# ENCRYPTION METRICS

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_ApplyEyeMakeup\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | -0.0142134666 | -0.0203943742 | | -0.0478492115 | 7.9974802710 | 7.9974899309 | 7.9976805874 | 7.9991420192 | 99.5720486111 | 33.2607060185 |
| **2** | 0.0009716324 | 0.0504127869 | | 0.0007531266 | 7.9977716794 | 7.9975604033 | 7.9976472979 | 7.9992499366 | 99.5850694444 | 33.2124523420 |
| **3** | -0.0044720125 | 0.0279081551 | | -0.0590885225 | 7.9973931178 | 7.9952668142 | 7.9973458651 | 7.9985774990 | 99.6072048611 | 33.1689457380 |
| **4** | -0.0361486557 | -0.0181227150 | | 0.0770428560 | 7.9974059331 | 7.9971336937 | 7.9977051828 | 7.9989889856 | 99.6019965278 | 33.2958350354 |
| **5** | -0.0315744938 | -0.0050155239 | | 0.0380108173 | 7.9974469683 | 7.9970639326 | 7.9976524409 | 7.9990706871 | 99.6202256944 | 33.2056917211 |
| **6** | -0.0047867529 | -0.0075756055 | | 0.0224065987 | 7.9975399487 | 7.9972949757 | 7.9978752184 | 7.9992914108 | 99.6289062500 | 33.0320738017 |
| **7** | 0.2227671961 | -0.3013562894 | | -0.1300906108 | 7.8295467711 | 7.5912444742 | 7.8323457177 | 7.7745899931 | 99.5989583333 | 32.9549087691 |
| **8** | -0.0149931511 | -0.0163771772 | | 0.0399698556 | 7.9972900061 | 7.9964358870 | 7.9977557619 | 7.9988204453 | 99.5768229167 | 33.1830541939 |
| **9** | -0.0454331516 | -0.0218905316 | | 0.0120948692 | 7.9973675350 | 7.9975940804 | 7.9976426598 | 7.9992365239 | 99.6050347222 | 33.2199720861 |
| **10** | 0.0040321383 | -0.0056660171 | | 0.0192372231 | 7.9976560614 | 7.9977569407 | 7.9974939371 | 7.9992079011 | 99.6284722222 | 33.1760127315 |
| **11** | 0.0114615492 | 0.0399418177 | | -0.0020354561 | 7.9976563005 | 7.9971345080 | 7.9975702177 | 7.9991161290 | 99.6085069444 | 33.2260586874 |
| **12** | 0.0001923085 | -0.0162786638 | | -0.0010500064 | 7.9977457023 | 7.9968983692 | 7.9978486689 | 7.9990722212 | 99.6050347222 | 33.2114430147 |
| **13** | -0.0146749261 | 0.0260499527 | | -0.0114191094 | 7.9975433649 | 7.9978370500 | 7.9970665084 | 7.9990986779 | 99.6037326389 | 33.2202648420 |
| **14** | 0.0113632533 | 0.0124508241 | | -0.0179613231 | 7.9976971269 | 7.9970868877 | 7.9975647101 | 7.9989990922 | 99.6080729167 | 33.1746919254 |
| **15** | -0.0050994033 | -0.0376752253 | | -0.0487380969 | 7.9974635359 | 7.9972156091 | 7.9975637331 | 7.9992168602 | 99.6250000000 | 33.2207482298 |
| **16** | 0.0060063881 | 0.0358012030 | | -0.0163570141 | 7.9974648867 | 7.9974659369 | 7.9978087938 | 7.9991323001 | 99.6041666667 | 33.1587094907 |
| **17** | 0.0328309873 | 0.0130029785 | | 0.0043689112 | 7.9977804022 | 7.9974338376 | 7.9970549430 | 7.9991741641 | 99.6184895833 | 33.2242868328 |
| **18** | -0.0150476480 | -0.0121236755 | | -0.0367454902 | 7.9977349532 | 7.9970762232 | 7.9973345478 | 7.9990010588 | 99.5807291667 | 33.2500136166 |
| **19** | -0.0034285386 | -0.0171295042 | | -0.0037524246 | 7.9972652035 | 7.9970766287 | 7.9976361074 | 7.9991200041 | 99.6111111111 | 33.1114021650 |
| **20** | -0.0139164150 | 0.0010325372 | | -0.0433982950 | 7.9975810521 | 7.9960750699 | 7.9974079643 | 7.9984829138 | 99.6223958333 | 33.2139263344 |
| **21** | 0.0211118779 | -0.0048776192 | | 0.0011327648 | 7.9973644387 | 7.9974872674 | 7.9974073374 | 7.9990060821 | 99.5963541667 | 33.1407186138 |
| **22** | -0.0094585498 | -0.0250132257 | | 0.0207335317 | 7.9978965359 | 7.9966371471 | 7.9975226042 | 7.9989256240 | 99.6111111111 | 33.2064116966 |
| **23** | 0.0244183799 | -0.0012818578 | | -0.0117167986 | 7.9974063718 | 7.9973041344 | 7.9974450920 | 7.9990171006 | 99.6193576389 | 33.3014688862 |
| **24** | -0.0400235516 | -0.0013652291 | | -0.0158252016 | 7.9976201709 | 7.9974077492 | 7.9970351180 | 7.9990448165 | 99.6037326389 | 33.2048764297 |
| **25** | -0.1851389897 | 0.2351720010 | | -0.2235198329 | 7.7144755646 | 7.4117365728 | 7.7271466951 | 7.6500652534 | 99.6302083333 | 31.9788977397 |
| **26** | 0.4004371644 | -0.5708483302 | | -0.0996015188 | 7.7986580054 | 7.5409142875 | 7.8199110433 | 7.7507527091 | 99.5941840278 | 34.3951559096 |
| **27** | 0.0004163816 | 0.0154826903 | | -0.0028408567 | 7.9970364684 | 7.9974229439 | 7.9977807818 | 7.9989667405 | 99.5898437500 | 33.2054347086 |
| **28** | -0.0035275707 | -0.0198647552 | | 0.0141796995 | 7.9974257490 | 7.9973737155 | 7.9978276997 | 7.9989957558 | 99.6176215278 | 33.2030824483 |
| **29** | -0.0026493412 | -0.0154339406 | | -0.0380071635 | 7.9971862423 | 7.9957160604 | 7.9975052413 | 7.9985417694 | 99.5872395833 | 33.2950725082 |
| **30** | -0.0020011692 | 0.0037109954 | | -0.0617267761 | 7.9976478530 | 7.9973512565 | 7.9973293465 | 7.9990147802 | 99.6171875000 | 33.1712145969 |
| **31** | -0.0307315388 | 0.0133055464 | | -0.0462025585 | 7.9971728568 | 7.9974542028 | 7.9974787810 | 7.9990390983 | 99.6085069444 | 33.2171364379 |
| **32** | -0.0087909237 | -0.0002094322 | | -0.0368230033 | 7.9973230794 | 7.9964968610 | 7.9976964556 | 7.9988792142 | 99.6241319444 | 33.1863647195 |
| **33** | 0.0077138315 | 0.0281852316 | | -0.0475870018 | 7.9976412685 | 7.9960532022 | 7.9969722344 | 7.9984955061 | 99.6085069444 | 33.2014859069 |
| **34** | 0.0189116961 | -0.0035479983 | | -0.0060271401 | 7.9975991405 | 7.9973531025 | 7.9976123484 | 7.9990914036 | 99.6440972222 | 33.2021429058 |
| **35** | 0.0237225952 | 0.0271844132 | | 0.0309799917 | 7.9976263037 | 7.9963159740 | 7.9968365345 | 7.9987697058 | 99.6041666667 | 33.2136540033 |
| **36** | 0.0174829591 | -0.0116692846 | | 0.0482099228 | 7.9973392670 | 7.9967575800 | 7.9974995342 | 7.9989548828 | 99.6180555556 | 33.2345366966 |
| **37** | -0.0016729212 | 0.0179215234 | | -0.0330608234 | 7.9975380936 | 7.9969953634 | 7.9976169051 | 7.9989274863 | 99.6197916667 | 33.3095979711 |
| **38** | -0.0255802321 | -0.0273019666 | | 0.0119955555 | 7.9972829525 | 7.9975563290 | 7.9977420321 | 7.9991025279 | 99.6098090278 | 33.2775582108 |
| **39** | -0.0060669903 | -0.0419536766 | | 0.0583872677 | 7.9971706207 | 7.9965892686 | 7.9975072963 | 7.9987559906 | 99.5959201389 | 33.1752723312 |
| **40** | -0.0011852505 | -0.0057825683 | | -0.0185529639 | 7.9971477603 | 7.9971841531 | 7.9972963576 | 7.9989671898 | 99.6089409722 | 33.2335682190 |
| **41** | -0.0169326526 | -0.0267689474 | | 0.0578328546 | 7.9977870306 | 7.9971861330 | 7.9976580019 | 7.9990472176 | 99.6150173611 | 33.2142990877 |
| **42** | 0.0035513806 | 0.0046143828 | | -0.0050494483 | 7.9973793167 | 7.9971298826 | 7.9975810007 | 7.9989536997 | 99.6206597222 | 33.1113000408 |
| **43** | -0.2473449566 | -0.0454313855 | | -0.0557960033 | 7.8207191424 | 7.5474094667 | 7.8171898381 | 7.7563563474 | 99.6054687500 | 32.9899748094 |
| **44** | -0.0215867031 | 0.0115648041 | | -0.0312042384 | 7.9975176201 | 7.9971840199 | 7.9974773489 | 7.9990199852 | 99.6028645833 | 33.1998331972 |
| **45** | -0.0236334313 | 0.0091207766 | | -0.0118949725 | 7.9974328114 | 7.9973226792 | 7.9977863878 | 7.9991511091 | 99.5998263889 | 33.2208112064 |
| **46** | -0.0072629972 | 0.0007544150 | | 0.0082086833 | 7.9975404366 | 7.9975728760 | 7.9977906455 | 7.9991517639 | 99.6076388889 | 33.2002110566 |
| **47** | -0.0144194372 | -0.0057900822 | | -0.0119380239 | 7.9965879482 | 7.9957134480 | 7.9970788104 | 7.9985307588 | 99.6132812500 | 33.1873110703 |
| **48** | -0.0134661365 | -0.0291262133 | | 0.0079490579 | 7.9974301890 | 7.9974243471 | 7.9977091875 | 7.9991429549 | 99.6189236111 | 33.2146718410 |
| **49** | 0.0151229966 | -0.0148088914 | | -0.0559394444 | 7.9975234107 | 7.9972426487 | 7.9976379096 | 7.9991405845 | 99.6388888889 | 33.1790985839 |
| **50** | 0.0037378701 | -0.0402578440 | | 0.0452208722 | 7.9970572356 | 7.9962757496 | 7.9971723751 | 7.9986739541 | 99.5937500000 | 31.6372055419 |
| **Total** | -0.0390093721 | -0.7973215161 | | -0.7130848708 | 399.0463647040 | 397.9547096747 | 399.0822518078 | 398.8850708351 | 4980.4370659722 | 1658.2295649510 |
| **Average** | -0.0007801873 | -0.0159450788 | | -0.0142607306 | 7.9809272941 | 7.9590941935 | 7.9816450362 | 7.9777014167 | 99.6087413194 | 33.1645912990 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_ApplyLipstick\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | -0.0151888501 | 0.0023533174 | | 0.0109896840 | 7.9972604022 | 7.9968921232 | 7.9968483033 | 7.9986664395 | 99.6093750000 | 33.0612625953 |
| **2** | 0.0033652752 | -0.0141979716 | | -0.0364005243 | 7.9973263019 | 7.9970073427 | 7.9972987783 | 7.9988577232 | 99.6267361111 | 33.2086414080 |
| **3** | 0.0117684109 | -0.0163904742 | | -0.0386045273 | 7.9951452502 | 7.9943043027 | 7.9948641825 | 7.9964871203 | 99.6271701389 | 33.1748995779 |
| **4** | -0.0332227193 | 0.0067199912 | | 0.0723366170 | 7.9972797382 | 7.9961153663 | 7.9972549317 | 7.9986266682 | 99.5863715278 | 33.2457465278 |
| **5** | 0.1065757248 | -0.3628196927 | | -0.0478593173 | 7.7632268665 | 7.7134297863 | 7.7395538658 | 7.7468250022 | 99.6024305556 | 33.5216588371 |
| **6** | -0.0300416511 | -0.0144302981 | | 0.0147001854 | 7.9973705314 | 7.9964432070 | 7.9970543059 | 7.9985161325 | 99.6089409722 | 33.2160675381 |
| **7** | 0.0019466283 | -0.0221134769 | | 0.0043534874 | 7.9970438409 | 7.9972132852 | 7.9973007141 | 7.9986703722 | 99.6067708333 | 33.1712503404 |
| **8** | -0.0001971299 | 0.0025204842 | | -0.0617618511 | 7.9979188971 | 7.9974768528 | 7.9977544963 | 7.9991424147 | 99.5885416667 | 33.2108575027 |
| **9** | -0.0403044530 | 0.0021779446 | | -0.0116355900 | 7.9975298867 | 7.9975944680 | 7.9973985193 | 7.9988854458 | 99.6098090278 | 33.1481243192 |
| **10** | -0.0041324945 | -0.0076119981 | | 0.0105077913 | 7.9963542364 | 7.9953915434 | 7.9963163458 | 7.9974777314 | 99.5924479167 | 33.1691346678 |
| **11** | 0.0269714479 | -0.0236419929 | | 0.0172189674 | 7.9971536755 | 7.9967827672 | 7.9970914383 | 7.9987365997 | 99.6145833333 | 33.2185185185 |
| **12** | -0.0222822627 | 0.0044174689 | | -0.0392121232 | 7.9962098311 | 7.9947025560 | 7.9952247905 | 7.9968491357 | 99.6189236111 | 33.2689746732 |
| **13** | -0.0281949060 | 0.0013261847 | | 0.0072505858 | 7.9975440496 | 7.9974197893 | 7.9975198642 | 7.9990766019 | 99.6150173611 | 33.2113323802 |
| **14** | -0.0151760498 | -0.0066006135 | | -0.0703366736 | 7.9968584889 | 7.9966317172 | 7.9970158046 | 7.9985907338 | 99.6145833333 | 33.3023845997 |
| **15** | -0.0175367543 | 0.0194705421 | | 0.0260991773 | 7.9964863896 | 7.9974256966 | 7.9969677375 | 7.9986028717 | 99.6154513889 | 33.2417007081 |
| **16** | -0.1525157232 | -0.0453701755 | | 0.1306999713 | 7.1108543689 | 7.0843177266 | 7.0360508847 | 7.0988587425 | 99.5963541667 | 33.2712997004 |
| **17** | -0.0081655646 | -0.0034566958 | | -0.0314489143 | 7.9971744680 | 7.9968192482 | 7.9971837893 | 7.9986065916 | 99.6024305556 | 33.2140897331 |
| **18** | 0.0022094156 | -0.0209774573 | | 0.0321690744 | 7.9972740805 | 7.9969819331 | 7.9969577740 | 7.9987448401 | 99.5972222222 | 33.1962775735 |
| **19** | -0.0109770457 | -0.0363846382 | | 0.0124011897 | 7.9971139990 | 7.9966329598 | 7.9969864696 | 7.9984298876 | 99.6028645833 | 33.1916700708 |
| **20** | -0.0111287640 | -0.0146492404 | | -0.0248360680 | 7.9971551612 | 7.9972743365 | 7.9970365634 | 7.9985521765 | 99.5993923611 | 33.1955695125 |
| **21** | 0.0033550686 | 0.0213828604 | | -0.0049631645 | 7.9974284471 | 7.9969307480 | 7.9970349503 | 7.9986220454 | 99.6106770833 | 33.1902539488 |
| **22** | -0.0030610861 | -0.0083822831 | | -0.0097091612 | 7.9965924963 | 7.9968727820 | 7.9978051544 | 7.9985975910 | 99.6284722222 | 33.1733711193 |
| **23** | -0.0240376439 | -0.0139602535 | | -0.0511481224 | 7.9966930384 | 7.9969793630 | 7.9971143452 | 7.9986227279 | 99.6067708333 | 33.2111519608 |
| **24** | -0.0229204202 | -0.0063294439 | | 0.0438634321 | 7.9974061394 | 7.9970126247 | 7.9965545992 | 7.9985573996 | 99.6176215278 | 33.2337128949 |
| **25** | 0.0074153202 | -0.0077287088 | | 0.0116981729 | 7.9971823601 | 7.9974411308 | 7.9974482405 | 7.9988276680 | 99.6228298611 | 33.2244893791 |
| **26** | 0.0077693631 | -0.0251034801 | | -0.0408046021 | 7.9977868176 | 7.9971514517 | 7.9972934935 | 7.9989433543 | 99.6011284722 | 33.1778747958 |
| **27** | 0.0164208483 | -0.0008404488 | | -0.0121964085 | 7.9971019535 | 7.9968292382 | 7.9966858817 | 7.9985023729 | 99.6015625000 | 33.1865485430 |
| **28** | -0.0138541855 | -0.0016405740 | | 0.0132711817 | 7.9971045254 | 7.9968863641 | 7.9975224013 | 7.9987271572 | 99.5872395833 | 33.2553972631 |
| **29** | -0.0121400095 | -0.0117330565 | | 0.0218890808 | 7.9976757107 | 7.9975127693 | 7.9973513940 | 7.9991252260 | 99.6206597222 | 34.0600234886 |
| **30** | 0.0022083088 | -0.0009525082 | | -0.0088941919 | 7.9973382151 | 7.9971632762 | 7.9969229351 | 7.9986275591 | 99.6093750000 | 33.2358115468 |
| **31** | -0.0094097542 | -0.0200223959 | | 0.0004144771 | 7.9974618174 | 7.9967553462 | 7.9969592409 | 7.9987609874 | 99.5976562500 | 33.2677798203 |
| **32** | 0.0008632737 | 0.0354203169 | | -0.0776013036 | 7.9966434062 | 7.9972752878 | 7.9971896813 | 7.9985793522 | 99.6006944444 | 33.2440172249 |
| **33** | 0.0262135338 | 0.0000402975 | | -0.0244367629 | 7.9952950218 | 7.9949544034 | 7.9950981046 | 7.9967820898 | 99.6046006944 | 33.2591979847 |
| **34** | 0.0142268548 | -0.0099606875 | | 0.0547408358 | 7.9973362111 | 7.9971322653 | 7.9966423860 | 7.9987899156 | 99.6080729167 | 33.0864225899 |
| **35** | -0.0047160329 | 0.0155111366 | | -0.0418837293 | 7.9970360744 | 7.9966364066 | 7.9974208492 | 7.9986810789 | 99.6032986111 | 33.2610209014 |
| **36** | -0.0057044430 | 0.0271548748 | | 0.0044753099 | 7.9960243551 | 7.9954850196 | 7.9961342794 | 7.9976479361 | 99.5941840278 | 33.3051828023 |
| **37** | -0.0203503496 | -0.0047766389 | | -0.0576067971 | 7.9971440614 | 7.9972452579 | 7.9970264778 | 7.9988019960 | 99.6115451389 | 33.2960358796 |
| **38** | -0.0168435137 | -0.0236899253 | | -0.0252896558 | 7.9973152269 | 7.9979905214 | 7.9972037017 | 7.9989023522 | 99.5868055556 | 33.2296789897 |
| **39** | 0.0291469323 | -0.0097982869 | | 0.0525674777 | 7.9974379023 | 7.9974451518 | 7.9977243904 | 7.9990647628 | 99.6206597222 | 33.2260535812 |
| **40** | -0.0022707594 | 0.0092867315 | | -0.0232809418 | 7.9955779240 | 7.9954482846 | 7.9949831542 | 7.9969436922 | 99.5963541667 | 33.2849417892 |
| **41** | -0.2151849496 | -0.4807077201 | | 0.1479224209 | 7.0906209471 | 7.0675830601 | 7.0041515060 | 7.0699856736 | 99.5954861111 | 33.6656318083 |
| **42** | 0.0260228330 | -0.0171468739 | | 0.0016409524 | 7.9957314763 | 7.9949790775 | 7.9949521102 | 7.9969417601 | 99.6111111111 | 33.2297130310 |
| **43** | -0.0217423091 | 0.0141377840 | | -0.0477314005 | 7.9973528486 | 7.9969467754 | 7.9975855233 | 7.9986685320 | 99.6072048611 | 33.2425347222 |
| **44** | 0.0155302948 | -0.0144770911 | | 0.0112157323 | 7.9972475876 | 7.9967494072 | 7.9971456733 | 7.9985711380 | 99.6015625000 | 33.9871238426 |
| **45** | 0.0024166325 | 0.0214197773 | | 0.0095487640 | 7.9972576746 | 7.9971024544 | 7.9967845906 | 7.9986627055 | 99.6119791667 | 33.1500187228 |
| **46** | 0.0084034811 | -0.0080458790 | | 0.0073808336 | 7.9973038621 | 7.9969880301 | 7.9969518616 | 7.9986988861 | 99.6349826389 | 33.2240825844 |
| **47** | -0.0194032575 | -0.0037317366 | | 0.0492289191 | 7.9971284966 | 7.9973934723 | 7.9970608713 | 7.9989326457 | 99.6323784722 | 33.1966128813 |
| **48** | 0.0060035307 | 0.0380323407 | | 0.1130608713 | 7.9973028178 | 7.9971686255 | 7.9969297818 | 7.9987735779 | 99.6202256944 | 33.3045955882 |
| **49** | 0.0160104613 | -0.0061331261 | | 0.0003365283 | 7.9973187854 | 7.9972603830 | 7.9970695875 | 7.9987816846 | 99.6254340278 | 33.2141884532 |
| **50** | -0.0090255366 | 0.0037505332 | | 0.0723740832 | 7.9976991201 | 7.9971983614 | 7.9977930951 | 7.9991622168 | 99.6371527778 | 33.1590175654 |
| **Total** | -0.4548849793 | -1.0386832577 | | 0.1667139734 | 397.8248257842 | 397.7133743478 | 397.6342198203 | 397.8444893159 | 4980.4431423611 | 1663.2219464869 |
| **Average** | -0.0090974486 | -0.0207706774 | | 0.0033342671 | 7.9564965157 | 7.9542674870 | 7.9526843964 | 7.9568897863 | 99.6088628472 | 33.2644389297 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_Archery\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | -0.0306276621 | -0.0104385105 | | 0.0213532421 | 7.9971958361 | 7.9975022050 | 7.9976781368 | 7.9992224126 | 99.6206597222 | 33.1649339597 |
| **2** | -0.0273904890 | -0.0049742874 | | 0.0452616254 | 7.9974964348 | 7.9976552214 | 7.9972913834 | 7.9991470836 | 99.6011284722 | 33.2872225626 |
| **3** | 0.4137131439 | 0.0131034692 | | -0.0764031686 | 7.8501445812 | 7.8605498347 | 7.8993619601 | 7.9042162443 | 99.6050347222 | 34.2187976580 |
| **4** | 0.0128930285 | -0.0114634681 | | 0.0367514919 | 7.9974987151 | 7.9976879567 | 7.9977083477 | 7.9991793420 | 99.6254340278 | 33.1827495234 |
| **5** | 0.0043895335 | 0.0075666850 | | 0.0302068440 | 7.9975325769 | 7.9977839830 | 7.9972979465 | 7.9992636475 | 99.6054687500 | 33.2351205065 |
| **6** | -0.0148410188 | 0.0115276348 | | 0.0041081840 | 7.9974123529 | 7.9977588687 | 7.9977614712 | 7.9993407753 | 99.6150173611 | 33.2729932598 |
| **7** | 0.0165607713 | 0.0146770989 | | -0.0393534374 | 7.9977220691 | 7.9973502259 | 7.9974405889 | 7.9991450574 | 99.6093750000 | 33.1711260893 |
| **8** | 0.2623984427 | -0.2432452709 | | -0.0418064259 | 7.9428917614 | 7.8891941135 | 7.9319392113 | 7.9450745664 | 99.6046006944 | 34.5600166803 |
| **9** | -0.0382600751 | -0.0008671142 | | 0.0244834837 | 7.9976741105 | 7.9974945940 | 7.9972085460 | 7.9991940948 | 99.6189236111 | 33.2900633170 |
| **10** | -0.0205851322 | 0.0054549419 | | 0.0121879743 | 7.9976697591 | 7.9976993985 | 7.9972489694 | 7.9991494792 | 99.6137152778 | 33.2190887119 |
| **11** | 0.0156968176 | -0.0094862580 | | -0.0098515857 | 7.9975111355 | 7.9976784891 | 7.9975639004 | 7.9991659354 | 99.6019965278 | 33.1992647059 |
| **12** | -0.2667210196 | -0.3536607838 | | 0.1400352791 | 7.7050900321 | 7.7332464973 | 7.8276108397 | 7.7967248190 | 99.6124131944 | 32.2344090414 |
| **13** | 0.0160085550 | 0.0123747883 | | -0.0154416384 | 7.9977470578 | 7.9974960214 | 7.9976814129 | 7.9992367116 | 99.6180555556 | 33.3251753132 |
| **14** | 0.0377937298 | -0.0263123437 | | 0.0085146395 | 7.9975656093 | 7.9976659988 | 7.9974272642 | 7.9992036026 | 99.6241319444 | 33.2321180556 |
| **15** | -0.0361681074 | -0.0123641829 | | -0.0311203376 | 7.9976899563 | 7.9970571542 | 7.9971585330 | 7.9992340106 | 99.5946180556 | 33.2612881264 |
| **16** | 0.0020108289 | -0.0016214261 | | -0.0152248524 | 7.9977469774 | 7.9974412470 | 7.9973090547 | 7.9991763361 | 99.6414930556 | 33.2713507625 |
| **17** | -0.0068781383 | -0.0174910610 | | -0.0240652774 | 7.9976812858 | 7.9977001577 | 7.9972410922 | 7.9992250545 | 99.5933159722 | 33.2479421977 |
| **18** | -0.0088192791 | -0.0134435553 | | 0.0208591092 | 7.9978217172 | 7.9978659408 | 7.9973079428 | 7.9992588126 | 99.5950520833 | 33.2456971678 |
| **19** | -0.0062910117 | 0.0089577430 | | 0.0279761904 | 7.9975389851 | 7.9975922807 | 7.9973690819 | 7.9991856983 | 99.5980902778 | 33.2376021242 |
| **20** | -0.0188600921 | 0.0319675998 | | -0.0466840382 | 7.9976766757 | 7.9975268451 | 7.9975745485 | 7.9991640957 | 99.6241319444 | 33.2675313181 |
| **21** | 0.0128480292 | 0.0073611815 | | -0.0181270487 | 7.9977753672 | 7.9973896455 | 7.9977593398 | 7.9992246690 | 99.6006944444 | 33.1873434096 |
| **22** | -0.0121826123 | -0.0206398123 | | 0.0439924621 | 7.9974210329 | 7.9973762889 | 7.9980118613 | 7.9992549839 | 99.6124131944 | 33.2595945670 |
| **23** | 0.0021506786 | 0.0195059297 | | -0.0498946990 | 7.9974176432 | 7.9975686827 | 7.9976072977 | 7.9991049485 | 99.6189236111 | 33.2449363426 |
| **24** | 0.0111217236 | -0.0369422701 | | -0.0582521799 | 7.9972119597 | 7.9972429454 | 7.9973829289 | 7.9991511482 | 99.6284722222 | 33.2102975218 |
| **25** | 0.0253937746 | 0.0115966274 | | 0.0241281870 | 7.9972509145 | 7.9976717907 | 7.9973974551 | 7.9992405196 | 99.6002604167 | 33.2293351716 |
| **26** | 0.0088385076 | 0.0105574231 | | -0.0019261379 | 7.9973045441 | 7.9978505560 | 7.9976093941 | 7.9991994689 | 99.5889756944 | 33.2905858524 |
| **27** | -0.0233501976 | 0.0098732132 | | 0.0113129969 | 7.9976295403 | 7.9974935683 | 7.9978023529 | 7.9991284236 | 99.6128472222 | 33.2507931645 |
| **28** | -0.0094273084 | 0.0121229368 | | -0.0492832609 | 7.9974587490 | 7.9970522514 | 7.9973397674 | 7.9990450383 | 99.6132812500 | 33.1730800654 |
| **29** | -0.0205957787 | 0.0117633490 | | -0.0247330013 | 7.9977053365 | 7.9977846004 | 7.9973039603 | 7.9991400013 | 99.5980902778 | 33.2753302015 |
| **30** | 0.0182613409 | -0.0267646474 | | -0.0137852745 | 7.9974498004 | 7.9977361520 | 7.9974316903 | 7.9990765419 | 99.6167534722 | 33.2327631400 |
| **31** | 0.0436210072 | -0.0070046274 | | -0.0031441160 | 7.9970327064 | 7.9978223473 | 7.9974540948 | 7.9990804410 | 99.6115451389 | 33.2740519472 |
| **32** | 0.0128306783 | 0.0136772867 | | -0.0523635322 | 7.9978322881 | 7.9975437479 | 7.9975910869 | 7.9992201475 | 99.5993923611 | 33.3142258987 |
| **33** | 0.0191617377 | 0.0081018193 | | -0.0425842689 | 7.9975624528 | 7.9974898137 | 7.9979057892 | 7.9991913746 | 99.6037326389 | 33.2101800790 |
| **34** | 0.0043238764 | -0.0106995505 | | -0.0058507744 | 7.9977473077 | 7.9978798029 | 7.9974983829 | 7.9992160142 | 99.6046006944 | 33.1096881808 |
| **35** | -0.0163129224 | 0.0046896253 | | -0.0086899167 | 7.9978377788 | 7.9974286948 | 7.9975909793 | 7.9992148790 | 99.6141493056 | 33.1728656046 |
| **36** | 0.0167479134 | 0.0316819861 | | 0.0367174128 | 7.9975990447 | 7.9975984644 | 7.9978009671 | 7.9992017414 | 99.6206597222 | 33.2397501362 |
| **37** | -0.0125039935 | 0.0124011222 | | -0.0635070104 | 7.9976519986 | 7.9973698331 | 7.9973944243 | 7.9992311059 | 99.6037326389 | 33.2892871732 |
| **38** | -0.0166459527 | 0.0283518049 | | 0.0259720327 | 7.9975659508 | 7.9975618663 | 7.9972755154 | 7.9990591774 | 99.6067708333 | 33.1701610158 |
| **39** | -0.2236210619 | -0.0105285131 | | -0.0968176174 | 7.9832578151 | 7.9774538260 | 7.9838439093 | 7.9898147105 | 99.6345486111 | 33.4360072849 |
| **40** | -0.0280535346 | 0.0071918513 | | 0.0037277071 | 7.9977893000 | 7.9975575823 | 7.9973376203 | 7.9992254156 | 99.5989583333 | 33.2836754493 |
| **41** | 0.0119829653 | -0.0179686114 | | 0.0481431044 | 7.9976374111 | 7.9977521494 | 7.9977364349 | 7.9992720371 | 99.6132812500 | 33.3123093682 |
| **42** | 0.0082659353 | 0.0200501411 | | 0.0676669318 | 7.9974754568 | 7.9975438421 | 7.9975547945 | 7.9990721672 | 99.6041666667 | 33.2385910267 |
| **43** | -0.2685709268 | -0.0974041908 | | -0.0885236925 | 7.6836482759 | 7.6767102495 | 7.7778579539 | 7.7601696563 | 99.5963541667 | 30.2808823529 |
| **44** | -0.2803978717 | -0.1042935260 | | 0.4092232964 | 7.8579945232 | 7.8758965963 | 7.9023649059 | 7.9093070736 | 99.6271701389 | 35.0125442538 |
| **45** | 0.0328412745 | 0.0064218262 | | 0.0026008293 | 7.9975154046 | 7.9972264918 | 7.9976452210 | 7.9991773695 | 99.6245659722 | 33.2272177968 |
| **46** | -0.0301734786 | 0.0146683243 | | -0.0056529106 | 7.9979178556 | 7.9976757002 | 7.9975809155 | 7.9992425203 | 99.6141493056 | 33.1876055283 |
| **47** | 0.0411664107 | 0.7014686581 | | -0.1497440207 | 7.9786337238 | 7.9758932590 | 7.9813718214 | 7.9899698610 | 99.6041666667 | 32.9615400327 |
| **48** | -0.0319178312 | 0.0366585794 | | -0.0138601735 | 7.9976669976 | 7.9975611486 | 7.9977413571 | 7.9992803450 | 99.6002604167 | 32.9401994826 |
| **49** | -0.0067754396 | 0.0274200178 | | -0.0061233999 | 7.9973330440 | 7.9974651765 | 7.9977460007 | 7.9991999059 | 99.5989583333 | 33.2667619826 |
| **50** | -0.0017412909 | -0.0079392792 | | -0.0004690781 | 7.9977237118 | 7.9975639102 | 7.9975568185 | 7.9992578596 | 99.6119791667 | 33.2186155365 |
| **Total** | -0.4066915222 | 0.0556403742 | | -0.0080598510 | 398.8973555647 | 398.8841080176 | 399.1976752723 | 399.2604773251 | 4980.5065104167 | 1661.6247106482 |
| **Average** | -0.0081336511 | 0.0011128070 | | -0.0001611970 | 7.9779471113 | 7.9776821604 | 7.9839535054 | 7.9852095465 | 99.6101302083 | 33.2324942130 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_BabyCrawling\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | 0.0049407475 | -0.0304447570 | | -0.0169667209 | 7.9967921706 | 7.9968813519 | 7.9960588355 | 7.998325067 | 99.5733506944 | 33.2873808551 |
| **2** | -0.0114176069 | -0.0032148225 | | 0.0249825625 | 7.9968921515 | 7.9972468631 | 7.9966885388 | 7.998620202 | 99.6115451389 | 33.1546994145 |
| **3** | -0.0192837280 | -0.0151865358 | | -0.0820814022 | 7.9970245937 | 7.9970965419 | 7.9964925646 | 7.998469209 | 99.6215277778 | 33.1697218818 |
| **4** | 0.0302547775 | 0.0008768446 | | 0.0241468263 | 7.9974786758 | 7.9966705358 | 7.9966086854 | 7.998535586 | 99.6028645833 | 33.2197474129 |
| **5** | 0.0078760670 | -0.0157426400 | | 0.0358660435 | 7.9971606095 | 7.9975940658 | 7.9969481546 | 7.998839709 | 99.6106770833 | 33.3816925381 |
| **6** | -0.0064250885 | -0.0120728689 | | -0.0189383607 | 7.9961216326 | 7.9959197070 | 7.9954583843 | 7.997562089 | 99.5885416667 | 33.2310270289 |
| **7** | 0.0401606551 | -0.0221152000 | | 0.0280015849 | 7.9965467862 | 7.9969391652 | 7.9961864882 | 7.998248361 | 99.6089409722 | 33.2062534041 |
| **8** | -0.0145039848 | -0.0004801780 | | -0.0032047850 | 7.9969286592 | 7.9970442781 | 7.9969560103 | 7.998623186 | 99.5898437500 | 33.2353945398 |
| **9** | -0.0042013272 | -0.0022415915 | | 0.0013850211 | 7.9970114492 | 7.9974212853 | 7.9968283083 | 7.998674878 | 99.6041666667 | 33.2373536220 |
| **10** | -0.0277569615 | -0.0091809271 | | 0.0279560361 | 7.9970384874 | 7.9968380895 | 7.9966339541 | 7.99845145 | 99.6236979167 | 33.2215175654 |
| **11** | -0.0057708895 | 0.0134226982 | | -0.0553065327 | 7.9971121297 | 7.9971565793 | 7.9967995479 | 7.998585233 | 99.5946180556 | 33.2132182734 |
| **12** | 0.0145842750 | 0.0255794684 | | -0.0245594533 | 7.9975199550 | 7.9971480489 | 7.9967692053 | 7.998685301 | 99.5954861111 | 33.2543164488 |
| **13** | -0.0080249565 | 0.0294389335 | | -0.0259674900 | 7.9950215130 | 7.9947510874 | 7.9938623319 | 7.996203438 | 99.6371527778 | 33.2862064270 |
| **14** | -0.0118947061 | 0.0113340597 | | 0.0404521109 | 7.9950026644 | 7.9949987426 | 7.9949311750 | 7.996464987 | 99.5885416667 | 33.2296330338 |
| **15** | -0.0117222632 | 0.0083939993 | | -0.0416288560 | 7.9966715587 | 7.9968187329 | 7.9963313398 | 7.998257968 | 99.6263020833 | 33.1131655093 |
| **16** | 0.1654144080 | -0.2058645474 | | -0.1855718425 | 7.5756843225 | 7.5817545440 | 7.5289287858 | 7.571938784 | 99.5993923611 | 33.0217047930 |
| **17** | 0.0162000623 | -0.0216711897 | | -0.0249946783 | 7.9971584597 | 7.9974008678 | 7.9974291395 | 7.998862132 | 99.6028645833 | 33.1952546296 |
| **18** | -0.2863755730 | 0.0495701283 | | -0.6802268176 | 7.1067704533 | 7.1147813018 | 6.9602906928 | 7.125762381 | 99.6189236111 | 32.9624591503 |
| **19** | 0.0025487914 | 0.0018338585 | | -0.0346350933 | 7.9935158840 | 7.9939937121 | 7.9923939224 | 7.994976887 | 99.5933159722 | 33.1807223584 |
| **20** | 0.0103893304 | 0.0279631349 | | -0.0426294246 | 7.9943691914 | 7.9937309136 | 7.9936778977 | 7.995469931 | 99.6050347222 | 33.2729387936 |
| **21** | 0.0455365550 | 0.0239835380 | | -0.0490915355 | 7.9973893615 | 7.9974776373 | 7.9978084987 | 7.999069254 | 99.5898437500 | 33.3100047658 |
| **22** | -0.2419748209 | 0.6446364036 | | 0.0440302651 | 7.3555090888 | 7.3217560680 | 7.1776843194 | 7.323406179 | 99.6137152778 | 33.3774731073 |
| **23** | -0.0313474162 | 0.0254698439 | | 0.0109594804 | 7.9944574621 | 7.9946647845 | 7.9936327449 | 7.996013864 | 99.5972222222 | 33.2326559096 |
| **24** | 0.0014764216 | 0.0057585569 | | -0.0113878849 | 7.9972090966 | 7.9969135993 | 7.9965313917 | 7.998278992 | 99.6111111111 | 33.2184793709 |
| **25** | -0.0113430682 | -0.0147475814 | | -0.0250811692 | 7.9961738232 | 7.9972496623 | 7.9970904379 | 7.998453906 | 99.5972222222 | 32.5047828159 |
| **26** | 0.0094721944 | -0.0285651554 | | -0.0058516976 | 7.9964304457 | 7.9964451346 | 7.9964711697 | 7.998116248 | 99.6054687500 | 33.1843171296 |
| **27** | -0.0057917186 | -0.0082209176 | | 0.0153835401 | 7.9967556806 | 7.9975233354 | 7.9969889778 | 7.998511984 | 99.5963541667 | 33.2416819853 |
| **28** | -0.0042826497 | 0.0196731211 | | 0.0138615307 | 7.9944927558 | 7.9951423951 | 7.9941830393 | 7.996123006 | 99.6115451389 | 33.1792483660 |
| **29** | 0.0115627782 | -0.0124435277 | | -0.0606788504 | 7.9957664165 | 7.9958009849 | 7.9954227512 | 7.997234468 | 99.6150173611 | 33.2762169798 |
| **30** | 0.0184580290 | 0.0021100775 | | 0.0161058839 | 7.9967543986 | 7.9968768232 | 7.9966964357 | 7.998271404 | 99.6111111111 | 33.1867715142 |
| **31** | 0.0031485245 | 0.0308101816 | | -0.0263187744 | 7.9945223896 | 7.9944169302 | 7.9936276401 | 7.995878966 | 99.6128472222 | 33.1882369962 |
| **32** | -0.0039054868 | 0.0115172939 | | 0.0296702503 | 7.9945512523 | 7.9953864608 | 7.9944805298 | 7.996501676 | 99.6219618056 | 33.2186223448 |
| **33** | -0.2707961900 | -0.0719785843 | | 0.0457021691 | 7.5742190018 | 7.5794714741 | 7.5243439992 | 7.57573973 | 99.5776909722 | 33.1927049292 |
| **34** | -0.0203824445 | -0.0177109729 | | 0.0705392651 | 7.9958571169 | 7.9956601407 | 7.9957516375 | 7.997349052 | 99.6254340278 | 33.3202699483 |
| **35** | -0.0200972793 | 0.0297204355 | | -0.0026123886 | 7.9968481231 | 7.9968207465 | 7.9971567462 | 7.998582745 | 99.6015625000 | 33.2249029820 |
| **36** | 0.0070467404 | -0.0022849539 | | 0.0211390217 | 7.9964074535 | 7.9969518413 | 7.9970752785 | 7.998342529 | 99.6154513889 | 33.2768348312 |
| **37** | -0.0142756730 | -0.0020637902 | | 0.0578926556 | 7.9971319579 | 7.9968539335 | 7.9969716053 | 7.998615201 | 99.5815972222 | 33.1802713099 |
| **38** | -0.0205077853 | -0.0307126800 | | -0.0147436853 | 7.9972555906 | 7.9972376173 | 7.9970970493 | 7.998773075 | 99.6089409722 | 33.2046772876 |
| **39** | 0.0209169407 | -0.3303781484 | | -0.0198853976 | 7.3244458309 | 7.3477507535 | 7.2774057904 | 7.346384349 | 99.6827256944 | 34.7133578431 |
| **40** | 0.0069119922 | 0.0032611451 | | -0.0166515000 | 7.9971728079 | 7.9967243996 | 7.9961255875 | 7.998327004 | 99.6245659722 | 33.5325248502 |
| **41** | -0.0178052539 | -0.0257423756 | | -0.0113816788 | 7.9965770278 | 7.9965960805 | 7.9966764085 | 7.998291747 | 99.6041666667 | 33.2570550790 |
| **42** | -0.0360289799 | -0.0125214536 | | -0.0472544434 | 7.9971129274 | 7.9964449977 | 7.9963658889 | 7.998353911 | 99.5876736111 | 32.7612030229 |
| **43** | -0.0141221839 | -0.0136921597 | | 0.0525183687 | 7.9966728286 | 7.9970324508 | 7.9965623672 | 7.998457661 | 99.6059027778 | 33.2082754630 |
| **44** | -0.0124194889 | 0.0084410948 | | 0.0040557444 | 7.9960767232 | 7.9964020907 | 7.9962401944 | 7.99775284 | 99.6106770833 | 33.2218205338 |
| **45** | -0.0060338368 | -0.0152163778 | | -0.0356308983 | 7.9973054357 | 7.9972729503 | 7.9966128233 | 7.998515866 | 99.6210937500 | 33.4566670071 |
| **46** | -0.0211913217 | 0.0060292947 | | -0.0351551943 | 7.9966399921 | 7.9965136686 | 7.9961034455 | 7.998084048 | 99.6085069444 | 33.1963916122 |
| **47** | -0.0148769277 | 0.0017623806 | | 0.0117625615 | 7.9964655900 | 7.9971581540 | 7.9962370155 | 7.998245937 | 99.6267361111 | 33.1856787854 |
| **48** | -0.0561006748 | 0.2631348081 | | -0.0473209599 | 7.5599329310 | 7.3441383853 | 7.2610210941 | 7.410501493 | 99.6046006944 | 33.3989004630 |
| **49** | -0.0173283757 | 0.0040859737 | | -0.0275904096 | 7.9966936856 | 7.9969951628 | 7.9963887430 | 7.998374702 | 99.5941840278 | 33.6332158905 |
| **50** | -0.0171915691 | 0.0107539082 | | 0.0410940237 | 7.9973356352 | 7.9974324316 | 7.9966624216 | 7.998670121 | 99.6145833333 | 33.2207992919 |
| **Total** | -0.8482809393 | 0.3350672461 | | -1.0558429790 | 396.3379841778 | 396.1352975087 | 395.5576899937 | 396.2627787 | 4980.3763020833 | 1662.3784500953 |
| **Average** | -0.0169639912 | 0.0067012446 | | -0.0211137213 | 7.9267596836 | 7.9227059502 | 7.9111537999 | 7.925255575 | 99.6075260417 | 33.2475690019 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_BalanceBeam\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | 0.0028309612 | 0.0056608660 | | 0.0344105375 | 7.9973854634 | 7.9973376925 | 7.9972358576 | 7.9987943171 | 99.5876736111 | 33.2399356618 |
| **2** | 0.0153671099 | 0.0239038701 | | -0.0504312928 | 7.9964185720 | 7.9962217637 | 7.9957378542 | 7.9977137503 | 99.5907118056 | 32.7317861520 |
| **3** | 0.0280792097 | 0.0061630052 | | 0.0252547360 | 7.9957030438 | 7.9959721643 | 7.9958123301 | 7.9973600740 | 99.5868055556 | 33.2470554194 |
| **4** | -0.0153448739 | 0.0049355598 | | -0.0312193886 | 7.9968613202 | 7.9964896914 | 7.9964110904 | 7.9984840504 | 99.6054687500 | 33.1911628540 |
| **5** | 0.0382788082 | 0.0239420349 | | -0.0479410269 | 7.9972123163 | 7.9972288948 | 7.9969417213 | 7.9987464017 | 99.6059027778 | 33.1332329112 |
| **6** | -0.0232301316 | -0.0247892664 | | -0.0290622479 | 7.9957129482 | 7.9956939624 | 7.9957469993 | 7.9973682750 | 99.6171875000 | 33.2291598584 |
| **7** | -0.1198207643 | 0.0029796346 | | -0.2330648422 | 7.4198505874 | 7.4266895519 | 7.4284164671 | 7.4432762531 | 99.6388888889 | 33.4559929875 |
| **8** | 0.0094679985 | -0.0105703280 | | 0.0150684909 | 7.9971279271 | 7.9972908836 | 7.9975404574 | 7.9987090373 | 99.5820312500 | 33.3296840959 |
| **9** | 0.0245172802 | -0.0075952712 | | -0.0269420594 | 7.9975004374 | 7.9969093816 | 7.9971092927 | 7.9986556888 | 99.6137152778 | 33.1636471950 |
| **10** | 0.0203042862 | -0.0074586492 | | -0.0008815866 | 7.9973931636 | 7.9970893886 | 7.9969848074 | 7.9986777396 | 99.5824652778 | 33.2104064542 |
| **11** | 0.0162856793 | 0.0068282839 | | -0.0231804322 | 7.9970439097 | 7.9966745146 | 7.9969538876 | 7.9986814447 | 99.6193576389 | 33.1921245234 |
| **12** | -0.0151237344 | -0.0062389128 | | 0.0203730950 | 7.9962926472 | 7.9962596680 | 7.9958637115 | 7.9977300861 | 99.6228298611 | 33.2666462418 |
| **13** | -0.0098428879 | 0.0133521613 | | 0.0248185863 | 7.9972921878 | 7.9980220021 | 7.9972891720 | 7.9990450419 | 99.6171875000 | 33.2588218273 |
| **14** | 0.0237465775 | -0.0185592439 | | 0.0078432734 | 7.9970023271 | 7.9969319808 | 7.9973320420 | 7.9985387651 | 99.6124131944 | 33.2301674837 |
| **15** | 0.0103258690 | -0.0049272167 | | 0.0146647170 | 7.9958157617 | 7.9957890834 | 7.9955996166 | 7.9972929437 | 99.6180555556 | 33.2502144608 |
| **16** | -0.0083920738 | -0.0071795162 | | -0.0365119297 | 7.9974700372 | 7.9970784860 | 7.9972719541 | 7.9987454092 | 99.5894097222 | 33.1929398148 |
| **17** | -0.0516635610 | 0.0017684200 | | 0.0397996592 | 7.9970705503 | 7.9970333351 | 7.9975852426 | 7.9987893272 | 99.5959201389 | 32.4882421024 |
| **18** | 0.0199799978 | 0.0100924210 | | -0.0282209919 | 7.9958522988 | 7.9959999925 | 7.9959067019 | 7.9974629817 | 99.6076388889 | 33.2271684368 |
| **19** | 0.0219529640 | 0.0060794300 | | -0.0197462769 | 7.9970460224 | 7.9971308954 | 7.9967347413 | 7.9986436846 | 99.6093750000 | 33.2567418981 |
| **20** | 0.0078256542 | -0.0104607831 | | 0.0395360904 | 7.9974730760 | 7.9975270540 | 7.9972970453 | 7.9991318143 | 99.6145833333 | 33.1411798747 |
| **21** | -0.0202756122 | 0.0205265022 | | -0.0007779539 | 7.9975315281 | 7.9977257099 | 7.9973040050 | 7.9991669136 | 99.6232638889 | 33.1737642974 |
| **22** | 0.0222196147 | -0.0163253947 | | 0.0578021084 | 7.9974696105 | 7.9969701207 | 7.9973194924 | 7.9988536359 | 99.6011284722 | 33.2480085784 |
| **23** | -0.0057583639 | -0.0012791347 | | -0.0447185832 | 7.9970692341 | 7.9967357510 | 7.9964908210 | 7.9985646707 | 99.6041666667 | 33.2249982979 |
| **24** | -0.0115417145 | -0.0068351481 | | 0.0133788375 | 7.9975270585 | 7.9974195839 | 7.9976409070 | 7.9991447704 | 99.6093750000 | 33.2047198393 |
| **25** | 0.0213331656 | -0.0064111934 | | 0.0020597468 | 7.9970571517 | 7.9973196663 | 7.9976144828 | 7.9988129629 | 99.6050347222 | 32.9330099401 |
| **26** | 0.0003311378 | -0.0037097441 | | 0.0392482954 | 7.9973846781 | 7.9972898017 | 7.9971801981 | 7.9989172757 | 99.6054687500 | 33.2278543709 |
| **27** | 0.0084013919 | 0.0042227701 | | 0.0473806803 | 7.9961457176 | 7.9956369383 | 7.9964808776 | 7.9978307155 | 99.5802951389 | 33.1305283224 |
| **28** | 0.0237313959 | -0.0384793218 | | -0.0395588617 | 7.9970822705 | 7.9970094069 | 7.9969202165 | 7.9988605029 | 99.6046006944 | 33.3202988834 |
| **29** | 0.0087083449 | 0.0148638628 | | -0.0533899948 | 7.9955292026 | 7.9953407043 | 7.9946800317 | 7.9968123805 | 99.6137152778 | 33.1692470044 |
| **30** | 0.0240078688 | 0.0018120722 | | 0.0284518818 | 7.9968093899 | 7.9970036826 | 7.9965228886 | 7.9984177022 | 99.5729166667 | 33.1914130583 |
| **31** | -0.5143185380 | 0.5061380198 | | -0.5364144483 | 7.3933141343 | 7.3789284450 | 7.3672127642 | 7.3915807938 | 99.7200520833 | 35.4104694308 |
| **32** | -0.2453113833 | -0.4536488653 | | 0.5051470874 | 7.3633507086 | 7.3629073487 | 7.3665537607 | 7.3839703993 | 99.6093750000 | 33.2313963780 |
| **33** | -0.0392322786 | 0.0096126124 | | 0.0169359345 | 7.9971803417 | 7.9967588411 | 7.9973740299 | 7.9987368726 | 99.6115451389 | 33.1429074755 |
| **34** | 0.0001065716 | -0.0241282327 | | 0.0239938880 | 7.9973865546 | 7.9972651947 | 7.9974194611 | 7.9990064381 | 99.6041666667 | 33.2153390523 |
| **35** | 0.2136118818 | -0.1951961767 | | 0.1424479789 | 7.6065324488 | 7.5920795519 | 7.5888784972 | 7.6008526650 | 99.6241319444 | 33.2935083061 |
| **36** | 0.0137323416 | 0.0134530080 | | 0.0085979213 | 7.9945312214 | 7.9953839968 | 7.9947347625 | 7.9964585134 | 99.6032986111 | 33.2461039624 |
| **37** | 0.0173722265 | 0.0174880306 | | 0.0224282686 | 7.9964300769 | 7.9968280602 | 7.9956482242 | 7.9979124928 | 99.6184895833 | 33.1241336465 |
| **38** | -0.0148057689 | -0.0102786558 | | 0.0100464190 | 7.9971944409 | 7.9972115659 | 7.9968321892 | 7.9987513768 | 99.6098090278 | 33.2316959423 |
| **39** | -0.0125550328 | 0.0222481016 | | 0.0140837763 | 7.9974631248 | 7.9972317814 | 7.9970944199 | 7.9987529131 | 99.6150173611 | 33.2053904548 |
| **40** | 0.0047200829 | -0.0424485928 | | -0.0182118307 | 7.9971397727 | 7.9969944928 | 7.9971142477 | 7.9987180979 | 99.6289062500 | 33.2461192810 |
| **41** | -0.0035516344 | -0.0169661086 | | -0.0262399598 | 7.9974946614 | 7.9975341249 | 7.9969900972 | 7.9988310654 | 99.6241319444 | 33.3503182870 |
| **42** | -0.0166509506 | 0.0310569336 | | 0.0264977405 | 7.9972624613 | 7.9973938941 | 7.9968475711 | 7.9988730361 | 99.6067708333 | 33.2781930828 |
| **43** | 0.0185674461 | 0.0168906420 | | -0.0658850039 | 7.9973819475 | 7.9973500703 | 7.9969688594 | 7.9987151803 | 99.6115451389 | 33.2474383851 |
| **44** | 0.0167228267 | 0.0027676568 | | 0.0138390028 | 7.9976934947 | 7.9973848590 | 7.9973610654 | 7.9989830858 | 99.6137152778 | 33.2553479031 |
| **45** | -0.0380985010 | 0.0115070119 | | 0.0318080340 | 7.9973535754 | 7.9967683740 | 7.9974648175 | 7.9987680311 | 99.6015625000 | 33.2377025463 |
| **46** | 0.0124067128 | -0.0175510395 | | -0.0469563420 | 7.9971212009 | 7.9968548914 | 7.9968481320 | 7.9985224682 | 99.6080729167 | 33.1968954248 |
| **47** | -0.0147906572 | -0.0260560419 | | -0.0465529689 | 7.9977453235 | 7.9968650999 | 7.9968645635 | 7.9987526472 | 99.5711805556 | 33.1620029956 |
| **48** | 0.0136785040 | 0.0039674925 | | 0.0082055781 | 7.9967231441 | 7.9965215879 | 7.9961058573 | 7.9982192954 | 99.6076388889 | 33.2225558279 |
| **49** | 0.0339536143 | 0.0363643563 | | -0.0363912949 | 7.9972853818 | 7.9972635081 | 7.9971935062 | 7.9989179798 | 99.6080729167 | 33.1908292484 |
| **50** | 0.0280495690 | 0.0263760290 | | -0.0090090639 | 7.9972603521 | 7.9972671104 | 7.9965272419 | 7.9988300731 | 99.6276041667 | 33.1468052151 |
| **Total** | -0.4596913697 | -0.1120920491 | | -0.2171860156 | 397.6429748066 | 397.6166145509 | 397.6019589813 | 397.7493820410 | 4980.4626736111 | 1661.8953056917 |
| **Average** | -0.0091935684 | -0.0022418372 | | -0.0043436930 | 7.9528594961 | 7.9523322910 | 7.9520391796 | 7.9549876408 | 99.6092534722 | 33.2379061138 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_BandMarching\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | -0.0219588531 | -0.0103474600 | | 0.0267802605 | 7.9974543512 | 7.9978401485 | 7.9978940529 | 7.9992768909 | 99.6119791667 | 33.2364685458 |
| **2** | 0.0043116886 | 0.0071127589 | | 0.0181962183 | 7.9973701736 | 7.9973545492 | 7.9977726364 | 7.9992364226 | 99.6171875000 | 33.2352839052 |
| **3** | -0.0036852008 | 0.0132635813 | | 0.0539790420 | 7.9975871566 | 7.9972841904 | 7.9974200277 | 7.9991222842 | 99.6032986111 | 33.1740910948 |
| **4** | -0.0469201802 | -0.0070687759 | | 0.0038383136 | 7.9973334079 | 7.9976572894 | 7.9975872113 | 7.9992224640 | 99.6024305556 | 33.2132591231 |
| **5** | -0.0062037618 | 0.0063723320 | | -0.0092510076 | 7.9974981523 | 7.9976535439 | 7.9975453621 | 7.9991448780 | 99.6037326389 | 33.2634480528 |
| **6** | 0.0149935552 | 0.0163563689 | | -0.0466386727 | 7.9973905185 | 7.9971613973 | 7.9976962237 | 7.9991847239 | 99.6141493056 | 33.3638565496 |
| **7** | 0.0033171640 | 0.0178766792 | | -0.0317239758 | 7.9975101899 | 7.9971334567 | 7.9978368038 | 7.9993639759 | 99.5985243056 | 33.2067418981 |
| **8** | -0.0088046529 | -0.0376215426 | | 0.0211571807 | 7.9973189103 | 7.9980098541 | 7.9975186614 | 7.9993061414 | 99.6124131944 | 33.1931661901 |
| **9** | -0.0180129626 | 0.0205320946 | | 0.0107488957 | 7.9978405473 | 7.9977390078 | 7.9973364218 | 7.9992089729 | 99.6319444444 | 33.2812653186 |
| **10** | -0.0071790044 | 0.0100419809 | | -0.0088159012 | 7.9973261069 | 7.9979275844 | 7.9978288948 | 7.9992581945 | 99.6341145833 | 33.2532169118 |
| **11** | 0.0089568975 | -0.0307973811 | | -0.0413578088 | 7.9973669480 | 7.9975088553 | 7.9971391333 | 7.9989600504 | 99.6167534722 | 33.2013191040 |
| **12** | -0.0048287699 | -0.0145542405 | | -0.0164319871 | 7.9967127719 | 7.9972459199 | 7.9974940648 | 7.9990511746 | 99.6167534722 | 33.2586754493 |
| **13** | 0.0132355552 | -0.0136908828 | | 0.0530922632 | 7.9977129538 | 7.9978134559 | 7.9974102800 | 7.9992134969 | 99.6150173611 | 33.2316431781 |
| **14** | -0.0110685598 | -0.0104714111 | | -0.0061678951 | 7.9969975122 | 7.9976883777 | 7.9972595319 | 7.9990157298 | 99.6019965278 | 33.2345401008 |
| **15** | 0.0054311159 | -0.0018339540 | | -0.0183413366 | 7.9973059367 | 7.9973277225 | 7.9973828617 | 7.9991026156 | 99.6180555556 | 33.2029530910 |
| **16** | 0.0261928572 | -0.0108514070 | | -0.0192533412 | 7.9974133119 | 7.9974552687 | 7.9972391931 | 7.9991549546 | 99.6137152778 | 33.2345128676 |
| **17** | 0.0138107962 | -0.0247986776 | | 0.0145860854 | 7.9973431480 | 7.9973298110 | 7.9976064204 | 7.9991549425 | 99.6202256944 | 33.1951320806 |
| **18** | -0.0102383535 | 0.0022048340 | | 0.0245864227 | 7.9972773927 | 7.9974723355 | 7.9975058567 | 7.9991641054 | 99.6236979167 | 33.2469107435 |
| **19** | 0.3730908714 | -0.4175924019 | | -0.0519753379 | 7.5369459978 | 7.6811364976 | 7.4879170615 | 7.6507515434 | 99.6141493056 | 34.7914470997 |
| **20** | -0.0101845687 | 0.0052980995 | | -0.0075832543 | 7.9973556251 | 7.9975029616 | 7.9974335447 | 7.9990827307 | 99.6150173611 | 33.2705916394 |
| **21** | -0.0126147880 | 0.0031325057 | | 0.0204526652 | 7.9972037713 | 7.9974588181 | 7.9974871700 | 7.9990427409 | 99.5763888889 | 33.2921619690 |
| **22** | -0.0180600055 | -0.0081553279 | | -0.0113812038 | 7.9974012235 | 7.9980427252 | 7.9973077939 | 7.9991741814 | 99.6002604167 | 33.2141476035 |
| **23** | 0.0042223956 | -0.0364437917 | | 0.0209154534 | 7.9965302945 | 7.9975802424 | 7.9968645357 | 7.9989207256 | 99.6223958333 | 33.1244502315 |
| **24** | -0.0270274455 | -0.0112096977 | | -0.0582325160 | 7.9976436514 | 7.9976513144 | 7.9971128621 | 7.9991154566 | 99.6150173611 | 33.2065972222 |
| **25** | -0.0231617836 | 0.0178543572 | | -0.0281683082 | 7.9974243887 | 7.9974873719 | 7.9970982876 | 7.9990607084 | 99.6102430556 | 33.2833843954 |
| **26** | -0.0009960441 | 0.0144562160 | | -0.0490687524 | 7.9974317701 | 7.9975570040 | 7.9976200736 | 7.9991762191 | 99.6041666667 | 33.2576116558 |
| **27** | 0.0136349179 | 0.0016683915 | | -0.0341511113 | 7.9974985588 | 7.9974691247 | 7.9969981324 | 7.9990102441 | 99.5846354167 | 33.2006110430 |
| **28** | -0.0113005198 | 0.0039506875 | | 0.0212107095 | 7.9972097610 | 7.9975181528 | 7.9975267870 | 7.9991500580 | 99.6219618056 | 33.3108217593 |
| **29** | 0.0153749941 | -0.0100511153 | | -0.0070996037 | 7.9975745785 | 7.9978723187 | 7.9966559307 | 7.9990583348 | 99.5985243056 | 33.1790475218 |
| **30** | -0.0471887265 | 0.0061457486 | | 0.0114907370 | 7.9974922261 | 7.9972759017 | 7.9978352472 | 7.9991442899 | 99.6076388889 | 33.1365893927 |
| **31** | -0.0397425468 | 0.0000285001 | | -0.0058258096 | 7.9973596344 | 7.9977760078 | 7.9971431842 | 7.9991202339 | 99.6106770833 | 33.3060763889 |
| **32** | 0.0029025173 | 0.0025360922 | | -0.0164370415 | 7.9975840199 | 7.9976127367 | 7.9978459103 | 7.9991690427 | 99.6032986111 | 33.2335341776 |
| **33** | 0.0312634908 | -0.0080847494 | | 0.0013042361 | 7.9962627773 | 7.9978172680 | 7.9972215819 | 7.9989573486 | 99.6006944444 | 33.2482026144 |
| **34** | -0.0019086960 | 0.0032545021 | | -0.0062773730 | 7.9972419115 | 7.9978262273 | 7.9972286889 | 7.9990081390 | 99.5941840278 | 33.2376616966 |
| **35** | -0.0121061224 | 0.0293795989 | | 0.0072933147 | 7.9974583161 | 7.9975633964 | 7.9977826553 | 7.9992126495 | 99.6193576389 | 33.2240093954 |
| **36** | -0.0099914053 | 0.0146731140 | | -0.0307302090 | 7.9977173799 | 7.9977150432 | 7.9978942786 | 7.9992320832 | 99.5976562500 | 33.1402488426 |
| **37** | -0.0273480097 | 0.0225913577 | | 0.0081403745 | 7.9975047590 | 7.9977103315 | 7.9975822195 | 7.9991822788 | 99.6271701389 | 33.1893399374 |
| **38** | -0.0182610751 | 0.0007940141 | | 0.0100258633 | 7.9964706517 | 7.9975234946 | 7.9968731677 | 7.9989814440 | 99.5963541667 | 33.2233387800 |
| **39** | -0.0270630451 | 0.0061920289 | | -0.0018237375 | 7.9974498953 | 7.9975311738 | 7.9977662322 | 7.9992529556 | 99.6145833333 | 33.1760586874 |
| **40** | -0.0187323865 | -0.0256431828 | | 0.0230639426 | 7.9975604537 | 7.9978275680 | 7.9975747962 | 7.9991998973 | 99.6128472222 | 33.1795751634 |
| **41** | -0.0135975512 | 0.0176491778 | | 0.0132862585 | 7.9974811077 | 7.9976734389 | 7.9972094227 | 7.9992334079 | 99.6002604167 | 33.2634412446 |
| **42** | 0.0040148754 | 0.0188937779 | | -0.0682604185 | 7.9964982025 | 7.9975781667 | 7.9972286989 | 7.9989322368 | 99.6054687500 | 33.1762101716 |
| **43** | 0.0305218777 | 0.0122984287 | | -0.0228878114 | 7.9975540360 | 7.9976064559 | 7.9972983743 | 7.9990611053 | 99.5963541667 | 33.1438912718 |
| **44** | -0.0323381644 | -0.0087732030 | | -0.0079413102 | 7.9972869211 | 7.9977708736 | 7.9976241280 | 7.9991783532 | 99.6093750000 | 33.2696282680 |
| **45** | -0.0225688970 | 0.0068601109 | | -0.0133337030 | 7.9975086071 | 7.9976279562 | 7.9974552182 | 7.9990598683 | 99.6106770833 | 33.2124948938 |
| **46** | -0.0217370832 | 0.0126452504 | | 0.0071706527 | 7.9974560890 | 7.9972068065 | 7.9973365641 | 7.9991948958 | 99.5972222222 | 33.1868157680 |
| **47** | -0.0243811754 | 0.0309061238 | | 0.0579970100 | 7.9978806629 | 7.9978328935 | 7.9975572377 | 7.9992183047 | 99.5954861111 | 33.2296721814 |
| **48** | -0.0141956088 | -0.0093654246 | | -0.0181667267 | 7.9967973141 | 7.9968814383 | 7.9970927820 | 7.9991099555 | 99.5898437500 | 33.2211431100 |
| **49** | 0.0035474953 | 0.0273301756 | | -0.0098962056 | 7.9973381504 | 7.9972480080 | 7.9978632333 | 7.9991214866 | 99.6080729167 | 33.1675704657 |
| **50** | 0.0112855254 | -0.0191838425 | | -0.0148714182 | 7.9970337574 | 7.9975057151 | 7.9975723998 | 7.9992016455 | 99.5855034722 | 33.2358677151 |
| **Total** | 0.0067026433 | -0.3642395806 | | -0.2327778782 | 399.4059159835 | 399.5619902013 | 399.3624818379 | 399.6084565833 | 4980.4014756944 | 1662.7587265114 |
| **Average** | 0.0001340529 | -0.0072846628 | | -0.0046555239 | 7.9881183197 | 7.9912398040 | 7.9872496368 | 7.9921691317 | 99.6080295139 | 33.2551745302 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_BaseballPitch\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | 0.0060288394 | -0.0219490650 | | -0.0167603451 | 7.9973988902 | 7.9974590099 | 7.9977807472 | 7.9992442049 | 99.6362847222 | 33.2616710920 |
| **2** | -0.0251354077 | -0.0278676857 | | -0.0302158152 | 7.9976375489 | 7.9976742729 | 7.9973976084 | 7.9992011953 | 99.6150173611 | 33.2257965686 |
| **3** | 0.0013511514 | 0.0063170477 | | 0.0388227828 | 7.9975229941 | 7.9976915683 | 7.9978455759 | 7.9992327235 | 99.6041666667 | 33.2688878676 |
| **4** | -0.0154891038 | 0.0086522014 | | 0.0630818611 | 7.9979448248 | 7.9978301758 | 7.9977410165 | 7.9992747991 | 99.6106770833 | 33.2465499047 |
| **5** | 0.0195223389 | 0.0037910314 | | 0.0413794958 | 7.9973575614 | 7.9977615916 | 7.9974641820 | 7.9991602981 | 99.5993923611 | 33.2460375817 |
| **6** | -0.0013168983 | 0.0128615189 | | -0.0710630528 | 7.9977744193 | 7.9977705758 | 7.9976923398 | 7.9991978650 | 99.6011284722 | 33.2728553922 |
| **7** | -0.0145270409 | -0.0351067168 | | -0.0062012338 | 7.9977820768 | 7.9976037964 | 7.9975195100 | 7.9991571984 | 99.6132812500 | 33.2659807326 |
| **8** | -0.0029353854 | -0.0414614847 | | -0.0460249824 | 7.9975219582 | 7.9976952612 | 7.9980538410 | 7.9992851873 | 99.6089409722 | 33.1789096541 |
| **9** | 0.0215291038 | 0.0040160671 | | 0.0308301044 | 7.9978328846 | 7.9972984674 | 7.9974626182 | 7.9991527004 | 99.6093750000 | 33.2126463780 |
| **10** | -0.0628497340 | 0.0695279688 | | 0.0216055505 | 7.9367569148 | 7.9079267021 | 7.9266641083 | 7.9372374699 | 99.6067708333 | 33.9059742647 |
| **11** | -0.0216276739 | -0.0247871277 | | 0.0048395884 | 7.9978035101 | 7.9976568933 | 7.9975071207 | 7.9992390686 | 99.6037326389 | 33.1941074346 |
| **12** | -0.0172990129 | -0.0262691368 | | 0.0199795049 | 7.9976872724 | 7.9978162416 | 7.9976192278 | 7.9991693236 | 99.5920138889 | 33.2218001089 |
| **13** | -0.0192620742 | -0.0151039686 | | 0.0271493319 | 7.9977955724 | 7.9976477712 | 7.9978050333 | 7.9993804591 | 99.6306423611 | 33.1649884259 |
| **14** | 0.0017089265 | -0.0277250812 | | -0.0101228238 | 7.9979651919 | 7.9976508320 | 7.9974736650 | 7.9992520801 | 99.6128472222 | 33.1972971133 |
| **15** | 0.0017374474 | -0.0035546914 | | -0.0021114327 | 7.9974936476 | 7.9978904728 | 7.9978408376 | 7.9991854420 | 99.5716145833 | 33.2283530773 |
| **16** | -0.1812256022 | -0.1420142535 | | -0.0104899185 | 7.8667795671 | 7.9042789042 | 7.7890320398 | 7.8757602328 | 99.6202256944 | 32.4270850354 |
| **17** | 0.0009302491 | 0.0011230866 | | 0.0683733014 | 7.9977331983 | 7.9975621189 | 7.9977588786 | 7.9992460652 | 99.6080729167 | 33.1751668028 |
| **18** | -0.0090670548 | -0.0090818292 | | 0.0046480924 | 7.9975562354 | 7.9978265584 | 7.9975651056 | 7.9993338317 | 99.6362847222 | 33.2259378404 |
| **19** | 0.0147381390 | 0.0040079029 | | 0.0202735202 | 7.9979208936 | 7.9975102400 | 7.9977925812 | 7.9992631085 | 99.6059027778 | 33.2441670071 |
| **20** | -0.0160458103 | -0.0144360747 | | 0.0366905026 | 7.9973865711 | 7.9975005268 | 7.9974454889 | 7.9991228546 | 99.6050347222 | 33.1829758987 |
| **21** | -0.0095245786 | -0.0022454367 | | 0.0035097146 | 7.9977530631 | 7.9974573893 | 7.9974606680 | 7.9991793213 | 99.6145833333 | 33.2046364379 |
| **22** | 0.0013948876 | -0.0001577660 | | -0.0426374227 | 7.9975998974 | 7.9977420758 | 7.9978817792 | 7.9992417565 | 99.5993923611 | 33.2248536220 |
| **23** | 0.0063245352 | 0.0029004360 | | -0.0596789388 | 7.9975977520 | 7.9976744890 | 7.9977745188 | 7.9992380595 | 99.6354166667 | 33.1905671296 |
| **24** | 0.0002926128 | 0.0018951685 | | 0.0180925763 | 7.9972211745 | 7.9978207616 | 7.9974075315 | 7.9991618100 | 99.6024305556 | 33.1842660675 |
| **25** | -0.0052146927 | 0.0078810827 | | 0.0224633484 | 7.9976957006 | 7.9976534871 | 7.9976053076 | 7.9990749611 | 99.6163194444 | 33.1868906590 |
| **26** | 0.0154008782 | -0.0147948500 | | -0.0177501011 | 7.9978761887 | 7.9976627766 | 7.9974782149 | 7.9991673354 | 99.6132812500 | 33.2958231209 |
| **27** | 0.0129121591 | -0.0007600881 | | -0.0034713288 | 7.9971996001 | 7.9976901137 | 7.9977262982 | 7.9991864535 | 99.6041666667 | 33.2865638617 |
| **28** | 0.0187447194 | -0.0273667457 | | 0.0038815272 | 7.9979541795 | 7.9978691219 | 7.9974385982 | 7.9992694298 | 99.6263020833 | 33.2393909995 |
| **29** | 0.2191378428 | 0.0001923344 | | 0.0500323370 | 7.9862496249 | 7.9888727171 | 7.9757345388 | 7.9873932092 | 99.5967881944 | 33.2212350218 |
| **30** | 0.2683333993 | 0.0389538684 | | 0.0184795487 | 7.9727835430 | 7.9802277574 | 7.9490266248 | 7.9745818655 | 99.6163194444 | 33.5260365605 |
| **31** | 0.0533659760 | -0.2278849247 | | -0.0063394400 | 7.9661372915 | 7.9591317941 | 7.9685737369 | 7.9703630965 | 99.6254340278 | 33.9173049428 |
| **32** | -0.0184228448 | 0.0015821898 | | -0.0074358746 | 7.9978527579 | 7.9972947786 | 7.9976446402 | 7.9991458979 | 99.6202256944 | 33.1842269199 |
| **33** | -0.0144784732 | 0.0168421160 | | -0.0249943945 | 7.9973894592 | 7.9977207950 | 7.9976778299 | 7.9991767483 | 99.6111111111 | 33.1206188725 |
| **34** | -0.0259932039 | -0.0104134124 | | -0.0637921598 | 7.9977537390 | 7.9978070595 | 7.9977189249 | 7.9992807835 | 99.6141493056 | 33.2657066993 |
| **35** | 0.0278869759 | -0.0145891460 | | -0.0362873253 | 7.9975284996 | 7.9974243682 | 7.9977955407 | 7.9991109389 | 99.6085069444 | 33.2461431100 |
| **36** | -0.0100170623 | 0.0170839358 | | -0.0119089559 | 7.9976740807 | 7.9974418053 | 7.9977191122 | 7.9991182692 | 99.5872395833 | 33.0135791122 |
| **37** | -0.0403959643 | 0.0623361286 | | -0.0063327644 | 7.9974705446 | 7.9973584581 | 7.9978300237 | 7.9992236715 | 99.6072048611 | 33.2311342593 |
| **38** | -0.0186975831 | 0.0056822239 | | -0.0077590082 | 7.9975657993 | 7.9974488230 | 7.9976794312 | 7.9991434961 | 99.6080729167 | 33.2958214188 |
| **39** | -0.0097989264 | -0.0239503082 | | 0.0626129193 | 7.9355962447 | 7.9117833346 | 7.9469960788 | 7.9432679063 | 99.6002604167 | 32.2576848448 |
| **40** | 0.0163866380 | 0.0008999270 | | 0.0635347281 | 7.9978489787 | 7.9977605034 | 7.9975718892 | 7.9992421998 | 99.6015625000 | 33.2195499728 |
| **41** | 0.0146718992 | -0.0071735424 | | 0.0030282625 | 7.9979416055 | 7.9973074796 | 7.9975371729 | 7.9992824138 | 99.6250000000 | 33.2273335376 |
| **42** | -0.0171739988 | -0.0051557341 | | -0.0478808243 | 7.9973022121 | 7.9977412607 | 7.9975711393 | 7.9991229766 | 99.5946180556 | 33.3065104167 |
| **43** | 0.0373013792 | 0.0433907664 | | 0.0268419548 | 7.9975521080 | 7.9976859427 | 7.9976491412 | 7.9992097359 | 99.6067708333 | 33.2182819308 |
| **44** | 0.0137147935 | -0.0197447454 | | -0.0081103282 | 7.9976567225 | 7.9974285338 | 7.9979830388 | 7.9992859875 | 99.5998263889 | 33.1881161492 |
| **45** | -0.0025704235 | 0.0072208796 | | -0.0149631400 | 7.9975788757 | 7.9977446514 | 7.9978690137 | 7.9993340968 | 99.6210937500 | 33.1765744145 |
| **46** | 0.2315861122 | -0.0152283213 | | 0.0077872770 | 7.9296932651 | 7.9226138363 | 7.9030378519 | 7.9328918801 | 99.6111111111 | 34.0416394336 |
| **47** | -0.0066168947 | 0.0026175940 | | 0.0255488750 | 7.9977981913 | 7.9976965573 | 7.9976539946 | 7.9991801795 | 99.5993923611 | 33.2036985975 |
| **48** | -0.0326418407 | -0.0263319300 | | -0.0022837164 | 7.9977751901 | 7.9976727124 | 7.9975019282 | 7.9991602253 | 99.6345486111 | 33.2538398693 |
| **49** | -0.0007271536 | -0.0099862559 | | -0.0223049050 | 7.9980810792 | 7.9974917126 | 7.9979077982 | 7.9992287391 | 99.6427951389 | 33.1928768382 |
| **50** | 0.0161290878 | 0.0061449156 | | 0.0189478295 | 7.9980716005 | 7.9977601414 | 7.9974448813 | 7.9992909100 | 99.6197916667 | 33.2438776552 |
| **Total** | 0.4220756524 | -0.4692199308 | | 0.1255143022 | 399.4938507022 | 399.4730372185 | 399.3583587737 | 399.5876504625 | 4980.5551215278 | 1661.7119706563 |
| **Average** | 0.0084413125 | -0.0093841231 | | 0.0025102808 | 7.9898770140 | 7.9894607444 | 7.9871671755 | 7.9917530093 | 99.6111024306 | 33.2342394131 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_Basketball\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | -0.0079613815 | -0.0052352334 | | -0.0490465092 | 7.9978525449 | 7.9977329067 | 7.9974820796 | 7.9992543033 | 99.6076388889 | 33.2626974401 |
| **2** | 0.0073003943 | -0.0022794945 | | 0.0399916823 | 7.9977076865 | 7.9979577005 | 7.9975885092 | 7.9993363926 | 99.6089409722 | 33.1184436275 |
| **3** | 0.0027573130 | 0.0128513498 | | 0.0011468243 | 7.9974649632 | 7.9976378991 | 7.9974419532 | 7.9990993915 | 99.6128472222 | 33.4213456563 |
| **4** | 0.0188890973 | 0.0101032961 | | -0.0045895595 | 7.9977770718 | 7.9978434193 | 7.9976281756 | 7.9992402315 | 99.5946180556 | 33.2226307190 |
| **5** | -0.0157533378 | 0.0242141601 | | 0.0303778027 | 7.9975080941 | 7.9971561346 | 7.9975523679 | 7.9990867056 | 99.6028645833 | 33.1213694853 |
| **6** | 0.0072861246 | 0.0018688358 | | 0.0121293174 | 7.9977897141 | 7.9976029958 | 7.9974256825 | 7.9992613044 | 99.6102430556 | 33.2384599673 |
| **7** | 0.0383928493 | 0.0150808234 | | -0.0329914164 | 7.9974641636 | 7.9975076574 | 7.9974853558 | 7.9990263012 | 99.6002604167 | 33.2025105528 |
| **8** | -0.0271375518 | -0.0349315110 | | -0.0261697453 | 7.9976676599 | 7.9976050923 | 7.9978243743 | 7.9992929759 | 99.6137152778 | 33.2599928513 |
| **9** | -0.0064048296 | -0.0107401320 | | -0.0586951493 | 7.9979275942 | 7.9973246272 | 7.9979909641 | 7.9992465437 | 99.6323784722 | 33.2664794390 |
| **10** | 0.0165469762 | 0.0051247039 | | -0.0225084518 | 7.9977287928 | 7.9974009061 | 7.9976280764 | 7.9991658424 | 99.6093750000 | 33.2793028322 |
| **11** | 0.0262874542 | 0.0088230539 | | -0.0358142374 | 7.9978023666 | 7.9976870218 | 7.9975316547 | 7.9992143474 | 99.6193576389 | 33.2148999183 |
| **12** | 0.0247674573 | -0.0387070823 | | 0.0123953299 | 7.9981371641 | 7.9972883831 | 7.9978604855 | 7.9991912812 | 99.6276041667 | 33.1568474265 |
| **13** | 0.0104292158 | -0.0182021813 | | -0.0055288149 | 7.9975829425 | 7.9976910466 | 7.9979625147 | 7.9992797578 | 99.5985243056 | 33.2294849537 |
| **14** | -0.0412741134 | 0.0031204327 | | 0.0099446980 | 7.9973040774 | 7.9974911608 | 7.9973214784 | 7.9990486131 | 99.6297743056 | 33.2063657407 |
| **15** | -0.0199615233 | 0.0136062752 | | 0.0259936980 | 7.9969580846 | 7.9976235296 | 7.9973232338 | 7.9993333873 | 99.6223958333 | 33.1679364107 |
| **16** | 0.0059661028 | 0.0113978953 | | -0.0006292081 | 7.9975911838 | 7.9975295852 | 7.9974961229 | 7.9991543385 | 99.5876736111 | 33.2127025463 |
| **17** | 0.0059938973 | 0.0065500325 | | 0.0167870641 | 7.9977454695 | 7.9974960103 | 7.9975360054 | 7.9991966239 | 99.6019965278 | 33.2369706563 |
| **18** | 0.0153647172 | 0.0056462681 | | -0.0133343119 | 7.9978747319 | 7.9973119518 | 7.9975828909 | 7.9992123307 | 99.6019965278 | 33.2453720724 |
| **19** | -0.0223064637 | -0.0174674858 | | 0.0174115006 | 7.9974427859 | 7.9977929143 | 7.9975251583 | 7.9990367487 | 99.6284722222 | 33.2666802832 |
| **20** | -0.2476893218 | 0.0480832529 | | -0.0021893595 | 7.9747316265 | 7.9698527814 | 7.9731319529 | 7.9808898891 | 99.6072048611 | 33.0708929058 |
| **21** | 0.0175222126 | -0.0114609376 | | 0.0240096009 | 7.9976463205 | 7.9973799067 | 7.9972972762 | 7.9991646058 | 99.6124131944 | 33.1784892429 |
| **22** | -0.0360092436 | -0.0187066156 | | -0.0374729789 | 7.9974993335 | 7.9976085542 | 7.9975792882 | 7.9992127786 | 99.5820312500 | 33.0653833061 |
| **23** | -0.0337186756 | 0.0151007037 | | -0.0032157710 | 7.9971101237 | 7.9978805644 | 7.9977070266 | 7.9993036663 | 99.5980902778 | 33.2573325163 |
| **24** | 0.0018926809 | -0.0252446659 | | -0.0345326362 | 7.9976367908 | 7.9975374327 | 7.9974263699 | 7.9991710005 | 99.6054687500 | 33.2350830610 |
| **25** | -0.0097655850 | 0.0384945453 | | 0.0752825830 | 7.9974821048 | 7.9978681244 | 7.9979930006 | 7.9992500359 | 99.6215277778 | 33.2658173339 |
| **26** | -0.0145276211 | -0.0038449910 | | -0.0495819368 | 7.9978917116 | 7.9977383139 | 7.9977169931 | 7.9992166713 | 99.6015625000 | 33.2170564406 |
| **27** | -0.0228831230 | -0.0129187993 | | 0.0044328063 | 7.9975732014 | 7.9978444801 | 7.9971354615 | 7.9991392070 | 99.6032986111 | 33.1996868192 |
| **28** | -0.0322104439 | -0.0067460400 | | -0.0226092776 | 7.9977816666 | 7.9974848026 | 7.9974864406 | 7.9991462512 | 99.5946180556 | 33.2355528322 |
| **29** | 0.0133181140 | -0.0189481694 | | -0.0190450799 | 7.9974290403 | 7.9977105035 | 7.9976990123 | 7.9992804273 | 99.6002604167 | 33.1735549428 |
| **30** | -0.0169235961 | 0.0197566518 | | 0.0100946862 | 7.9979438176 | 7.9975407724 | 7.9973857058 | 7.9991425001 | 99.5933159722 | 33.1685729847 |
| **31** | 0.0032833567 | 0.0307307399 | | -0.0147684789 | 7.9974459056 | 7.9975120222 | 7.9973985990 | 7.9992216769 | 99.6063368056 | 33.2199108115 |
| **32** | -0.0220521583 | 0.0188182141 | | -0.0011650543 | 7.9974696509 | 7.9974111591 | 7.9979863016 | 7.9992500173 | 99.6163194444 | 33.2162819989 |
| **33** | -0.0154044335 | -0.0245553865 | | 0.0103570790 | 7.9974820490 | 7.9972648208 | 7.9976177590 | 7.9990679304 | 99.6019965278 | 33.1002433960 |
| **34** | 0.0102349418 | 0.0082597075 | | -0.0140833934 | 7.9976897734 | 7.9975033463 | 7.9976456846 | 7.9991412341 | 99.6210937500 | 33.2135620915 |
| **35** | 0.0066248592 | -0.0296715425 | | 0.0243246290 | 7.9977624940 | 7.9978199701 | 7.9973343797 | 7.9991555903 | 99.6119791667 | 33.2432955474 |
| **36** | 0.0154318148 | 0.0024202247 | | -0.0068160132 | 7.9974526459 | 7.9972870385 | 7.9979366645 | 7.9991062229 | 99.6098090278 | 33.1806406590 |
| **37** | 0.0045306583 | 0.0330574305 | | 0.0338734928 | 7.9974672287 | 7.9974646939 | 7.9978420974 | 7.9991927252 | 99.6041666667 | 33.1944087010 |
| **38** | -0.0569508338 | -0.0085551247 | | 0.0048061290 | 7.9975476398 | 7.9973217039 | 7.9979397505 | 7.9990890940 | 99.6137152778 | 33.1873774510 |
| **39** | -0.0090099627 | -0.0101933083 | | -0.0019746147 | 7.9975156631 | 7.9978119580 | 7.9978381917 | 7.9991889029 | 99.6024305556 | 33.1932751225 |
| **40** | 0.0204138350 | -0.0038454242 | | 0.0439105951 | 7.9976470832 | 7.9975326314 | 7.9977317225 | 7.9992514388 | 99.6050347222 | 33.1962486383 |
| **41** | 0.3075746098 | 0.3435880224 | | -0.0920578050 | 7.9437105273 | 7.8968023588 | 7.9320580619 | 7.9416420816 | 99.5859375000 | 33.5486077070 |
| **42** | 0.0288697230 | -0.0228354309 | | 0.0398048342 | 7.9975972971 | 7.9977572519 | 7.9980362331 | 7.9991676724 | 99.6167534722 | 33.2689099946 |
| **43** | 0.0008673471 | 0.0139082895 | | 0.0452130564 | 7.9975072247 | 7.9973161557 | 7.9978891171 | 7.9992123798 | 99.5989583333 | 33.1547300517 |
| **44** | 0.0042562381 | 0.0076721296 | | 0.0086789723 | 7.9976956027 | 7.9976981623 | 7.9979234000 | 7.9992639208 | 99.6106770833 | 33.2502825436 |
| **45** | -0.0344965602 | -0.0194497611 | | -0.0229427976 | 7.9974850172 | 7.9975747911 | 7.9978782736 | 7.9991118618 | 99.6046006944 | 33.2093750000 |
| **46** | 0.0069392001 | 0.0172756447 | | 0.0074960801 | 7.9977694300 | 7.9976229394 | 7.9975772359 | 7.9991589112 | 99.6111111111 | 33.1987779139 |
| **47** | 0.0253963547 | -0.0242797562 | | 0.0027547972 | 7.9977265603 | 7.9975446465 | 7.9975691849 | 7.9992087009 | 99.5824652778 | 33.1328890931 |
| **48** | 0.0087204428 | -0.0020174368 | | 0.0088701861 | 7.9975149730 | 7.9972897036 | 7.9972477193 | 7.9991992351 | 99.6228298611 | 33.2621085240 |
| **49** | -0.0067852837 | 0.0038173056 | | 0.0157458486 | 7.9977732912 | 7.9976897058 | 7.9976336645 | 7.9991843391 | 99.6206597222 | 33.2447763480 |
| **50** | -0.0066051666 | -0.0028379294 | | -0.0457887394 | 7.9973789678 | 7.9973162917 | 7.9974332459 | 7.9991121555 | 99.5937500000 | 33.2151382081 |
| **Total** | -0.0499732220 | 0.3456955494 | | -0.0917180465 | 399.8036918537 | 399.7496685301 | 399.7912628973 | 399.8835205451 | 4980.3710937500 | 1660.8287547658 |
| **Average** | -0.0009994641 | 0.0069138008 | | -0.0018343589 | 7.9960738371 | 7.9949933706 | 7.9958252579 | 7.9976704109 | 99.6074218750 | 33.2165750953 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_BasketballDunk\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | -0.3865947198 | -0.0346078456 | | -0.1368490971 | 7.9937635579 | 7.9851301247 | 7.9839536710 | 7.9928254945 | 99.6271701389 | 33.3932053377 |
| **2** | 0.0318923931 | 0.0624649503 | | 0.1480887420 | 7.9804958442 | 7.9240693460 | 7.8960427739 | 7.9591056435 | 99.5967881944 | 33.1347783905 |
| **3** | 0.0047493204 | 0.0050363908 | | -0.0132892410 | 7.9978209297 | 7.9974970070 | 7.9974543209 | 7.9991421342 | 99.6158854167 | 33.2206750408 |
| **4** | 0.0295568728 | 0.0307080914 | | -0.0797666898 | 7.9975680717 | 7.9976786311 | 7.9975703800 | 7.9992426187 | 99.6006944444 | 33.2032798883 |
| **5** | 0.0155065919 | 0.0010163225 | | -0.0530960186 | 7.9976587463 | 7.9978076865 | 7.9977877568 | 7.9991798891 | 99.6024305556 | 32.9461669390 |
| **6** | 0.0008319831 | -0.0200062536 | | 0.0105615757 | 7.9975410978 | 7.9973883025 | 7.9973221450 | 7.9991475168 | 99.6037326389 | 33.2474639161 |
| **7** | -0.0151819051 | 0.0125477190 | | 0.0005134113 | 7.9974317513 | 7.9977136599 | 7.9975796027 | 7.9991434884 | 99.6171875000 | 33.2919713371 |
| **8** | 0.0005083474 | 0.0163222460 | | 0.0042484412 | 7.9973697559 | 7.9977184750 | 7.9976674373 | 7.9991656755 | 99.6297743056 | 33.3057376770 |
| **9** | 0.0052974522 | 0.0031340475 | | 0.0184968683 | 7.9972149486 | 7.9979805923 | 7.9974210478 | 7.9992081518 | 99.5928819444 | 33.2236519608 |
| **10** | -0.0269348737 | -0.4433396976 | | 0.4189819190 | 7.9452739329 | 7.9512529852 | 7.9405244587 | 7.9639500303 | 99.6193576389 | 33.6214392702 |
| **11** | 0.0012603082 | -0.0050466248 | | 0.0008453449 | 7.9977175243 | 7.9977853789 | 7.9975162808 | 7.9992761732 | 99.5985243056 | 33.2851409314 |
| **12** | 0.0318263509 | -0.0015007702 | | -0.0110956641 | 7.9975166871 | 7.9976498358 | 7.9977372909 | 7.9991822573 | 99.5920138889 | 33.1395084423 |
| **13** | -0.0140240472 | 0.0141729128 | | 0.0113109107 | 7.9976992972 | 7.9973281004 | 7.9974110055 | 7.9991873226 | 99.5959201389 | 33.1840890523 |
| **14** | 0.0248090453 | -0.0138535862 | | 0.0503427911 | 7.9977865468 | 7.9971503958 | 7.9974760262 | 7.9991328052 | 99.6080729167 | 33.3040662446 |
| **15** | -0.0136078890 | -0.0047556337 | | 0.0504568714 | 7.9975285523 | 7.9975572923 | 7.9975947287 | 7.9992145390 | 99.5902777778 | 33.1843818083 |
| **16** | -0.0989847254 | -0.0254238277 | | 0.0361469322 | 7.9793269547 | 7.9425382626 | 7.9550665316 | 7.9731783793 | 99.6319444444 | 33.3862591912 |
| **17** | 0.0704839749 | -0.1394932703 | | 0.1824420860 | 7.9690422449 | 7.9078087400 | 7.9144351900 | 7.9549463048 | 99.6493055556 | 34.0128914760 |
| **18** | 0.0311829929 | -0.0173064653 | | 0.0168869762 | 7.9977259768 | 7.9976970544 | 7.9974750174 | 7.9993948587 | 99.6176215278 | 33.2470996732 |
| **19** | 0.0207381187 | 0.0213205272 | | 0.0289753646 | 7.9971234309 | 7.9972418893 | 7.9975187462 | 7.9991503199 | 99.6167534722 | 32.4260757081 |
| **20** | -0.0299170226 | 0.0194252884 | | -0.0477156037 | 7.9973161845 | 7.9983241019 | 7.9975760500 | 7.9991559209 | 99.6189236111 | 33.1804244962 |
| **21** | 0.0243087082 | 0.0368143383 | | 0.0160805850 | 7.9975530116 | 7.9974390913 | 7.9976410344 | 7.9992375184 | 99.6015625000 | 33.2672777097 |
| **22** | -0.0143599380 | -0.0045947388 | | -0.0099149694 | 7.9974658098 | 7.9973722672 | 7.9976031958 | 7.9991189366 | 99.6171875000 | 33.2582907816 |
| **23** | -0.0058621618 | -0.0515206606 | | 0.1068626959 | 7.9975042285 | 7.9975731634 | 7.9977592539 | 7.9992181076 | 99.6145833333 | 33.3132489107 |
| **24** | 0.0102765326 | 0.0080149945 | | 0.0156213879 | 7.9978200321 | 7.9976993284 | 7.9975481308 | 7.9992070396 | 99.6059027778 | 33.2350251906 |
| **25** | -0.0447433315 | 0.0369416928 | | -0.0641848291 | 7.9781190925 | 7.9558314992 | 7.9641506487 | 7.9766373585 | 99.6141493056 | 32.1928036492 |
| **26** | -0.0244307429 | 0.0232898929 | | -0.0462453058 | 7.9974701779 | 7.9976558832 | 7.9973220890 | 7.9991155801 | 99.6202256944 | 33.2953278186 |
| **27** | -0.0223352810 | -0.0291032213 | | -0.0253478612 | 7.9976080949 | 7.9976559194 | 7.9979569841 | 7.9993013915 | 99.6015625000 | 33.2199805964 |
| **28** | 0.0076473993 | 0.0052897973 | | -0.0365187350 | 7.9978500221 | 7.9973323868 | 7.9978137420 | 7.9991616499 | 99.5998263889 | 33.2546568627 |
| **29** | 0.0042371465 | 0.0113103361 | | 0.0082648056 | 7.9978361987 | 7.9976534866 | 7.9973666404 | 7.9990917808 | 99.6128472222 | 33.2054942810 |
| **30** | 0.0050119011 | -0.0207950281 | | -0.0202599992 | 7.9973772151 | 7.9970429038 | 7.9978118045 | 7.9992016957 | 99.6072048611 | 33.1699227260 |
| **31** | 0.0078993495 | -0.0073268182 | | -0.0360247219 | 7.9976589985 | 7.9976411327 | 7.9972967840 | 7.9992539956 | 99.5911458333 | 33.2366727941 |
| **32** | 0.0354468929 | -0.0095374007 | | 0.0114433769 | 7.9975680506 | 7.9976215320 | 7.9976834536 | 7.9992536778 | 99.6106770833 | 33.2259395425 |
| **33** | -0.0118958969 | 0.0104650792 | | -0.0703467386 | 7.9978380263 | 7.9973165024 | 7.9971916472 | 7.9990948655 | 99.6124131944 | 33.0755225354 |
| **34** | 0.0082338727 | -0.0356299129 | | -0.0447764017 | 7.9976381486 | 7.9975407851 | 7.9980666125 | 7.9992059428 | 99.6102430556 | 33.2304993873 |
| **35** | 0.0211509801 | 0.0067293950 | | -0.0007404721 | 7.9978393533 | 7.9975653991 | 7.9978056957 | 7.9992196923 | 99.6028645833 | 33.0393978077 |
| **36** | 0.0081378010 | -0.0195380222 | | 0.0188906462 | 7.9977878022 | 7.9975314988 | 7.9974135773 | 7.9991012759 | 99.6037326389 | 33.2236553649 |
| **37** | 0.0042034025 | -0.0050440206 | | 0.0100207266 | 7.9974108316 | 7.9972357945 | 7.9980239345 | 7.9993999011 | 99.6050347222 | 33.1655450027 |
| **38** | -0.0210770589 | -0.0283782516 | | 0.0248027987 | 7.9975657469 | 7.9976118965 | 7.9975184678 | 7.9991642056 | 99.6054687500 | 33.2497736247 |
| **39** | 0.0072182234 | -0.0094869459 | | -0.0457702330 | 7.9975474725 | 7.9974501826 | 7.9976279251 | 7.9991562372 | 99.6293402778 | 33.1847069036 |
| **40** | -0.0339067254 | -0.0191363535 | | -0.0076809550 | 7.9977010095 | 7.9976898721 | 7.9977973041 | 7.9992551254 | 99.6223958333 | 33.2680998094 |
| **41** | 0.0155798737 | -0.0223745625 | | -0.0356788829 | 7.9976716895 | 7.9975919163 | 7.9975714369 | 7.9990871005 | 99.6132812500 | 33.2700639978 |
| **42** | 0.0351342764 | 0.0243855961 | | -0.0280646760 | 7.9972852272 | 7.9975728985 | 7.9979290734 | 7.9991951171 | 99.6232638889 | 33.1398233252 |
| **43** | -0.4508454276 | 0.0482035478 | | -0.1052346729 | 7.9845819765 | 7.9774103475 | 7.9786652113 | 7.9906383400 | 99.6145833333 | 33.2883442266 |
| **44** | 0.0343806054 | -0.0080154509 | | -0.0147660706 | 7.9978655724 | 7.9976006177 | 7.9977116806 | 7.9992623895 | 99.6054687500 | 33.2031250000 |
| **45** | -0.0091381243 | -0.0296807144 | | -0.0324235544 | 7.9974844858 | 7.9977612706 | 7.9978120210 | 7.9992724154 | 99.6050347222 | 33.1898897059 |
| **46** | 0.0105765651 | 0.0113946226 | | -0.0283390345 | 7.9981032264 | 7.9975950578 | 7.9972526806 | 7.9992278647 | 99.6289062500 | 33.3078907952 |
| **47** | 0.0081683982 | -0.3789831304 | | 0.0371396470 | 7.9804860281 | 7.9818300175 | 7.9664530348 | 7.9844145523 | 99.6046006944 | 33.2956750408 |
| **48** | -0.0103676265 | -0.0054545202 | | -0.0347590526 | 7.9975270884 | 7.9977279322 | 7.9977505236 | 7.9992245919 | 99.6046006944 | 33.1723107298 |
| **49** | -0.2087083493 | 0.1087820557 | | -0.2319529277 | 7.9682118170 | 7.9288846633 | 7.9106104956 | 7.9539958650 | 99.6150173611 | 33.3578329248 |
| **50** | 0.0222308832 | 0.0307318925 | | 0.0034969579 | 7.9974115023 | 7.9974055090 | 7.9977930551 | 7.9991014073 | 99.6089409722 | 33.2310525599 |
| **Total** | -0.9044292832 | -0.8414319910 | | -0.0299205458 | 399.6807099725 | 399.4551586173 | 399.4120785998 | 399.7167451456 | 4980.5373263889 | 1660.7061563862 |
| **Average** | -0.0180866131 | -0.0168270514 | | -0.0005984108 | 7.9936141995 | 7.9891031723 | 7.9882415720 | 7.9943349029 | 99.6107465278 | 33.2141231277 |

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| **Encryption Algorithm** | | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | | | | | | | |
| **Video Stream** | | | **v\_BenchPress\_g01\_c01** | | | | | | | |
| **Resolution** | | | **240p** | | | | | | | |
| **Frame Number** | **Correlation Coefficient** | | | | **E(i)** | | | | **Differential Attacks** | |
| **CCh** | **CCv** | | **CCd** | **Red** | **Green** | **Blue** | **Combined** | **NPCR** | **UACI** |
| **1** | -0.0072460045 | 0.0015162984 | | -0.0127173031 | 7.9975709852 | 7.9977126681 | 7.9978426486 | 7.9992442176 | 99.5989583333 | 33.1879714733 |
| **2** | 0.0156042209 | 0.0090381785 | | 0.0093595812 | 7.9976053094 | 7.9976746145 | 7.9977841762 | 7.9992824967 | 99.6041666667 | 33.3243770425 |
| **3** | -0.0014231434 | -0.0153340971 | | -0.0559622992 | 7.9975109368 | 7.9979239013 | 7.9978616514 | 7.9992136560 | 99.6384548611 | 33.1917704929 |
| **4** | -0.0183968806 | 0.0234859422 | | -0.0195538828 | 7.9980977423 | 7.9973901751 | 7.9973406015 | 7.9992465414 | 99.5933159722 | 33.2658700980 |
| **5** | 0.0071629582 | -0.0139023253 | | 0.0165923319 | 7.9974722196 | 7.9975248144 | 7.9972502102 | 7.9991196539 | 99.6206597222 | 33.1426147195 |
| **6** | 0.0363798044 | -0.0194295398 | | -0.0496180188 | 7.9980930312 | 7.9972904277 | 7.9971680106 | 7.9991567693 | 99.6289062500 | 33.1816993464 |
| **7** | -0.0239198423 | -0.0111217968 | | 0.0763436463 | 7.9970526409 | 7.9974635093 | 7.9977384457 | 7.9991278332 | 99.6137152778 | 33.1963694853 |
| **8** | -0.0229311117 | 0.0132393285 | | 0.0002044596 | 7.9973496818 | 7.9976128932 | 7.9976789693 | 7.9992100000 | 99.5989583333 | 33.2594413807 |
| **9** | -0.0118144631 | -0.0029620240 | | 0.0393169791 | 7.9973469894 | 7.9974997101 | 7.9973796280 | 7.9991844962 | 99.5993923611 | 32.6246017157 |
| **10** | -0.0167200895 | 0.0182422692 | | -0.0140540205 | 7.9974917472 | 7.9978291208 | 7.9971594666 | 7.9990606006 | 99.5933159722 | 33.2823444308 |
| **11** | -0.0281516691 | -0.0069351317 | | -0.0146528352 | 7.9978543259 | 7.9970400679 | 7.9981598859 | 7.9991672024 | 99.5907118056 | 33.2233779276 |
| **12** | -0.0109217792 | 0.0098210976 | | -0.0218602814 | 7.9975243419 | 7.9973968930 | 7.9975072152 | 7.9991543106 | 99.5950520833 | 33.1336856618 |
| **13** | 0.0017371679 | -0.0115426981 | | 0.0069867768 | 7.9976255879 | 7.9975509563 | 7.9975083048 | 7.9992015300 | 99.5928819444 | 33.1729966639 |
| **14** | -0.0197551136 | -0.0030945333 | | 0.0154542320 | 7.9980693461 | 7.9971849827 | 7.9976701375 | 7.9992188357 | 99.6015625000 | 33.1641050517 |
| **15** | -0.0269816289 | -0.0204512639 | | 0.0404117813 | 7.9977151061 | 7.9973434295 | 7.9972189714 | 7.9991148153 | 99.6072048611 | 33.2605800654 |
| **16** | -0.0015670103 | -0.0137305808 | | 0.0354425187 | 7.9974449585 | 7.9981583309 | 7.9978527138 | 7.9992257734 | 99.6167534722 | 33.2338882081 |
| **17** | 0.0125215295 | -0.0015818874 | | -0.0431860380 | 7.9976574860 | 7.9978031083 | 7.9975356156 | 7.9992706337 | 99.6111111111 | 33.1670360158 |
| **18** | -0.0293194393 | 0.0162163250 | | 0.0194159012 | 7.9975390703 | 7.9977185975 | 7.9975042900 | 7.9991340969 | 99.6154513889 | 33.2047606890 |
| **19** | 0.0062449760 | 0.0002060748 | | -0.0010887284 | 7.9976368372 | 7.9976705206 | 7.9980206924 | 7.9992242064 | 99.6202256944 | 33.3139348448 |
| **20** | 0.0312555434 | -0.0135547035 | | -0.0553954449 | 7.9975587577 | 7.9977828276 | 7.9973179582 | 7.9992464124 | 99.6028645833 | 33.2740230120 |
| **21** | 0.0066810735 | 0.0235978239 | | -0.0443107340 | 7.9976387190 | 7.9977610604 | 7.9979537454 | 7.9993135997 | 99.5928819444 | 33.2516578159 |
| **22** | 0.0310833423 | -0.0011968593 | | 0.0279040335 | 7.9975941069 | 7.9975481916 | 7.9973205998 | 7.9991069347 | 99.6176215278 | 33.2174734477 |
| **23** | -0.0263045427 | 0.0026735417 | | -0.0461600075 | 7.9977739477 | 7.9975853430 | 7.9975446518 | 7.9991757916 | 99.6041666667 | 33.1589035267 |
| **24** | -0.0484576517 | -0.0195904371 | | 0.0168647045 | 7.9978726076 | 7.9973828859 | 7.9978024587 | 7.9991949836 | 99.6015625000 | 33.1870387391 |
| **25** | -0.0176381619 | 0.0057573790 | | -0.0505429704 | 7.9975205236 | 7.9974404044 | 7.9974070168 | 7.9992221702 | 99.6024305556 | 33.2283105256 |
| **26** | 0.0059075788 | 0.0130522757 | | 0.0203498618 | 7.9980015356 | 7.9979186286 | 7.9975061430 | 7.9992804377 | 99.6054687500 | 33.1451184641 |
| **27** | 0.0497370432 | 0.2088518622 | | -0.0339625672 | 7.9638902787 | 7.9762069777 | 7.9497050974 | 7.9719717471 | 99.5993923611 | 33.7251038263 |
| **28** | -0.0093803882 | -0.0323705607 | | -0.0001049458 | 7.9974599017 | 7.9977318192 | 7.9978491211 | 7.9991969281 | 99.5941840278 | 33.2044304875 |
| **29** | -0.0377509638 | -0.0079655081 | | -0.0161210138 | 7.9976430304 | 7.9973657394 | 7.9975267153 | 7.9991397042 | 99.6037326389 | 33.2961516204 |
| **30** | -0.0185077193 | -0.0237222342 | | -0.0143275956 | 7.9971440978 | 7.9978164375 | 7.9974282950 | 7.9990573140 | 99.6111111111 | 33.1593767021 |
| **31** | 0.0012673087 | 0.0027562970 | | -0.0460668126 | 7.9977909425 | 7.9973771423 | 7.9971536877 | 7.9992646656 | 99.6250000000 | 33.2317793437 |
| **32** | 0.0175681106 | -0.0025555797 | | 0.0050997355 | 7.9977911510 | 7.9977076485 | 7.9976992651 | 7.9992983451 | 99.6245659722 | 33.2250153186 |
| **33** | -0.0087082127 | -0.0171489627 | | -0.0270638393 | 7.9973694591 | 7.9974676999 | 7.9978734632 | 7.9991832448 | 99.6254340278 | 33.2027199074 |
| **34** | -0.0032610736 | 0.0094892476 | | -0.0102101844 | 7.9974236352 | 7.9975182031 | 7.9976451104 | 7.9992730512 | 99.6093750000 | 33.2218392565 |
| **35** | -0.0000635480 | 0.0111747113 | | -0.0070898556 | 7.9972580254 | 7.9974551707 | 7.9975651834 | 7.9991343470 | 99.6019965278 | 33.3468324483 |
| **36** | -0.0014303634 | -0.0176910038 | | 0.0404891990 | 7.9973424151 | 7.9975511459 | 7.9974498937 | 7.9991398533 | 99.6145833333 | 33.3183857571 |
| **37** | 0.0183078758 | -0.0130836792 | | 0.0640519470 | 7.9978209765 | 7.9979647140 | 7.9972418318 | 7.9991598654 | 99.6119791667 | 33.2777011846 |
| **38** | 0.0196899957 | 0.0254666182 | | -0.0237759830 | 7.9978408138 | 7.9975025080 | 7.9975034216 | 7.9991907997 | 99.6089409722 | 33.1944989107 |
| **39** | 0.0097787389 | 0.0203702408 | | 0.0062430594 | 7.9975876502 | 7.9978466395 | 7.9978003492 | 7.9992278562 | 99.6167534722 | 33.1697303922 |
| **40** | -0.0141748650 | -0.0040142869 | | -0.0181430746 | 7.9974437599 | 7.9974704181 | 7.9976137576 | 7.9992362251 | 99.6349826389 | 33.1861400463 |
| **41** | 0.0107114236 | 0.0008159288 | | 0.0123061425 | 7.9974116278 | 7.9976542937 | 7.9973602229 | 7.9991394155 | 99.6054687500 | 33.1295326117 |
| **42** | 0.0032986669 | -0.0156754451 | | -0.0117395544 | 7.9978912472 | 7.9979788076 | 7.9973855817 | 7.9991913863 | 99.6019965278 | 33.2580831291 |
| **43** | 0.0107168813 | 0.0042964069 | | -0.0481345979 | 7.9974462695 | 7.9975472407 | 7.9977366017 | 7.9991473735 | 99.6241319444 | 33.2049019608 |
| **44** | 0.0013250025 | -0.0220177856 | | -0.0271644991 | 7.9978446339 | 7.9973512414 | 7.9975057290 | 7.9992017910 | 99.5985243056 | 33.3191925381 |
| **45** | -0.1176993485 | 0.2987580044 | | 0.0095299907 | 7.9604104499 | 7.9816195559 | 7.9333934712 | 7.9716243193 | 99.6158854167 | 33.5235855801 |
| **46** | -0.0155974463 | -0.0355118617 | | -0.0109629775 | 7.9978607908 | 7.9975617538 | 7.9975230387 | 7.9993479011 | 99.5828993056 | 33.3003982843 |
| **47** | 0.0246890299 | -0.0361678097 | | 0.0208831989 | 7.9971211319 | 7.9979126346 | 7.9974928796 | 7.9991063528 | 99.6106770833 | 32.4837673611 |
| **48** | 0.0104543936 | 0.0042961734 | | -0.0306089783 | 7.9977706708 | 7.9975740998 | 7.9976003576 | 7.9992004946 | 99.6067708333 | 33.2195176334 |
| **49** | 0.0085618561 | -0.0244928164 | | -0.0034373373 | 7.9974754288 | 7.9973267775 | 7.9978579733 | 7.9991832638 | 99.5998263889 | 33.1694750817 |
| **50** | 0.0061653136 | 0.0061221530 | | 0.0291998648 | 7.9972346010 | 7.9972909776 | 7.9974562808 | 7.9989810453 | 99.6024305556 | 33.4154088371 |
| **Total** | -0.1912726256 | 0.3223987658 | | -0.2455664353 | 399.8088915309 | 399.8420077093 | 399.7664015375 | 399.9046952890 | 4980.3984375000 | 1660.7775190632 |
| **Average** | -0.0038254339 | 0.0064478860 | | -0.0049112892 | 7.9961778306 | 7.9968401542 | 7.9953280308 | 7.9980939058 | 99.6079687500 | 33.2155503813 |

# DECRYPTION METRICS

|  |  |  |  |
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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_ApplyEyeMakeup\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0000693036 | | 41.5924416437 |
| **2** | 0.0000821603 | | 40.8533794698 |
| **3** | 0.0000853254 | | 40.6892189292 |
| **4** | 0.0000826320 | | 40.8285166273 |
| **5** | 0.0000903794 | | 40.4393070001 |
| **6** | 0.0000913419 | | 40.3933009337 |
| **7** | 0.0000879413 | | 40.5580693760 |
| **8** | 0.0000955957 | | 40.1956159212 |
| **9** | 0.0000903302 | | 40.4416682832 |
| **10** | 0.0000890733 | | 40.5025239347 |
| **11** | 0.0000959365 | | 40.1801631652 |
| **12** | 0.0000968960 | | 40.1369403626 |
| **13** | 0.0001095120 | | 39.6053815746 |
| **14** | 0.0001166829 | | 39.3299283626 |
| **15** | 0.0001129560 | | 39.4709087043 |
| **16** | 0.0001117359 | | 39.5180738196 |
| **17** | 0.0001176865 | | 39.2927332782 |
| **18** | 0.0001186044 | | 39.2589911503 |
| **19** | 0.0001039926 | | 39.8299761230 |
| **20** | 0.0001124160 | | 39.4917200911 |
| **21** | 0.0001064211 | | 39.7297208727 |
| **22** | 0.0001067546 | | 39.7161334701 |
| **23** | 0.0001066344 | | 39.7210266724 |
| **24** | 0.0001096202 | | 39.6010954941 |
| **25** | 0.0001119163 | | 39.5110669423 |
| **26** | 0.0001296892 | | 38.8709629355 |
| **27** | 0.0001272959 | | 38.9518572588 |
| **28** | 0.0001271674 | | 38.9562431435 |
| **29** | 0.0001272924 | | 38.9519756765 |
| **30** | 0.0001245861 | | 39.0453042049 |
| **31** | 0.0001197829 | | 39.2160533635 |
| **32** | 0.0001303018 | | 38.8504942806 |
| **33** | 0.0001283651 | | 38.9155306376 |
| **34** | 0.0001311573 | | 38.8220757446 |
| **35** | 0.0001284510 | | 38.9126252250 |
| **36** | 0.0001249141 | | 39.0338855226 |
| **37** | 0.0001108736 | | 39.5517202496 |
| **38** | 0.0001353503 | | 38.6854092947 |
| **39** | 0.0001310635 | | 38.8251821683 |
| **40** | 0.0001341718 | | 38.7233869041 |
| **41** | 0.0001368526 | | 38.6374690667 |
| **42** | 0.0001259035 | | 38.9996220138 |
| **43** | 0.0001203983 | | 39.1937950915 |
| **44** | 0.0001404932 | | 38.5234477887 |
| **45** | 0.0001368020 | | 38.6390770834 |
| **46** | 0.0001414762 | | 38.4931650594 |
| **47** | 0.0001389126 | | 38.5725840887 |
| **48** | 0.0001399703 | | 38.5396399095 |
| **49** | 0.0001154521 | | 39.3759832727 |
| **50** | 0.0001280343 | | 38.9267370354 |
| **Total** | 0.0057366057 | | 1973.1021292219 |
| **Average** | 0.0001147321 | | 39.4620425844 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_ApplyLipstick\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0000785089 | | 41.0508129132 |
| **2** | 0.0000996609 | | 40.0147539450 |
| **3** | 0.0000902138 | | 40.4472686280 |
| **4** | 0.0001034561 | | 39.8524402638 |
| **5** | 0.0000939127 | | 40.2727552891 |
| **6** | 0.0001006127 | | 39.9734700163 |
| **7** | 0.0000931058 | | 40.3102318615 |
| **8** | 0.0001026776 | | 39.8852433647 |
| **9** | 0.0000984609 | | 40.0673607314 |
| **10** | 0.0001068834 | | 39.7108958954 |
| **11** | 0.0001016610 | | 39.9284553804 |
| **12** | 0.0001053737 | | 39.7726790331 |
| **13** | 0.0000972565 | | 40.1208152496 |
| **14** | 0.0001017437 | | 39.9249267090 |
| **15** | 0.0000986640 | | 40.0584138982 |
| **16** | 0.0001045461 | | 39.8069204682 |
| **17** | 0.0001015950 | | 39.9312763886 |
| **18** | 0.0001070517 | | 39.7040639833 |
| **19** | 0.0000967346 | | 40.1441802824 |
| **20** | 0.0001006377 | | 39.9723925934 |
| **21** | 0.0000903433 | | 40.4410393378 |
| **22** | 0.0000927163 | | 40.3284401885 |
| **23** | 0.0000925469 | | 40.3363826327 |
| **24** | 0.0001040956 | | 39.8256743125 |
| **25** | 0.0000973480 | | 40.1167277970 |
| **26** | 0.0001020165 | | 39.9132978472 |
| **27** | 0.0000982304 | | 40.0775387427 |
| **28** | 0.0001020332 | | 39.9125846833 |
| **29** | 0.0001024077 | | 39.8966726980 |
| **30** | 0.0001057607 | | 39.7567552573 |
| **31** | 0.0001036817 | | 39.8429770767 |
| **32** | 0.0001075705 | | 39.6830692431 |
| **33** | 0.0000988746 | | 40.0491512185 |
| **34** | 0.0000988029 | | 40.0523011301 |
| **35** | 0.0001017003 | | 39.9267790465 |
| **36** | 0.0001043844 | | 39.8136440869 |
| **37** | 0.0001011939 | | 39.9484558684 |
| **38** | 0.0001134091 | | 39.4535207509 |
| **39** | 0.0000978540 | | 40.0942145926 |
| **40** | 0.0000986718 | | 40.0580701570 |
| **41** | 0.0001008856 | | 39.9617077471 |
| **42** | 0.0001057764 | | 39.7561139284 |
| **43** | 0.0001036301 | | 39.8451416304 |
| **44** | 0.0001129294 | | 39.4719302234 |
| **45** | 0.0001102796 | | 39.5750468641 |
| **46** | 0.0001079760 | | 39.6667263566 |
| **47** | 0.0001054825 | | 39.7681972290 |
| **48** | 0.0001097581 | | 39.5956329074 |
| **49** | 0.0001016956 | | 39.9269785762 |
| **50** | 0.0001166643 | | 39.3306215540 |
| **Total** | 0.0050714764 | | 1997.3747505787 |
| **Average** | 0.0001014295 | | 39.9474950116 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_Archery\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0001136575 | | 39.4440174459 |
| **2** | 0.0001499600 | | 38.2402451598 |
| **3** | 0.0001267303 | | 38.9711952318 |
| **4** | 0.0001590870 | | 37.9836535396 |
| **5** | 0.0001405908 | | 38.5204302024 |
| **6** | 0.0001642437 | | 37.8451140261 |
| **7** | 0.0001379100 | | 38.6040435117 |
| **8** | 0.0001667006 | | 37.7806290329 |
| **9** | 0.0001461613 | | 38.3516750728 |
| **10** | 0.0001717764 | | 37.6503646921 |
| **11** | 0.0001537303 | | 38.1324061192 |
| **12** | 0.0001760996 | | 37.5424162117 |
| **13** | 0.0001572103 | | 38.0351900062 |
| **14** | 0.0001801705 | | 37.4431634680 |
| **15** | 0.0001540661 | | 38.1229278569 |
| **16** | 0.0001752375 | | 37.5637297904 |
| **17** | 0.0001505027 | | 38.2245557991 |
| **18** | 0.0001693477 | | 37.7122062854 |
| **19** | 0.0001466421 | | 38.3374147654 |
| **20** | 0.0001685690 | | 37.7322234138 |
| **21** | 0.0001474740 | | 38.3128455463 |
| **22** | 0.0001685520 | | 37.7326602306 |
| **23** | 0.0001580026 | | 38.0133577246 |
| **24** | 0.0001742432 | | 37.5884412904 |
| **25** | 0.0001554723 | | 38.0834710436 |
| **26** | 0.0001837847 | | 37.3569068841 |
| **27** | 0.0001611310 | | 37.9282089231 |
| **28** | 0.0001781337 | | 37.4925396685 |
| **29** | 0.0001527126 | | 38.1612522785 |
| **30** | 0.0001770253 | | 37.5196458866 |
| **31** | 0.0001553750 | | 38.0861885089 |
| **32** | 0.0001786472 | | 37.4800386335 |
| **33** | 0.0001546495 | | 38.1065142226 |
| **34** | 0.0001795004 | | 37.4593456520 |
| **35** | 0.0001511395 | | 38.2062196429 |
| **36** | 0.0001745317 | | 37.5812568805 |
| **37** | 0.0001560182 | | 38.0682477928 |
| **38** | 0.0001831286 | | 37.3724394096 |
| **39** | 0.0001570705 | | 38.0390528779 |
| **40** | 0.0001731931 | | 37.6146932349 |
| **41** | 0.0001585386 | | 37.9986484518 |
| **42** | 0.0001712820 | | 37.6628824349 |
| **43** | 0.0001662075 | | 37.7934936110 |
| **44** | 0.0001793114 | | 37.4639215683 |
| **45** | 0.0001546806 | | 38.1056408187 |
| **46** | 0.0001755134 | | 37.5568966047 |
| **47** | 0.0001544640 | | 38.1117264341 |
| **48** | 0.0001750092 | | 37.5693909264 |
| **49** | 0.0001618581 | | 37.9086559925 |
| **50** | 0.0001854360 | | 37.3180589423 |
| **Total** | 0.0081104794 | | 1895.9302437477 |
| **Average** | 0.0001622096 | | 37.9186048750 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BabyCrawling\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0000665648 | | 41.7675530671 |
| **2** | 0.0000822441 | | 40.8489502464 |
| **3** | 0.0000695261 | | 41.5785185772 |
| **4** | 0.0000846704 | | 40.7226825566 |
| **5** | 0.0000720134 | | 41.4258687550 |
| **6** | 0.0000891220 | | 40.5001488562 |
| **7** | 0.0000810874 | | 40.9104661243 |
| **8** | 0.0000960258 | | 40.1761191186 |
| **9** | 0.0000866651 | | 40.6215566674 |
| **10** | 0.0001098173 | | 39.5932908837 |
| **11** | 0.0000910258 | | 40.4083571504 |
| **12** | 0.0001038030 | | 39.8378999239 |
| **13** | 0.0000911882 | | 40.4006158810 |
| **14** | 0.0001108822 | | 39.5513829885 |
| **15** | 0.0000902194 | | 40.4470019341 |
| **16** | 0.0001076114 | | 39.6814176377 |
| **17** | 0.0000880487 | | 40.5527688447 |
| **18** | 0.0001075930 | | 39.6821584923 |
| **19** | 0.0000934712 | | 40.2932220818 |
| **20** | 0.0001096986 | | 39.5979894074 |
| **21** | 0.0000880332 | | 40.5535360165 |
| **22** | 0.0001078152 | | 39.6731985946 |
| **23** | 0.0000973413 | | 40.1170285644 |
| **24** | 0.0001111969 | | 39.5390739006 |
| **25** | 0.0000940940 | | 40.2643829241 |
| **26** | 0.0001122291 | | 39.4989463377 |
| **27** | 0.0001008420 | | 39.9635873407 |
| **28** | 0.0001102388 | | 39.5766558714 |
| **29** | 0.0000966402 | | 40.1484226475 |
| **30** | 0.0001078010 | | 39.6737740132 |
| **31** | 0.0000955266 | | 40.1987555651 |
| **32** | 0.0001089857 | | 39.6263037587 |
| **33** | 0.0000957014 | | 40.1908183207 |
| **34** | 0.0001095225 | | 39.6049660100 |
| **35** | 0.0001001581 | | 39.9931381156 |
| **36** | 0.0001092852 | | 39.6143855257 |
| **37** | 0.0000943264 | | 40.2536688974 |
| **38** | 0.0001111995 | | 39.5389722316 |
| **39** | 0.0001012223 | | 39.9472385754 |
| **40** | 0.0001131655 | | 39.4628604593 |
| **41** | 0.0000982716 | | 40.0757212813 |
| **42** | 0.0001131723 | | 39.4625991863 |
| **43** | 0.0001021024 | | 39.9096395061 |
| **44** | 0.0001146507 | | 39.4062335792 |
| **45** | 0.0001013410 | | 39.9421496906 |
| **46** | 0.0001146068 | | 39.4078950521 |
| **47** | 0.0001041391 | | 39.8238618073 |
| **48** | 0.0001103110 | | 39.5738115930 |
| **49** | 0.0000947764 | | 40.2329957094 |
| **50** | 0.0001101719 | | 39.5792915143 |
| **Total** | 0.0049601459 | | 2003.4518817846 |
| **Average** | 0.0000992029 | | 40.0690376357 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BalanceBeam\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0000651431 | | 41.8613126226 |
| **2** | 0.0000735952 | | 41.3315075575 |
| **3** | 0.0000804323 | | 40.9456966178 |
| **4** | 0.0000812900 | | 40.8996297287 |
| **5** | 0.0000895305 | | 40.4802881645 |
| **6** | 0.0000904902 | | 40.4339859887 |
| **7** | 0.0000884148 | | 40.5347480624 |
| **8** | 0.0001288587 | | 38.8988628077 |
| **9** | 0.0001031319 | | 39.8660708633 |
| **10** | 0.0001025203 | | 39.8918999866 |
| **11** | 0.0001111688 | | 39.5401689480 |
| **12** | 0.0001063678 | | 39.7318978264 |
| **13** | 0.0001066057 | | 39.7221957708 |
| **14** | 0.0001229191 | | 39.1038049988 |
| **15** | 0.0001175029 | | 39.2995147573 |
| **16** | 0.0001150669 | | 39.3904975826 |
| **17** | 0.0001200639 | | 39.2058744129 |
| **18** | 0.0001205980 | | 39.1865972442 |
| **19** | 0.0001122138 | | 39.4995378737 |
| **20** | 0.0001234211 | | 39.0861042261 |
| **21** | 0.0001226074 | | 39.1148323220 |
| **22** | 0.0001200223 | | 39.2073788436 |
| **23** | 0.0001220138 | | 39.1359115825 |
| **24** | 0.0001217255 | | 39.1461848690 |
| **25** | 0.0001132388 | | 39.4600487575 |
| **26** | 0.0001265745 | | 38.9765372938 |
| **27** | 0.0001223340 | | 39.1245297252 |
| **28** | 0.0001216621 | | 39.1484478281 |
| **29** | 0.0001375566 | | 38.6151856039 |
| **30** | 0.0001342771 | | 38.7199789263 |
| **31** | 0.0001203752 | | 39.1946306411 |
| **32** | 0.0001326245 | | 38.7737633419 |
| **33** | 0.0001304791 | | 38.8445895009 |
| **34** | 0.0001249236 | | 39.0335560025 |
| **35** | 0.0001373796 | | 38.6207779384 |
| **36** | 0.0001374355 | | 38.6190100499 |
| **37** | 0.0001214801 | | 39.1549478837 |
| **38** | 0.0001344375 | | 38.7147964989 |
| **39** | 0.0001299833 | | 38.8611235324 |
| **40** | 0.0001277112 | | 38.9377091170 |
| **41** | 0.0001331665 | | 38.7560491514 |
| **42** | 0.0001332372 | | 38.7537444901 |
| **43** | 0.0001258779 | | 39.0005062314 |
| **44** | 0.0001415264 | | 38.4916244988 |
| **45** | 0.0001384474 | | 38.5871513701 |
| **46** | 0.0001352304 | | 38.6892553821 |
| **47** | 0.0001440094 | | 38.4160921311 |
| **48** | 0.0001453465 | | 38.3759549750 |
| **49** | 0.0001244862 | | 39.0487864360 |
| **50** | 0.0001384498 | | 38.5870780875 |
| **Total** | 0.0059579546 | | 1965.0203790527 |
| **Average** | 0.0001191591 | | 39.3004075811 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BandMarching\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0001111727 | | 39.5400177107 |
| **2** | 0.0001295425 | | 38.8758764640 |
| **3** | 0.0001234530 | | 39.0849840294 |
| **4** | 0.0001339819 | | 38.7295379640 |
| **5** | 0.0001248240 | | 39.0370195334 |
| **6** | 0.0001431056 | | 38.4434332126 |
| **7** | 0.0001305451 | | 38.8423928205 |
| **8** | 0.0001448549 | | 38.3906667860 |
| **9** | 0.0001359663 | | 38.6656882179 |
| **10** | 0.0001523771 | | 38.1708032302 |
| **11** | 0.0001441536 | | 38.4117463571 |
| **12** | 0.0001558597 | | 38.0726627917 |
| **13** | 0.0001335014 | | 38.7451416569 |
| **14** | 0.0001532499 | | 38.1459984216 |
| **15** | 0.0001435582 | | 38.4297209634 |
| **16** | 0.0001555046 | | 38.0825687065 |
| **17** | 0.0001397781 | | 38.5456085628 |
| **18** | 0.0001560524 | | 38.0672947422 |
| **19** | 0.0001420770 | | 38.4747632691 |
| **20** | 0.0001587839 | | 37.9919340411 |
| **21** | 0.0001554963 | | 38.0827998659 |
| **22** | 0.0001669325 | | 37.7745921561 |
| **23** | 0.0001620314 | | 37.9040091346 |
| **24** | 0.0001705280 | | 37.6820439821 |
| **25** | 0.0001490941 | | 38.2653954684 |
| **26** | 0.0001647679 | | 37.8312741692 |
| **27** | 0.0001512457 | | 38.2031692127 |
| **28** | 0.0001612444 | | 37.9251534184 |
| **29** | 0.0001537550 | | 38.1317065978 |
| **30** | 0.0001727516 | | 37.6257792338 |
| **31** | 0.0001591332 | | 37.9823909653 |
| **32** | 0.0001718117 | | 37.6494720672 |
| **33** | 0.0001595399 | | 37.9713059224 |
| **34** | 0.0001720729 | | 37.6428750345 |
| **35** | 0.0001638406 | | 37.8557839020 |
| **36** | 0.0001743537 | | 37.5856887990 |
| **37** | 0.0001508972 | | 38.2131874867 |
| **38** | 0.0001691464 | | 37.7173720154 |
| **39** | 0.0001581532 | | 38.0092188540 |
| **40** | 0.0001702738 | | 37.6885220676 |
| **41** | 0.0001585742 | | 37.9976758181 |
| **42** | 0.0001711521 | | 37.6661788393 |
| **43** | 0.0001623886 | | 37.8944446805 |
| **44** | 0.0001781205 | | 37.4928602642 |
| **45** | 0.0001638214 | | 37.8562934885 |
| **46** | 0.0001777677 | | 37.5014714935 |
| **47** | 0.0001783272 | | 37.4878229758 |
| **48** | 0.0001897409 | | 37.2183898662 |
| **49** | 0.0001590300 | | 37.9852081214 |
| **50** | 0.0001813697 | | 37.4143531597 |
| **Total** | 0.0077897038 | | 1905.0042985414 |
| **Average** | 0.0001557941 | | 38.1000859708 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BaseballPitch\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0000951861 | | 40.2142655994 |
| **2** | 0.0001065733 | | 39.7235175028 |
| **3** | 0.0001065546 | | 39.7242764566 |
| **4** | 0.0001489847 | | 38.2685833293 |
| **5** | 0.0001473663 | | 38.3160172965 |
| **6** | 0.0001472882 | | 38.3183193964 |
| **7** | 0.0001064882 | | 39.7269869227 |
| **8** | 0.0001133909 | | 39.4542186154 |
| **9** | 0.0001135966 | | 39.4463466656 |
| **10** | 0.0001440214 | | 38.4157298171 |
| **11** | 0.0001385794 | | 38.5830138855 |
| **12** | 0.0001390044 | | 38.5697136070 |
| **13** | 0.0001206746 | | 39.1838410691 |
| **14** | 0.0001265279 | | 38.9781361543 |
| **15** | 0.0001263917 | | 38.9828147121 |
| **16** | 0.0001595661 | | 37.9705937215 |
| **17** | 0.0001542697 | | 38.1171948165 |
| **18** | 0.0001531875 | | 38.1477673953 |
| **19** | 0.0001096112 | | 39.6014498613 |
| **20** | 0.0001140252 | | 39.4299920318 |
| **21** | 0.0001139785 | | 39.4317719815 |
| **22** | 0.0001471733 | | 38.3217098365 |
| **23** | 0.0001467876 | | 38.3331055010 |
| **24** | 0.0001478487 | | 38.3018263481 |
| **25** | 0.0001030559 | | 39.8692707220 |
| **26** | 0.0001088296 | | 39.6325295324 |
| **27** | 0.0001086175 | | 39.6410028194 |
| **28** | 0.0001402662 | | 38.5304687434 |
| **29** | 0.0001361386 | | 38.6601868405 |
| **30** | 0.0001375679 | | 38.6148273664 |
| **31** | 0.0001085004 | | 39.6456864810 |
| **32** | 0.0001348287 | | 38.7021770114 |
| **33** | 0.0001260070 | | 38.9960547355 |
| **34** | 0.0001576399 | | 38.0233387656 |
| **35** | 0.0001471084 | | 38.3236247734 |
| **36** | 0.0001476800 | | 38.3067837850 |
| **37** | 0.0000962128 | | 40.1676716992 |
| **38** | 0.0001195391 | | 39.2249004416 |
| **39** | 0.0001189532 | | 39.2462394192 |
| **40** | 0.0001433605 | | 38.4357061521 |
| **41** | 0.0001404303 | | 38.5253918697 |
| **42** | 0.0001410276 | | 38.5069601979 |
| **43** | 0.0001093424 | | 39.6121155548 |
| **44** | 0.0001138600 | | 39.4362886981 |
| **45** | 0.0001171052 | | 39.3142382015 |
| **46** | 0.0001414850 | | 38.4928946023 |
| **47** | 0.0001385008 | | 38.5854787406 |
| **48** | 0.0001385670 | | 38.5834008882 |
| **49** | 0.0000988880 | | 40.0485648951 |
| **50** | 0.0001081239 | | 39.6607811551 |
| **Total** | 0.0064087118 | | 1948.3477766147 |
| **Average** | 0.0001281742 | | 38.9669555323 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_Basketball\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0000781840 | | 41.0688208600 |
| **2** | 0.0000783165 | | 41.0614673219 |
| **3** | 0.0000781615 | | 41.0700705317 |
| **4** | 0.0000809355 | | 40.9186103067 |
| **5** | 0.0000809579 | | 40.9174070408 |
| **6** | 0.0000840505 | | 40.7545949826 |
| **7** | 0.0000839851 | | 40.7579796750 |
| **8** | 0.0000858934 | | 40.6603997106 |
| **9** | 0.0000961905 | | 40.1686781335 |
| **10** | 0.0001012873 | | 39.9444501126 |
| **11** | 0.0000989605 | | 40.0453796105 |
| **12** | 0.0001014094 | | 39.9392158460 |
| **13** | 0.0000768089 | | 41.1458826792 |
| **14** | 0.0000934845 | | 40.2926018662 |
| **15** | 0.0000908357 | | 40.4174332318 |
| **16** | 0.0000915454 | | 40.3836354047 |
| **17** | 0.0000917249 | | 40.3751289141 |
| **18** | 0.0000934174 | | 40.2957224487 |
| **19** | 0.0000932266 | | 40.3046001342 |
| **20** | 0.0000956768 | | 40.1919331462 |
| **21** | 0.0000963209 | | 40.1627965074 |
| **22** | 0.0000990858 | | 40.0398848478 |
| **23** | 0.0000966621 | | 40.1474388892 |
| **24** | 0.0000973280 | | 40.1176242047 |
| **25** | 0.0000988869 | | 40.0486117980 |
| **26** | 0.0001003271 | | 39.9858160632 |
| **27** | 0.0000987378 | | 40.0551656024 |
| **28** | 0.0000990239 | | 40.0426006224 |
| **29** | 0.0001043764 | | 39.8139773473 |
| **30** | 0.0001036207 | | 39.8455360645 |
| **31** | 0.0001040874 | | 39.8260168524 |
| **32** | 0.0001057874 | | 39.7556617663 |
| **33** | 0.0001449935 | | 38.3865143030 |
| **34** | 0.0001459003 | | 38.3594387045 |
| **35** | 0.0001416251 | | 38.4885982332 |
| **36** | 0.0001439510 | | 38.4178517965 |
| **37** | 0.0001225789 | | 39.1158420004 |
| **38** | 0.0001242663 | | 39.0564660512 |
| **39** | 0.0001226600 | | 39.1129696440 |
| **40** | 0.0001230558 | | 39.0989802072 |
| **41** | 0.0001232759 | | 39.0912180581 |
| **42** | 0.0001245945 | | 39.0450110428 |
| **43** | 0.0001243496 | | 39.0535557553 |
| **44** | 0.0001380296 | | 38.6002784199 |
| **45** | 0.0001539386 | | 38.1265249758 |
| **46** | 0.0001555965 | | 38.0800006820 |
| **47** | 0.0001565741 | | 38.0527999978 |
| **48** | 0.0001566166 | | 38.0516208128 |
| **49** | 0.0001089969 | | 39.6258569324 |
| **50** | 0.0001097884 | | 39.5944340137 |
| **Total** | 0.0054000886 | | 1987.9131041534 |
| **Average** | 0.0001080018 | | 39.7582620831 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BasketballDunk\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0001146869 | | 39.4048608779 |
| **2** | 0.0001555202 | | 38.0821306559 |
| **3** | 0.0001390510 | | 38.5682603148 |
| **4** | 0.0001686619 | | 37.7298302997 |
| **5** | 0.0001505951 | | 38.2218928303 |
| **6** | 0.0001758080 | | 37.5496124492 |
| **7** | 0.0001609884 | | 37.9320533874 |
| **8** | 0.0001859085 | | 37.3070083569 |
| **9** | 0.0001591379 | | 37.9822634530 |
| **10** | 0.0001855857 | | 37.3145539958 |
| **11** | 0.0001597024 | | 37.9668856238 |
| **12** | 0.0001896450 | | 37.2205858393 |
| **13** | 0.0001873694 | | 37.2730139304 |
| **14** | 0.0002002735 | | 36.9837658636 |
| **15** | 0.0001870412 | | 37.2806262200 |
| **16** | 0.0002005204 | | 36.9784136658 |
| **17** | 0.0002021311 | | 36.9436680732 |
| **18** | 0.0002078576 | | 36.8223404655 |
| **19** | 0.0001810500 | | 37.4220157460 |
| **20** | 0.0002031222 | | 36.9224261559 |
| **21** | 0.0001774196 | | 37.5099838241 |
| **22** | 0.0001942984 | | 37.1153077527 |
| **23** | 0.0001842832 | | 37.3451436110 |
| **24** | 0.0002090634 | | 36.7972208573 |
| **25** | 0.0001935310 | | 37.1324945851 |
| **26** | 0.0002128132 | | 36.7200147702 |
| **27** | 0.0001853766 | | 37.3194504542 |
| **28** | 0.0002159829 | | 36.6558062809 |
| **29** | 0.0001938591 | | 37.1251388409 |
| **30** | 0.0002119075 | | 36.7385371414 |
| **31** | 0.0001756864 | | 37.5526193544 |
| **32** | 0.0002058303 | | 36.8649071484 |
| **33** | 0.0001797431 | | 37.4534777009 |
| **34** | 0.0002065877 | | 36.8489544689 |
| **35** | 0.0001821608 | | 37.3954497754 |
| **36** | 0.0002031102 | | 36.9226830472 |
| **37** | 0.0001938091 | | 37.1262589832 |
| **38** | 0.0002219173 | | 36.5380880470 |
| **39** | 0.0001881230 | | 37.2555804816 |
| **40** | 0.0002160564 | | 36.6543288215 |
| **41** | 0.0001809845 | | 37.4235851241 |
| **42** | 0.0002032971 | | 36.9186872533 |
| **43** | 0.0001694434 | | 37.7097540301 |
| **44** | 0.0001550074 | | 38.0964769263 |
| **45** | 0.0001416574 | | 38.4876076816 |
| **46** | 0.0001731433 | | 37.6159420325 |
| **47** | 0.0001507779 | | 38.2166217729 |
| **48** | 0.0001934976 | | 37.1332450773 |
| **49** | 0.0001879582 | | 37.2593882177 |
| **50** | 0.0002073803 | | 36.8323248529 |
| **Total** | 0.0092293627 | | 1868.6712871195 |
| **Average** | 0.0001845873 | | 37.3734257424 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BenchPress\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Mean Square Error** | | **Peak Signal-to-Noise Ratio** |
| **1** | 0.0001627907 | | 37.8837044455 |
| **2** | 0.0001613524 | | 37.9222455822 |
| **3** | 0.0001337217 | | 38.7379798431 |
| **4** | 0.0001413875 | | 38.4958890095 |
| **5** | 0.0001283529 | | 38.9159416609 |
| **6** | 0.0001399224 | | 38.5411271605 |
| **7** | 0.0001314197 | | 38.8133939722 |
| **8** | 0.0001419926 | | 38.4773429968 |
| **9** | 0.0001201824 | | 39.2015909690 |
| **10** | 0.0001339647 | | 38.7300962064 |
| **11** | 0.0001211442 | | 39.1669745259 |
| **12** | 0.0001448574 | | 38.3905927426 |
| **13** | 0.0001054580 | | 39.7692031702 |
| **14** | 0.0001216912 | | 39.1474091026 |
| **15** | 0.0001101126 | | 39.5816286312 |
| **16** | 0.0001324320 | | 38.7800715853 |
| **17** | 0.0001188665 | | 39.2494061628 |
| **18** | 0.0001324702 | | 38.7788175188 |
| **19** | 0.0001210597 | | 39.1700049551 |
| **20** | 0.0001293696 | | 38.8816783154 |
| **21** | 0.0001213299 | | 39.1603202718 |
| **22** | 0.0001308984 | | 38.8306553194 |
| **23** | 0.0001224664 | | 39.1198309880 |
| **24** | 0.0001281740 | | 38.9220008622 |
| **25** | 0.0001017760 | | 39.9235479430 |
| **26** | 0.0001113546 | | 39.5329180969 |
| **27** | 0.0001020223 | | 39.9130478003 |
| **28** | 0.0001142332 | | 39.4220775526 |
| **29** | 0.0001074438 | | 39.6881870096 |
| **30** | 0.0001157534 | | 39.3646640846 |
| **31** | 0.0001069637 | | 39.7076371339 |
| **32** | 0.0001247889 | | 39.0382389264 |
| **33** | 0.0001146144 | | 39.4076067144 |
| **34** | 0.0001262658 | | 38.9871424505 |
| **35** | 0.0001149498 | | 39.3949185962 |
| **36** | 0.0001245976 | | 39.0449016938 |
| **37** | 0.0000824587 | | 40.8376332415 |
| **38** | 0.0001080643 | | 39.6631759636 |
| **39** | 0.0000960601 | | 40.1745677360 |
| **40** | 0.0001153703 | | 39.3790601468 |
| **41** | 0.0001166062 | | 39.3327838293 |
| **42** | 0.0001388679 | | 38.5739824668 |
| **43** | 0.0001150009 | | 39.3929873149 |
| **44** | 0.0001286645 | | 38.9054118665 |
| **45** | 0.0001145819 | | 39.4088386066 |
| **46** | 0.0001298520 | | 38.8655146843 |
| **47** | 0.0001117896 | | 39.5159858685 |
| **48** | 0.0001246797 | | 39.0420433096 |
| **49** | 0.0000962073 | | 40.1679217794 |
| **50** | 0.0001122893 | | 39.4966145594 |
| **Total** | 0.0060906735 | | 1958.8493153727 |
| **Average** | 0.0001218135 | | 39.1769863075 |

# PROCESSING TIME

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_ApplyEyeMakeup\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0507900715 | | 0.0579521656 |
| **2** | 0.0286393166 | | 0.0276653767 |
| **3** | 0.0284430981 | | 0.0278031826 |
| **4** | 0.0281531811 | | 0.0275087357 |
| **5** | 0.0274615288 | | 0.0275537968 |
| **6** | 0.0280578136 | | 0.0272455215 |
| **7** | 0.0280337334 | | 0.0273387432 |
| **8** | 0.0278973579 | | 0.0271999836 |
| **9** | 0.0274395943 | | 0.0287344456 |
| **10** | 0.0279419422 | | 0.0279066563 |
| **11** | 0.0280828476 | | 0.0273931026 |
| **12** | 0.0277764797 | | 0.0286886692 |
| **13** | 0.0273180008 | | 0.0274860859 |
| **14** | 0.0279781818 | | 0.0272476673 |
| **15** | 0.0279736519 | | 0.0273287296 |
| **16** | 0.0276448727 | | 0.0275535583 |
| **17** | 0.0275123119 | | 0.0276019573 |
| **18** | 0.0282456875 | | 0.0273284912 |
| **19** | 0.0279359818 | | 0.0274348259 |
| **20** | 0.0276749134 | | 0.0277130604 |
| **21** | 0.0274693966 | | 0.0283737183 |
| **22** | 0.0281310081 | | 0.0275654793 |
| **23** | 0.0281071663 | | 0.0267367363 |
| **24** | 0.0276927948 | | 0.0287563801 |
| **25** | 0.0275335312 | | 0.0269892216 |
| **26** | 0.0281386375 | | 0.0273535252 |
| **27** | 0.0283465385 | | 0.0271561146 |
| **28** | 0.0277032852 | | 0.0272102356 |
| **29** | 0.0273621082 | | 0.0272946358 |
| **30** | 0.0280575752 | | 0.0273935795 |
| **31** | 0.0279653072 | | 0.0271873474 |
| **32** | 0.0274262428 | | 0.0272598267 |
| **33** | 0.0274872780 | | 0.0271003246 |
| **34** | 0.0278463364 | | 0.0273208618 |
| **35** | 0.0281438828 | | 0.0272405148 |
| **36** | 0.0278425217 | | 0.0271711349 |
| **37** | 0.0276312828 | | 0.0273213387 |
| **38** | 0.0281553268 | | 0.0274438858 |
| **39** | 0.0280585289 | | 0.0272579193 |
| **40** | 0.0277769566 | | 0.0272955894 |
| **41** | 0.0276319981 | | 0.0269331932 |
| **42** | 0.0280995369 | | 0.0271303654 |
| **43** | 0.0279722214 | | 0.0270063877 |
| **44** | 0.0276165009 | | 0.0270736217 |
| **45** | 0.0274598598 | | 0.0272867680 |
| **46** | 0.0279862881 | | 0.0272688866 |
| **47** | 0.0280141830 | | 0.0272150040 |
| **48** | 0.0273642540 | | 0.0272059441 |
| **49** | 0.0274150372 | | 0.0272114277 |
| **50** | 0.0279378891 | | 0.0271837711 |
| **Total** | 1.4153740406 | | 1.4016284943 |
| **Average** | 0.0283074808 | | 0.0280325699 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_ApplyLipstick\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0522279739 | | 0.0527377129 |
| **2** | 0.0358352661 | | 0.0274424553 |
| **3** | 0.0286417007 | | 0.0276265144 |
| **4** | 0.0281851292 | | 0.0277059078 |
| **5** | 0.0278046131 | | 0.0272457600 |
| **6** | 0.0276188850 | | 0.0273675919 |
| **7** | 0.0279812813 | | 0.0273942947 |
| **8** | 0.0278708935 | | 0.0275280476 |
| **9** | 0.0278351307 | | 0.0273182392 |
| **10** | 0.0273394585 | | 0.0273289680 |
| **11** | 0.0280828476 | | 0.0273392200 |
| **12** | 0.0279850960 | | 0.0272727013 |
| **13** | 0.0278162956 | | 0.0274693966 |
| **14** | 0.0275440216 | | 0.0273902416 |
| **15** | 0.0280036926 | | 0.0273280144 |
| **16** | 0.0280313492 | | 0.0273616314 |
| **17** | 0.0276758671 | | 0.0271859169 |
| **18** | 0.0278282166 | | 0.0269887447 |
| **19** | 0.0278277397 | | 0.0272543430 |
| **20** | 0.0275368690 | | 0.0273571014 |
| **21** | 0.0280416012 | | 0.0270707607 |
| **22** | 0.0280618668 | | 0.0272519588 |
| **23** | 0.0277581215 | | 0.0271246433 |
| **24** | 0.0277125835 | | 0.0272772312 |
| **25** | 0.0281958580 | | 0.0272295475 |
| **26** | 0.0279242992 | | 0.0271894932 |
| **27** | 0.0278511047 | | 0.0273575783 |
| **28** | 0.0277967453 | | 0.0273864269 |
| **29** | 0.0278844833 | | 0.0271160603 |
| **30** | 0.0277476311 | | 0.0273458958 |
| **31** | 0.0279891491 | | 0.0272133350 |
| **32** | 0.0279862881 | | 0.0274593830 |
| **33** | 0.0278296471 | | 0.0272521973 |
| **34** | 0.0275955200 | | 0.0271227360 |
| **35** | 0.0279088020 | | 0.0273778439 |
| **36** | 0.0274920464 | | 0.0273454189 |
| **37** | 0.0279326439 | | 0.0272612572 |
| **38** | 0.0279936790 | | 0.0274152756 |
| **39** | 0.0278098583 | | 0.0271952152 |
| **40** | 0.0275368690 | | 0.0272560120 |
| **41** | 0.0280749798 | | 0.0271522999 |
| **42** | 0.0281577110 | | 0.0270674229 |
| **43** | 0.0279917717 | | 0.0270402431 |
| **44** | 0.0276079178 | | 0.0272519588 |
| **45** | 0.0282120705 | | 0.0271790028 |
| **46** | 0.0281291008 | | 0.0272350311 |
| **47** | 0.0282032490 | | 0.0272171497 |
| **48** | 0.0273792744 | | 0.0271451473 |
| **49** | 0.0279548168 | | 0.0272412300 |
| **50** | 0.0279366970 | | 0.0273127556 |
| **Total** | 1.4263687134 | | 1.3897333145 |
| **Average** | 0.0285273743 | | 0.0277946663 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_Archery\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0566434860 | | 0.0432686806 |
| **2** | 0.0284471512 | | 0.0279216766 |
| **3** | 0.0283064842 | | 0.0277893543 |
| **4** | 0.0282609463 | | 0.0276944637 |
| **5** | 0.0278370380 | | 0.0275483131 |
| **6** | 0.0274224281 | | 0.0273997784 |
| **7** | 0.0278308392 | | 0.0275101662 |
| **8** | 0.0276398659 | | 0.0274109840 |
| **9** | 0.0278687477 | | 0.0275287628 |
| **10** | 0.0275011063 | | 0.0275409222 |
| **11** | 0.0277976990 | | 0.0274693966 |
| **12** | 0.0275859833 | | 0.0273613930 |
| **13** | 0.0278134346 | | 0.0273430347 |
| **14** | 0.0274605751 | | 0.0276303291 |
| **15** | 0.0277686119 | | 0.0277345181 |
| **16** | 0.0274138451 | | 0.0277299881 |
| **17** | 0.0278913975 | | 0.0276365280 |
| **18** | 0.0278053284 | | 0.0277481079 |
| **19** | 0.0276868343 | | 0.0274798870 |
| **20** | 0.0273990631 | | 0.0275053978 |
| **21** | 0.0277781487 | | 0.0276579857 |
| **22** | 0.0277910233 | | 0.0276720524 |
| **23** | 0.0278503895 | | 0.0275404453 |
| **24** | 0.0273745060 | | 0.0276012421 |
| **25** | 0.0278377533 | | 0.0275135040 |
| **26** | 0.0279612541 | | 0.0275301933 |
| **27** | 0.0277938843 | | 0.0273621082 |
| **28** | 0.0275216103 | | 0.0273263454 |
| **29** | 0.0277953148 | | 0.0276858807 |
| **30** | 0.0278520584 | | 0.0276508331 |
| **31** | 0.0275976658 | | 0.0275433064 |
| **32** | 0.0273599625 | | 0.0275027752 |
| **33** | 0.0278847218 | | 0.0277392864 |
| **34** | 0.0278708935 | | 0.0275757313 |
| **35** | 0.0278730392 | | 0.0357964039 |
| **36** | 0.0274877548 | | 0.0280091763 |
| **37** | 0.0278816223 | | 0.0268938541 |
| **38** | 0.0279877186 | | 0.0268433094 |
| **39** | 0.0276668072 | | 0.0276517868 |
| **40** | 0.0272932053 | | 0.0275287628 |
| **41** | 0.0279712677 | | 0.0276679993 |
| **42** | 0.0277965069 | | 0.0274283886 |
| **43** | 0.0277600288 | | 0.0274584293 |
| **44** | 0.0275733471 | | 0.0275988579 |
| **45** | 0.0280032158 | | 0.0274426937 |
| **46** | 0.0278570652 | | 0.0273671150 |
| **47** | 0.0278980732 | | 0.0274362564 |
| **48** | 0.0272657871 | | 0.0273408890 |
| **49** | 0.0277402401 | | 0.0274393559 |
| **50** | 0.0280559063 | | 0.0276088715 |
| **Total** | 1.4167616367 | | 1.4006655216 |
| **Average** | 0.0283352327 | | 0.0280133104 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BabyCrawling\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0490775108 | | 0.0483615398 |
| **2** | 0.0283725262 | | 0.0273432732 |
| **3** | 0.0284798145 | | 0.0276479721 |
| **4** | 0.0283291340 | | 0.0274186134 |
| **5** | 0.0277757645 | | 0.0271446705 |
| **6** | 0.0274851322 | | 0.0273644924 |
| **7** | 0.0278453827 | | 0.0274610519 |
| **8** | 0.0275745392 | | 0.0274233818 |
| **9** | 0.0276634693 | | 0.0272212029 |
| **10** | 0.0277681351 | | 0.0273015499 |
| **11** | 0.0280199051 | | 0.0273840427 |
| **12** | 0.0274610519 | | 0.0286703110 |
| **13** | 0.0279176235 | | 0.0273311138 |
| **14** | 0.0276799202 | | 0.0274207592 |
| **15** | 0.0278530121 | | 0.0275199413 |
| **16** | 0.0275065899 | | 0.0274150372 |
| **17** | 0.0279107094 | | 0.0272624493 |
| **18** | 0.0273387432 | | 0.0274169445 |
| **19** | 0.0281567574 | | 0.0272970200 |
| **20** | 0.0275194645 | | 0.0274155140 |
| **21** | 0.0278577805 | | 0.0270247459 |
| **22** | 0.0278451443 | | 0.0276231766 |
| **23** | 0.0279407501 | | 0.0276150703 |
| **24** | 0.0275177956 | | 0.0285687447 |
| **25** | 0.0278980732 | | 0.0274593830 |
| **26** | 0.0275061131 | | 0.0274534225 |
| **27** | 0.0279943943 | | 0.0273506641 |
| **28** | 0.0275390148 | | 0.0274670124 |
| **29** | 0.0280253887 | | 0.0274209976 |
| **30** | 0.0276966095 | | 0.0273013115 |
| **31** | 0.0280535221 | | 0.0272967815 |
| **32** | 0.0274820328 | | 0.0273520947 |
| **33** | 0.0277724266 | | 0.0273063183 |
| **34** | 0.0275511742 | | 0.0272917747 |
| **35** | 0.0280234814 | | 0.0268690586 |
| **36** | 0.0275530815 | | 0.0276374817 |
| **37** | 0.0279502869 | | 0.0272998810 |
| **38** | 0.0275521278 | | 0.0275313854 |
| **39** | 0.0280294418 | | 0.0270991325 |
| **40** | 0.0276794434 | | 0.0271399021 |
| **41** | 0.0281038284 | | 0.0270814896 |
| **42** | 0.0277633667 | | 0.0271408558 |
| **43** | 0.0281848907 | | 0.0273079872 |
| **44** | 0.0275418758 | | 0.0272939205 |
| **45** | 0.0278050900 | | 0.0272102356 |
| **46** | 0.0276401043 | | 0.0271046162 |
| **47** | 0.0278882980 | | 0.0272409916 |
| **48** | 0.0274536610 | | 0.0273954868 |
| **49** | 0.0281498432 | | 0.0270755291 |
| **50** | 0.0275714397 | | 0.0271165371 |
| **Total** | 1.4113056660 | | 1.3898968697 |
| **Average** | 0.0282261133 | | 0.0277979374 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BalanceBeam\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0505075455 | | 0.0507020950 |
| **2** | 0.0282392502 | | 0.0275790691 |
| **3** | 0.0283153057 | | 0.0277221203 |
| **4** | 0.0284152031 | | 0.0276019573 |
| **5** | 0.0279285908 | | 0.0274403095 |
| **6** | 0.0274715424 | | 0.0279376507 |
| **7** | 0.0276792049 | | 0.0273075104 |
| **8** | 0.0274140835 | | 0.0286185741 |
| **9** | 0.0278406143 | | 0.0275056362 |
| **10** | 0.0279648304 | | 0.0273363590 |
| **11** | 0.0277202129 | | 0.0274450779 |
| **12** | 0.0274257660 | | 0.0274283886 |
| **13** | 0.0276939869 | | 0.0273892879 |
| **14** | 0.0278594494 | | 0.0272483826 |
| **15** | 0.0276904106 | | 0.0275259018 |
| **16** | 0.0272972584 | | 0.0274593830 |
| **17** | 0.0279767513 | | 0.0273861885 |
| **18** | 0.0278060436 | | 0.0271968842 |
| **19** | 0.0277354717 | | 0.0272493362 |
| **20** | 0.0274560452 | | 0.0283114910 |
| **21** | 0.0277545452 | | 0.0272874832 |
| **22** | 0.0280361176 | | 0.0272753239 |
| **23** | 0.0278182030 | | 0.0272982121 |
| **24** | 0.0273666382 | | 0.0274314880 |
| **25** | 0.0278382301 | | 0.0275483131 |
| **26** | 0.0278682709 | | 0.0274362564 |
| **27** | 0.0278015137 | | 0.0273075104 |
| **28** | 0.0273239613 | | 0.0271885395 |
| **29** | 0.0280051231 | | 0.0273365974 |
| **30** | 0.0278668404 | | 0.0273449421 |
| **31** | 0.0277400017 | | 0.0272586346 |
| **32** | 0.0273323059 | | 0.0276257992 |
| **33** | 0.0279617310 | | 0.0273957253 |
| **34** | 0.0278518200 | | 0.0272922516 |
| **35** | 0.0277774334 | | 0.0274388790 |
| **36** | 0.0273907185 | | 0.0273756981 |
| **37** | 0.0278415680 | | 0.0275435448 |
| **38** | 0.0279192924 | | 0.0275425911 |
| **39** | 0.0277111530 | | 0.0272963047 |
| **40** | 0.0273058414 | | 0.0269618034 |
| **41** | 0.0278704166 | | 0.0269763470 |
| **42** | 0.0277597904 | | 0.0267052650 |
| **43** | 0.0278580189 | | 0.0270237923 |
| **44** | 0.0275843143 | | 0.0268101692 |
| **45** | 0.0279188156 | | 0.0268304348 |
| **46** | 0.0278143883 | | 0.0267214775 |
| **47** | 0.0277831554 | | 0.0268678665 |
| **48** | 0.0273008347 | | 0.0268313885 |
| **49** | 0.0278358459 | | 0.0271370411 |
| **50** | 0.0278527737 | | 0.0269074440 |
| **Total** | 1.4105272293 | | 1.3903887272 |
| **Average** | 0.0282105446 | | 0.0278077745 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BandMarching\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0520653725 | | 0.0502259731 |
| **2** | 0.0286097527 | | 0.0275096893 |
| **3** | 0.0283334255 | | 0.0276801586 |
| **4** | 0.0283353329 | | 0.0277729034 |
| **5** | 0.0279941559 | | 0.0274753571 |
| **6** | 0.0278990269 | | 0.0273630619 |
| **7** | 0.0281803608 | | 0.0287449360 |
| **8** | 0.0281453133 | | 0.0274620056 |
| **9** | 0.0279173851 | | 0.0275077820 |
| **10** | 0.0276815891 | | 0.0278959274 |
| **11** | 0.0283410549 | | 0.0274677277 |
| **12** | 0.0281462669 | | 0.0274665356 |
| **13** | 0.0280489922 | | 0.0275669098 |
| **14** | 0.0278604031 | | 0.0275425911 |
| **15** | 0.0296416283 | | 0.0275559425 |
| **16** | 0.0281503201 | | 0.0278060436 |
| **17** | 0.0280203819 | | 0.0274593830 |
| **18** | 0.0279247761 | | 0.0275342464 |
| **19** | 0.0279586315 | | 0.0273306370 |
| **20** | 0.0281453133 | | 0.0274918079 |
| **21** | 0.0276496410 | | 0.0275278091 |
| **22** | 0.0281739235 | | 0.0276567936 |
| **23** | 0.0281496048 | | 0.0273814201 |
| **24** | 0.0279805660 | | 0.0274384022 |
| **25** | 0.0277910233 | | 0.0274825096 |
| **26** | 0.0281453133 | | 0.0274775028 |
| **27** | 0.0281472206 | | 0.0275855064 |
| **28** | 0.0278806686 | | 0.0271587372 |
| **29** | 0.0276787281 | | 0.0274980068 |
| **30** | 0.0283193588 | | 0.0273687840 |
| **31** | 0.0282516479 | | 0.0276100636 |
| **32** | 0.0280141830 | | 0.0275149345 |
| **33** | 0.0277025700 | | 0.0274200439 |
| **34** | 0.0280532837 | | 0.0276787281 |
| **35** | 0.0282793045 | | 0.0273530483 |
| **36** | 0.0279717445 | | 0.0274953842 |
| **37** | 0.0275952816 | | 0.0274915695 |
| **38** | 0.0280208588 | | 0.0273544788 |
| **39** | 0.0280749798 | | 0.0275321007 |
| **40** | 0.0280647278 | | 0.0272955894 |
| **41** | 0.0276002884 | | 0.0273909569 |
| **42** | 0.0281662941 | | 0.0270664692 |
| **43** | 0.0280539989 | | 0.0274567604 |
| **44** | 0.0280065536 | | 0.0273084641 |
| **45** | 0.0276062489 | | 0.0272090435 |
| **46** | 0.0280089378 | | 0.0272791386 |
| **47** | 0.0280144215 | | 0.0272700787 |
| **48** | 0.0280094147 | | 0.0274050236 |
| **49** | 0.0275471210 | | 0.0275878906 |
| **50** | 0.0279667377 | | 0.0272772312 |
| **Total** | 1.4263241291 | | 1.3974320889 |
| **Average** | 0.0285264826 | | 0.0279486418 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BaseballPitch\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0501921177 | | 0.0471951962 |
| **2** | 0.0283377171 | | 0.0277435780 |
| **3** | 0.0283532143 | | 0.0276048183 |
| **4** | 0.0283734798 | | 0.0276675224 |
| **5** | 0.0279250145 | | 0.0275876522 |
| **6** | 0.0274572372 | | 0.0273020267 |
| **7** | 0.0278649330 | | 0.0288159847 |
| **8** | 0.0279016495 | | 0.0273566246 |
| **9** | 0.0279862881 | | 0.0273959637 |
| **10** | 0.0275373459 | | 0.0276422501 |
| **11** | 0.0279107094 | | 0.0274941921 |
| **12** | 0.0279204845 | | 0.0273518562 |
| **13** | 0.0278444290 | | 0.0275943279 |
| **14** | 0.0274207592 | | 0.0275998116 |
| **15** | 0.0280046463 | | 0.0273218155 |
| **16** | 0.0275657177 | | 0.0275766850 |
| **17** | 0.0279672146 | | 0.0275683403 |
| **18** | 0.0277538300 | | 0.0274631977 |
| **19** | 0.0279560089 | | 0.0282196999 |
| **20** | 0.0274562836 | | 0.0272717476 |
| **21** | 0.0279555321 | | 0.0273694992 |
| **22** | 0.0275247097 | | 0.0273144245 |
| **23** | 0.0279185772 | | 0.0275292397 |
| **24** | 0.0275673866 | | 0.0274181366 |
| **25** | 0.0280935764 | | 0.0274162292 |
| **26** | 0.0273933411 | | 0.0275537968 |
| **27** | 0.0279426575 | | 0.0272903442 |
| **28** | 0.0282146931 | | 0.0272383690 |
| **29** | 0.0275566578 | | 0.0272707939 |
| **30** | 0.0281002522 | | 0.0271351337 |
| **31** | 0.0279829502 | | 0.0271992683 |
| **32** | 0.0278060436 | | 0.0273478031 |
| **33** | 0.0274672508 | | 0.0270051956 |
| **34** | 0.0278720856 | | 0.0274689198 |
| **35** | 0.0278673172 | | 0.0276708603 |
| **36** | 0.0279812813 | | 0.0274527073 |
| **37** | 0.0275230408 | | 0.0273842812 |
| **38** | 0.0280244350 | | 0.0277063847 |
| **39** | 0.0281212330 | | 0.0273272991 |
| **40** | 0.0279340744 | | 0.0273833275 |
| **41** | 0.0273854733 | | 0.0273437500 |
| **42** | 0.0281178951 | | 0.0272374153 |
| **43** | 0.0282099247 | | 0.0273146629 |
| **44** | 0.0277602673 | | 0.0272135735 |
| **45** | 0.0274348259 | | 0.0274662971 |
| **46** | 0.0278508663 | | 0.0273807049 |
| **47** | 0.0279006958 | | 0.0273051262 |
| **48** | 0.0277748108 | | 0.0271451473 |
| **49** | 0.0275027752 | | 0.0273127556 |
| **50** | 0.0279715061 | | 0.0274062157 |
| **Total** | 1.4144852161 | | 1.3923809528 |
| **Average** | 0.0282897043 | | 0.0278476191 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_Basketball\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0463364124 | | 0.0478587151 |
| **2** | 0.0283615589 | | 0.0276188850 |
| **3** | 0.0284638405 | | 0.0287301540 |
| **4** | 0.0281007290 | | 0.0273442268 |
| **5** | 0.0279343128 | | 0.0273363590 |
| **6** | 0.0274195671 | | 0.0272407532 |
| **7** | 0.0277817249 | | 0.0274140835 |
| **8** | 0.0279717445 | | 0.0274484158 |
| **9** | 0.0278728008 | | 0.0273022652 |
| **10** | 0.0273540020 | | 0.0275959969 |
| **11** | 0.0281801224 | | 0.0271673203 |
| **12** | 0.0279438496 | | 0.0275061131 |
| **13** | 0.0278348923 | | 0.0274882317 |
| **14** | 0.0274336338 | | 0.0271897316 |
| **15** | 0.0279488564 | | 0.0399475098 |
| **16** | 0.0280973911 | | 0.0273485184 |
| **17** | 0.0277514458 | | 0.0275416374 |
| **18** | 0.0273399353 | | 0.0274500847 |
| **19** | 0.0277743340 | | 0.0272130966 |
| **20** | 0.0280191898 | | 0.0272982121 |
| **21** | 0.0277760029 | | 0.0271656513 |
| **22** | 0.0273489952 | | 0.0275285244 |
| **23** | 0.0280244350 | | 0.0273942947 |
| **24** | 0.0280730724 | | 0.0273113251 |
| **25** | 0.0279042721 | | 0.0277509689 |
| **26** | 0.0276467800 | | 0.0272605419 |
| **27** | 0.0280077457 | | 0.0274870396 |
| **28** | 0.0278630257 | | 0.0270600319 |
| **29** | 0.0279247761 | | 0.0273480415 |
| **30** | 0.0275256634 | | 0.0272684097 |
| **31** | 0.0278513432 | | 0.0272028446 |
| **32** | 0.0279572010 | | 0.0274436474 |
| **33** | 0.0278053284 | | 0.0275909901 |
| **34** | 0.0272784233 | | 0.0276970863 |
| **35** | 0.0280044079 | | 0.0268356800 |
| **36** | 0.0279159546 | | 0.0270078182 |
| **37** | 0.0276911259 | | 0.0275173187 |
| **38** | 0.0274355412 | | 0.0274407864 |
| **39** | 0.0279364586 | | 0.0275654793 |
| **40** | 0.0277786255 | | 0.0272126198 |
| **41** | 0.0280005932 | | 0.0274028778 |
| **42** | 0.0274524689 | | 0.0271542072 |
| **43** | 0.0279543400 | | 0.0273103714 |
| **44** | 0.0281441212 | | 0.0272152424 |
| **45** | 0.0278427601 | | 0.0273289680 |
| **46** | 0.0272076130 | | 0.0272779465 |
| **47** | 0.0280728340 | | 0.0271527767 |
| **48** | 0.0278949738 | | 0.0272376537 |
| **49** | 0.0277848244 | | 0.0274331570 |
| **50** | 0.0273473263 | | 0.0272300243 |
| **Total** | 1.4093713760 | | 1.4018726349 |
| **Average** | 0.0281874275 | | 0.0280374527 |

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| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BasketballDunk\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0495491028 | | 0.0522115231 |
| **2** | 0.0284316540 | | 0.0278017521 |
| **3** | 0.0282974243 | | 0.0278031826 |
| **4** | 0.0282537937 | | 0.0278487206 |
| **5** | 0.0279612541 | | 0.0286328793 |
| **6** | 0.0278203487 | | 0.0278465748 |
| **7** | 0.0279252529 | | 0.0274665356 |
| **8** | 0.0274133682 | | 0.0274229050 |
| **9** | 0.0279042721 | | 0.0273568630 |
| **10** | 0.0276451111 | | 0.0272843838 |
| **11** | 0.0278630257 | | 0.0274591446 |
| **12** | 0.0275781155 | | 0.0273458958 |
| **13** | 0.0279502869 | | 0.0272107124 |
| **14** | 0.0274524689 | | 0.0273277760 |
| **15** | 0.0278935432 | | 0.0274550915 |
| **16** | 0.0276706219 | | 0.0275030136 |
| **17** | 0.0278308392 | | 0.0286467075 |
| **18** | 0.0281071663 | | 0.0273144245 |
| **19** | 0.0279970169 | | 0.0274968147 |
| **20** | 0.0274024010 | | 0.0276877880 |
| **21** | 0.0279538631 | | 0.0273916721 |
| **22** | 0.0279364586 | | 0.0276627541 |
| **23** | 0.0277743340 | | 0.0270636082 |
| **24** | 0.0275211334 | | 0.0276148319 |
| **25** | 0.0280444622 | | 0.0274691582 |
| **26** | 0.0279116631 | | 0.0274331570 |
| **27** | 0.0279874802 | | 0.0274422169 |
| **28** | 0.0274488926 | | 0.0275456905 |
| **29** | 0.0280177593 | | 0.0299837589 |
| **30** | 0.0280327797 | | 0.0276048183 |
| **31** | 0.0278992653 | | 0.0276603699 |
| **32** | 0.0274791718 | | 0.0284838676 |
| **33** | 0.0278182030 | | 0.0274338722 |
| **34** | 0.0280015469 | | 0.0276036263 |
| **35** | 0.0279297829 | | 0.0276610851 |
| **36** | 0.0274226665 | | 0.0279858112 |
| **37** | 0.0280449390 | | 0.0279159546 |
| **38** | 0.0279300213 | | 0.0277614594 |
| **39** | 0.0278773308 | | 0.0281605721 |
| **40** | 0.0275382996 | | 0.0275456905 |
| **41** | 0.0278625488 | | 0.0273671150 |
| **42** | 0.0278501511 | | 0.0275790691 |
| **43** | 0.0278720856 | | 0.0276026726 |
| **44** | 0.0274868011 | | 0.0279078484 |
| **45** | 0.0281174183 | | 0.0275259018 |
| **46** | 0.0280909538 | | 0.0277771950 |
| **47** | 0.0279793739 | | 0.0277745724 |
| **48** | 0.0274865627 | | 0.0275104046 |
| **49** | 0.0281221867 | | 0.0275151730 |
| **50** | 0.0278842449 | | 0.0275442600 |
| **Total** | 1.4142694473 | | 1.4086508751 |
| **Average** | 0.0282853889 | | 0.0281730175 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Encryption Algorithm** | | **Modified Permutation Approach Using Logistic Maps-Integrated Fisher-Yates Shuffling Algorithm** | |
| **Video Stream** | | **v\_BenchPress\_g01\_c01** | |
| **Resolution** | | **240p** | |
| **Frame Number** | **Encryption (In seconds)** | | **Decryption (In seconds)** |
| **1** | 0.0497269630 | | 0.0498304367 |
| **2** | 0.0281689167 | | 0.0276746750 |
| **3** | 0.0282092094 | | 0.0277650356 |
| **4** | 0.0284209251 | | 0.0275263786 |
| **5** | 0.0279982090 | | 0.0271809101 |
| **6** | 0.0278530121 | | 0.0390205383 |
| **7** | 0.0279614925 | | 0.0275881290 |
| **8** | 0.0281095505 | | 0.0277304649 |
| **9** | 0.0279271603 | | 0.0274403095 |
| **10** | 0.0273544788 | | 0.0274877548 |
| **11** | 0.0280914307 | | 0.0274024010 |
| **12** | 0.0284278393 | | 0.0275051594 |
| **13** | 0.0279350281 | | 0.0274884701 |
| **14** | 0.0277202129 | | 0.0277323723 |
| **15** | 0.0278923512 | | 0.0276505947 |
| **16** | 0.0278055668 | | 0.0275540352 |
| **17** | 0.0274353027 | | 0.0276060104 |
| **18** | 0.0280301571 | | 0.0273017883 |
| **19** | 0.0279967785 | | 0.0269474983 |
| **20** | 0.0278997421 | | 0.0274484158 |
| **21** | 0.0276334286 | | 0.0273110867 |
| **22** | 0.0278253555 | | 0.0275428295 |
| **23** | 0.0276215076 | | 0.0272388458 |
| **24** | 0.0279579163 | | 0.0272853374 |
| **25** | 0.0274448395 | | 0.0275230408 |
| **26** | 0.0278263092 | | 0.0275816917 |
| **27** | 0.0275437832 | | 0.0273635387 |
| **28** | 0.0277554989 | | 0.0273060799 |
| **29** | 0.0274832249 | | 0.0272700787 |
| **30** | 0.0280168056 | | 0.0273008347 |
| **31** | 0.0274491310 | | 0.0272176266 |
| **32** | 0.0281774998 | | 0.0274343491 |
| **33** | 0.0279405117 | | 0.0273606777 |
| **34** | 0.0280442238 | | 0.0273904800 |
| **35** | 0.0275647640 | | 0.0274121761 |
| **36** | 0.0279655457 | | 0.0273644924 |
| **37** | 0.0280311108 | | 0.0274446011 |
| **38** | 0.0279722214 | | 0.0274219513 |
| **39** | 0.0275187492 | | 0.0274565220 |
| **40** | 0.0279805660 | | 0.0273489952 |
| **41** | 0.0279793739 | | 0.0273554325 |
| **42** | 0.0279703140 | | 0.0274415016 |
| **43** | 0.0274851322 | | 0.0272593498 |
| **44** | 0.0279815197 | | 0.0272402763 |
| **45** | 0.0280706882 | | 0.0273139477 |
| **46** | 0.0279390812 | | 0.0272758007 |
| **47** | 0.0276508331 | | 0.0273048878 |
| **48** | 0.0281121731 | | 0.0273132324 |
| **49** | 0.0281286240 | | 0.0272114277 |
| **50** | 0.0280327797 | | 0.0273602009 |
| **Total** | 1.4160678387 | | 1.4045326710 |
| **Average** | 0.0283213568 | | 0.0280906534 |