|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attack | Flute.wav | | Speech.wav | | Newsound.wav | |
| NC | BER | NC | BER | NC | BER |
| Noise addition  AWGN 20 dB | .4582 | .5176 | .5060 | .5107 | .6707 | .4580 |
| Re sampling  44.1-22.05-44.1 KHz | .4582 | .5176 | .5052 | .5107 | .6707 | .4580 |
| LPF  Cut off frequency 11.025 KHz | .4582 | .5176 | .5052 | .5107 | .6707 | 4580 |
| Re quantization  16-8-16 bits/sample | .4582 | .5176 | .5052 | .5107 | .6707 | 4580 |
| Echo  Delay 0.5s | .4017 | .5498 | .4903 | .5225 | .6281 | .5020 |
| Reverse | .4582 | .4582 | .5052 | .5107 | .6707 | .4580 |
| Mp3 compression  32 kbps | .4582 | .5176 | .5013 | .5244 | .6331 | .4980 |
| Mp3 compression  64 kbps | .4582 | .5176 | .4911 | .5225 | .6235 | .4902 |
| Mp3 compression  128 kbps | .4582 | .5176 | .4927 | .5244 | .6331 | .4980 |

Table: A Robust Zero-Watermarking Algorithm for Audio