033	3.87%
86	83	218	10	208	0.95412844	0.036967738	3.70%
87	84	217	10	207	0.953917051	0.035264156	3.53%
88	85	216	10	206	0.953703704	0.033631556	3.36%
89	86	215	10	205	0.953488372	0.032067298	3.21%
90	87	214	10	204	0.953271028	0.030568826	3.06%
91	88	213	10	203	0.953051643	0.02913367	2.91%
92	89	212	10	202	0.952830189	0.02775944	2.78%
93	90	211	10	201	0.952606635	0.026443827	2.64%
94	91	210	10	200	0.952380952	0.025184597	2.52%
95	92	209	10	199	0.95215311	0.023979592	2.40%
96	93	208	10	198	0.951923077	0.022826727	2.28%
97	94	207	10	197	0.951690821	0.021723987	2.17%
98	95	206	10	196	0.951456311	0.020669424	2.07%
99	96	205	10	195	0.951219512	0.01966116	1.97%
100	97	204	10	194	0.950980392	0.018697377	1.87%
101	98	203	10	193	0.950738916	0.017776324	1.78%
102	99	202	10	192	0.95049505	0.016896308	1.69%
103	100	201	10	191	0.950248756	0.016055696	1.61%
104	101	200	10	190	0.95	0.015252911	1.53%
105	102	199	10	189	0.949748744	0.014486433	1.45%
106	103	198	10	188	0.949494949	0.013754795	1.38%
107	104	197	10	187	0.949238579	0.013056582	1.31%
108	105	196	10	186	0.948979592	0.01239043	1.24%
109	106	195	10	185	0.948717949	0.011755023	1.18%
110	107	194	10	184	0.948453608	0.011149094	1.11%
111	108	193	10	183	0.948186528	0.010571421	1.06%
112	109	192	10	182	0.947916667	0.010020826	1.00%
113	110	191	10	181	0.947643979	0.009496176	0.95%
114	111	190	10	180	0.947368421	0.008996377	0.90%
115	112	189	10	179	0.947089947	0.008520378	0.85%
116	113	188	10	178	0.946808511	0.008067166	0.81%
117	114	187	10	177	0.946524064	0.007635767	0.76%
118	115	186	10	176	0.946236559	0.007225242	0.72%
119	116	185	10	175	0.945945946	0.006834688	0.68%
120	117	184	10	174	0.945652174	0.006463238	0.65%
121	118	183	10	173	0.945355191	0.006110056	0.61%
122	119	182	10	172	0.945054945	0.005774338	0.58%
123	120	181	10	171	0.944751381	0.005455314	0.55%
124	121	180	10	170	0.944444444	0.005152241	0.52%
125	122	179	10	169	0.944134078	0.004864406	0.49%
126	123	178	10	168	0.943820225	0.004591125	0.46%
127	124	177	10	167	0.943502825	0.004331739	0.43%
128	125	176	10	166	0.943181818	0.004085618	0.41%
129	126	175	10	165	0.942857143	0.003852154	0.39%
130	127	174	10	164	0.942528736	0.003630766	0.36%
131	128	173	10	163	0.942196532	0.003420895	0.34%

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132	129	172	10	162	0.941860465	0.003222006	0.32%
133	130	171	10	161	0.941520468	0.003033584	0.30%
134	131	170	10	160	0.941176471	0.002855138	0.29%
135	132	169	10	159	0.940828402	0.002686195	0.27%
136	133	168	10	158	0.94047619	0.002526303	0.25%
137	134	167	10	157	0.94011976	0.002375027	0.24%
138	135	166	10	156	0.939759036	0.002231953	0.22%
139	136	165	10	155	0.939393939	0.002096683	0.21%
140	137	164	10	154	0.93902439	0.001968837	0.20%
141	138	163	10	153	0.938650307	0.001848049	0.18%
142	139	162	10	152	0.938271605	0.001733972	0.17%
143	140	161	10	151	0.937888199	0.001626272	0.16%
144	141	160	10	150	0.9375	0.00152463	0.15%
145	142	159	10	149	0.937106918	0.001428741	0.14%
146	143	158	10	148	0.936708861	0.001338315	0.13%
147	144	157	10	147	0.936305732	0.001253072	0.13%
148	145	156	10	146	0.935897436	0.001172746	0.12%
149	146	155	10	145	0.935483871	0.001097085	0.11%
150	147	154	10	144	0.935064935	0.001025846	0.10%
151	148	153	10	143	0.934640523	0.000958797	0.10%
152							
153	Percent of Booths that will need to be cross checked to detect any tampering of EVMS with 99.9% Probability = (A151/C2) =						49.33%