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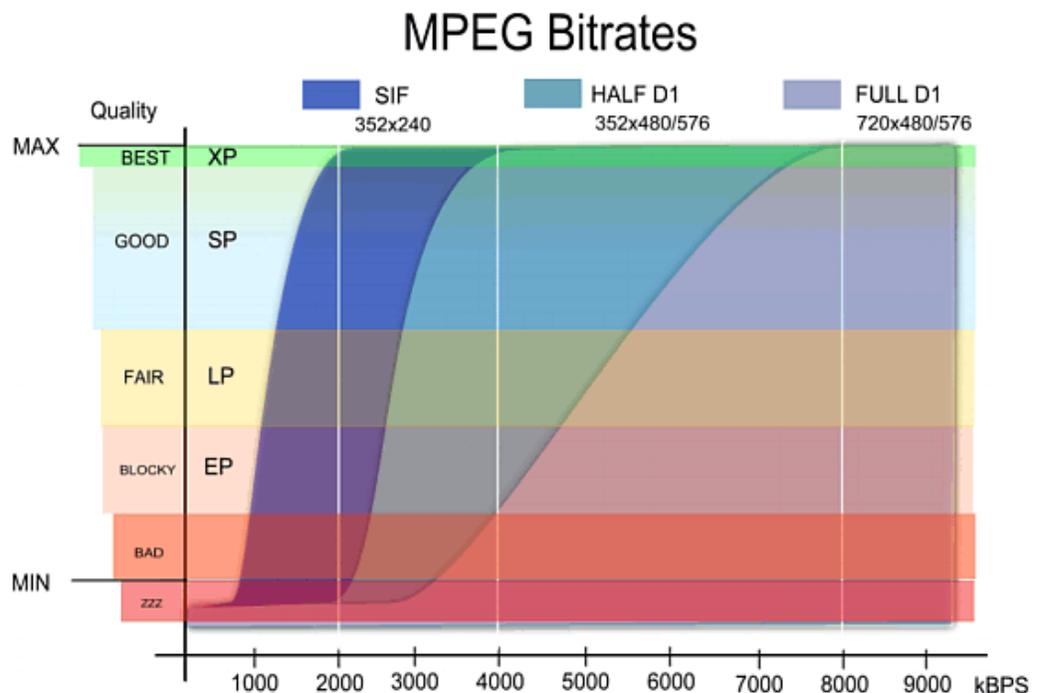
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## How to set optimal bitrate for MPEG

Here is a simple table to determine the best MPEG bitrate

A MPEG bitrate is not a linear function. At certain point you will reach a plateau where adding more bitrate will not make the quality any better. One important thing not many people realize is that optimal bitrate also depends on the resolution.

Here is a table that simply combine all resolution, quality and bitrate. The quality is a relative quality for certain resolution. Obviously a Half D1 at maximum bitrate will have less details than Full D1 at its own maximum bitrate.



We clearly see that at certain point there is a plateau. After this point adding more bitrate will not help. For example if we encode Half D1 at 7000kbps we see that it is far after the upper elbow (at 4000 kbps) of the Half D1 curve - we are just adding to the file size without any quality benefit.

It shows that smaller resolution has also much smaller area where we can actually affect the quality. It goes from bad to good very quickly. For example SIF at 1000kbps will be unwatchable, but just jump to 2200kbps will get to the maximum what SIF can offer. But 2200kbps is not enough for Half D1 and completely out of Full D1 range.

This table can let you determine the correct bitrate for both Constant Bitrate and Variable bitrate. For constant bitrate it is obvious that we should place it just after the elbow for the maximum quality. So for Full D1 8000 kbps CB will give us the maximum quality possible and about 6500kbps will put us to the middle of Good range, which is still fine.

For VB (Variable bitrate) this is a bit different. We have to specify min, average and max bitrate.

Now let's say we have Half D1. If we put the average to the BEST area (4200kbps) then we are actually almost killing the whole idea of variable bitrate because the quality cannot go up from the average. So what good is the average if it is set at the upper limit? We can simply use the CB and not bother with VB. We should put the maximum to the BEST and average lower - for example to the middle of GOOD area. The minimum can be placed somewhere in FAIR area.

So for Half D1 we will get Min: 2500-2800, Average: 3300, Max: 4200

For Full D1 we can get: Min: 4800-5800, Average: 6400, Max: 8000

The table will also tell us that for SIF we don't even have to bother with VB. Why? because the GOOD area is about 500-600kbps wide. That's nothing. We don't really gain much in terms of filesize, we can directly use CB at 2200-2300 which put us clearly in the plateau area and it will be faster to encode than VB.

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