

|                             |                        | Information           |             |            | TMuC 0.8  |          |         |          | Proposal |          |         |             | Bit-rate Saving (%) | PSNR Gain (dB) | Average PSNR Gain (dB) |              |              |
|-----------------------------|------------------------|-----------------------|-------------|------------|-----------|----------|---------|----------|----------|----------|---------|-------------|---------------------|----------------|------------------------|--------------|--------------|
|                             |                        | QPI/Slice             | Frame/Rates | Num.Frames | kbps      | Y psnr   | U psnr  | V psnr   | kbps     | Y psnr   | U psnr  | V psnr      |                     |                |                        |              |              |
| Class C<br>WVGA<br>832x480p | S08<br>BasketballDrill | 35                    | 50          | 30         | 733.27    | 33.32    | 36.40   | 36.22    | 735.85   | 33.33    | 36.42   | 36.38       | -1.19               | 0.043308932    | 0.02311871419917       |              |              |
|                             |                        | 39                    | 50          | 30         | 411.99    | 31.26    | 34.70   | 34.40    | 414.79   | 31.34    | 34.75   | 34.44       |                     |                |                        |              |              |
|                             |                        | 41                    | 50          | 30         | 307.71    | 30.21    | 33.99   | 33.32    | 307.47   | 30.32    | 33.73   | 33.20       |                     |                |                        |              |              |
|                             | S09<br>BQMall          | 30                    | 60          | 30         | 1950.86   | 35.30    | 39.17   | 40.07    | 1949.28  | 35.29    | 39.22   | 40.09       | -0.037530627        | 0.001496422    |                        |              |              |
|                             |                        | 33                    | 60          | 30         | 1284.43   | 33.44    | 37.91   | 38.75    | 1283.28  | 33.42    | 37.95   | 38.72       |                     |                |                        |              |              |
|                             |                        | 36                    | 60          | 30         | 850.37    | 31.56    | 36.86   | 37.47    | 847.15   | 31.57    | 36.83   | 37.47       |                     |                |                        |              |              |
|                             |                        | 39                    | 60          | 30         | 548.82    | 29.73    | 35.79   | 36.28    | 552.16   | 29.75    | 35.87   | 36.38       |                     |                |                        |              |              |
|                             | S10<br>PartyScene      | 42                    | 60          | 30         | 356.13    | 28.00    | 34.71   | 35.04    | 356.94   | 28.02    | 34.72   | 35.08       | -0.117577936        | 0.004384818    |                        |              |              |
|                             |                        | 24                    | 50          | 30         | 11986.91  | 37.13    | 39.11   | 39.47    | 11996.09 | 37.13    | 39.11   | 39.46       |                     |                |                        |              |              |
|                             |                        | 27                    | 50          | 30         | 7836.84   | 34.63    | 37.42   | 37.70    | 7843.84  | 34.64    | 37.42   | 37.70       |                     |                |                        |              |              |
|                             |                        | 30                    | 50          | 30         | 5069.51   | 32.32    | 36.02   | 36.27    | 5067.45  | 32.33    | 36.01   | 36.28       |                     |                |                        |              |              |
|                             | S11<br>RaceHorses      | 38                    | 50          | 30         | 1375.04   | 26.89    | 32.99   | 33.07    | 1373.57  | 26.88    | 33.05   | 33.13       | -1.06197813         | 0.043284685    |                        |              |              |
|                             |                        | 40                    | 50          | 30         | 943.47    | 25.67    | 32.38   | 32.43    | 940.15   | 25.66    | 32.37   | 32.42       |                     |                |                        |              |              |
|                             |                        | 42                    | 50          | 30         | 619.53    | 24.52    | 31.76   | 31.75    | 613.95   | 24.52    | 31.83   | 31.75       |                     |                |                        |              |              |
|                             |                        | 30                    | 30          | 30         | 2402.03   | 34.59    | 37.5599 | 38.5563  | 2403.488 | 34.5976  | 37.58   | 38.53       |                     |                |                        |              |              |
| Class E<br>1080 x 720p      | S16<br>Vidyo1          | 33                    | 60          | 30         | 1490.05   | 32.56    | 36.26   | 37.05    | 1489.83  | 32.56    | 36.25   | 37.03       | -0.98               | 0.038302594    | 0.025909184            |              |              |
|                             |                        | 36                    | 30          | 30         | 917.28    | 30.62    | 34.93   | 35.48    | 918.38   | 30.65    | 34.97   | 35.49       |                     |                |                        |              |              |
|                             |                        | 40                    | 30          | 30         | 647.10    | 29.41    | 34.17   | 34.50    | 640.94   | 29.49    | 34.18   | 34.48       |                     |                |                        |              |              |
|                             | S17<br>Vidyo3          | 40                    | 30          | 30         | 451.06    | 28.30    | 33.39   | 33.49    | 450.90   | 28.45    | 33.29   | 33.56       | -0.55               | 0.021528036    |                        |              |              |
|                             |                        | 29                    | 60          | 30         | 1377.456  | 40.0164  | 46.1229 | 44.8295  | 1380.88  | 40.0454  | 46.149  | 44.8672     |                     |                |                        |              |              |
|                             |                        | 32                    | 60          | 30         | 875.632   | 38.4175  | 45.5953 | 43.6542  | 876.128  | 38.4217  | 45.633  | 43.7014     |                     |                |                        |              |              |
|                             | S18<br>Vidyo4          | 35                    | 60          | 30         | 583.888   | 36.6454  | 44.6747 | 42.7015  | 576.832  | 36.7035  | 44.6746 | 42.5728     | -0.558674216        | 0.017896923    |                        |              |              |
|                             |                        | 29                    | 60          | 30         | 911.088   | 40.1372  | 46.1681 | 46.1545  | 906.272  | 40.1075  | 46.012  | 46.0293     |                     |                |                        |              |              |
|                             |                        | 32                    | 60          | 30         | 575.52    | 38.7625  | 45.1454 | 45.1127  | 573.392  | 38.7719  | 45.1435 | 45.0513     |                     |                |                        |              |              |
|                             | S13<br>BQSquare        | 35                    | 60          | 30         | 380.512   | 37.344   | 44.139  | 43.8653  | 383.632  | 37.4184  | 44.0763 | 43.734      | -0.06702467         | 0.00269883     |                        | -0.006352172 |              |
|                             |                        | 28                    | 60          | 30         | 1170.4    | 34.1858  | 40.166  | 40.6547  | 1170.592 | 34.1775  | 40.1654 | 40.6576     |                     |                |                        |              |              |
|                             |                        | 31                    | 60          | 30         | 679.104   | 31.8442  | 39.3213 | 39.6426  | 678.896  | 31.837   | 39.3405 | 39.6142     |                     |                |                        |              |              |
|                             |                        | 33                    | 60          | 30         | 477.36    | 30.4695  | 38.8123 | 38.9728  | 473.264  | 30.4504  | 38.8376 | 39.0257     |                     |                |                        |              |              |
|                             |                        | 36                    | 60          | 30         | 280.768   | 28.5043  | 38.1492 | 38.2386  | 281.152  | 28.518   | 38.208  | 38.1561     |                     |                |                        |              |              |
|                             |                        | S14<br>BlowingBubbles | 28          | 50         | 30        | 980.3867 | 34.5055 | 37.3838  | 38.8607  | 981.96   | 34.5092 | 37.4163     | 38.8968             | 0.217208741    |                        |              | -0.00795951  |
|                             |                        |                       | 31          | 50         | 30        | 603.6267 | 32.5302 | 36.0315  | 37.6567  | 608.7867 | 32.5677 | 36.0151     | 37.6863             |                |                        |              |              |
|                             |                        |                       | 33          | 50         | 30        | 437.8    | 31.3898 | 35.142   | 36.7287  | 440.5467 | 31.3765 | 35.1623     | 36.8097             |                |                        |              |              |
|                             |                        | S12<br>BasketballPass | 36          | 50         | 30        | 263.44   | 29.6066 | 33.91    | 35.6193  | 265.48   | 29.6559 | 33.795      | 35.4762             | 0.340476052    |                        |              | -0.015699761 |
| 32                          | 50                     |                       | 30          | 279.6533   | 34.7636   | 38.26    | 37.7511 | 274.7867 | 34.7453  | 38.1676  | 37.6898 |             |                     |                |                        |              |              |
| 34                          | 50                     |                       | 30          | 206.4267   | 33.4324   | 37.3794  | 36.7384 | 205.4533 | 33.3962  | 37.5023  | 36.7765 |             |                     |                |                        |              |              |
| S15<br>RaceHorses           | 37                     | 50                    | 30          | 133.2533   | 31.6012   | 36.1729  | 35.4423 | 134.5733 | 31.5947  | 36.4376  | 35.47   | 0.097544227 | -0.004448248        |                |                        |              |              |
|                             | 30                     | 30                    | 30          | 707.824    | 34.1159   | 36.8906  | 37.0407 | 709.192  | 34.1143  | 36.9549  | 37.0397 |             |                     |                |                        |              |              |
|                             | 32                     | 30                    | 30          | 527.376    | 32.6666   | 35.8849  | 35.8123 | 528.04   | 32.6675  | 35.8875  | 35.8148 |             |                     |                |                        |              |              |
| Class B<br>1920x1080p       | S06<br>BasketballDrive | 35                    | 30          | 30         | 333.864   | 30.6839  | 34.3097 | 34.1487  | 332.896  | 30.6719  | 34.3632 | 34.1756     | 0.808289377         | -0.021752848   | 0.000556461            |              |              |
|                             |                        | 30                    | 50          | 30         | 3680.3467 | 37.7416  | 41.9747 | 42.0858  | 3790.747 | 37.7752  | 41.9304 | 41.9957     |                     |                |                        |              |              |
|                             |                        | 34                    | 50          | 30         | 2447.2133 | 36.7235  | 40.9324 | 40.6402  | 2518.413 | 36.7743  | 40.8974 | 40.5673     |                     |                |                        |              |              |
|                             | S05<br>Cactus          | 38                    | 50          | 30         | 1444.3067 | 35.1823  | 39.3948 | 38.7171  | 1472.133 | 35.2389  | 39.3366 | 38.6322     | 0.70161128          | -0.02099648    |                        |              |              |
|                             |                        | 30                    | 50          | 30         | 5756.9067 | 35.6108  | 38.0594 | 40.0161  | 5818.04  | 35.6168  | 38.0461 | 39.9995     |                     |                |                        |              |              |
|                             |                        | 33                    | 50          | 30         | 3636.16   | 34.2778  | 37.3159 | 38.8342  | 3658.653 | 34.272   | 37.2663 | 38.7836     |                     |                |                        |              |              |
|                             | S04<br>ParkScene       | 36                    | 50          | 30         | 2314.2267 | 32.8594  | 36.5494 | 37.6315  | 2326.667 | 32.8722  | 36.5352 | 37.5792     | -1.198052945        | 0.034691126    |                        |              |              |
|                             |                        | 31                    | 24          | 30         | 2360.7552 | 35.3483  | 38.4247 | 40.0422  | 2372.838 | 35.368   | 38.4247 | 40.0399     |                     |                |                        |              |              |
|                             |                        | 34                    | 24          | 30         | 1414.624  | 33.7378  | 37.4899 | 39.3996  | 1414.752 | 33.749   | 37.4739 | 39.4259     |                     |                |                        |              |              |
|                             | S07<br>BQTerrace       | 38                    | 24          | 30         | 684.0512  | 31.6831  | 36.3907 | 38.8392  | 674.656  | 31.7746  | 36.3817 | 38.811      | -0.501071333        | 0.010284047    |                        |              |              |
|                             |                        | 30                    | 60          | 30         | 9377.824  | 34.1899  | 38.8596 | 41.1209  | 9436.688 | 34.2132  | 38.826  | 41.1115     |                     |                |                        |              |              |
|                             |                        | 32                    | 60          | 30         | 5630.368  | 33.165   | 38.2974 | 40.6492  | 5651.776 | 33.1806  | 38.2679 | 40.6197     |                     |                |                        |              |              |
|                             |                        |                       | 34          | 60         | 3514      | 32.1827  | 37.879  | 40.1739  | 3512.688 | 32.2021  | 37.8018 | 40.1231     |                     |                |                        |              |              |

GOP structure : IPPPP coding structure  
 Number of Reference Pictures : 1  
 Fast Motion Search Range : 64 x 64 (for Class C,E) , 16 x 16(for Class D)  
 RDOQ enabled  
 Entropy coder : CABAC  
 CU size / depth : 128 / 5

Class C Average PSNR Gain : 0.02311  
 Class E Average PSNR Gain : 0.0259  
 Class D Average PSNR Gain : - 0.00635  
 Class B Average PSNR Gain : 0.000556  
 Overall PSNR Gain : 0.01081