

Report of the formal subjective assessment test conducted on the Deep Render encoder

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Abstract

This report describes design and the conduction of a formal subjective assessment evaluation of a set of coded video clips, as provided by Deep Render and the results obtained in the form of tables and graphs. The formal subjective assessment was done adopting the standards for video quality assessment as described in the ITU Recommendations [1] [2]. The results of the test demonstrated the superiority of the Deep Render encoder efficiency in terms of visual quality and coding efficiency, when compared with an Anchor (AV1). Tables and graphs are here reported that show the obtained results on a 160 test points obtained encoding a set of 20 test sequences. The formal subjective assessment was done hiring a panel of 24 naïve human viewers. VABTech provided the test laboratory and all the necessary logistic support.

1 Content analysis, selection and test preparation

The test requirements were provided by DR in a document listing a set of user requirements [3].

The main requirement for a video clip to be considered in a formal subjective test is a gradual decrease in visual quality in relation to the variation of the QP values. This gradual variation of visual quality allows to get meaningful quality scores, i.e. scores ranging from the best to the lowest values in a homogeneous way.

A first selection of the clips proposed by the test Administrator brought to consider 42 clips that led to a test experiment for a total of 12 test sessions. After this initial selection, due to testing difficulties originating from short clip length, the number of test clips were reduced to 20 clips, each between 5-30sec length (maintaining the suggested QP values). Table 1 shows the final selection of the test sequences and QPs.

Class	Sequence Name	QPs			
Animation	SRC06_Monsters_Inc	37	42	50	54
	SRC07_Invincible	42	49	56	61
	SRC10_Tom_and_Jerry	38	46	54	59
	SRC15_Frankenweenie	42	48	53	57
Gaming	CSGO_Part1	42	48	55	60
	CSGO_Part2	42	48	55	60
	SRC0246_Beat_Saber	38	46	54	61
	SRC2143_Mirror_s_Edge	42	47	54	58
Social Media	Adventure_SRC01	40	49	55	61
	Adventure_SRC09	43	50	55	60
	SDR_Health_sowp	36	41	50	54
	SDR_Sports_wg60	43	49	56	60
Cinematic	videoSRC04	44	51	57	62
	videoSRC11	41	48	54	58
	videoSRC14	42	47	53	58
	videoSRC17	40	44	50	55
Webcam	S1_SRC080	37	44	52	57
	S2_SRC123	37	46	57	63
	S3_SRC019	37	42	51	57
	S3_SRC023	41	49	55	60

Table 1 – Final selection of the test sequences and QPs

According to the clips selection of table 1 the test design was made based on 6 test sessions.

2 Test design

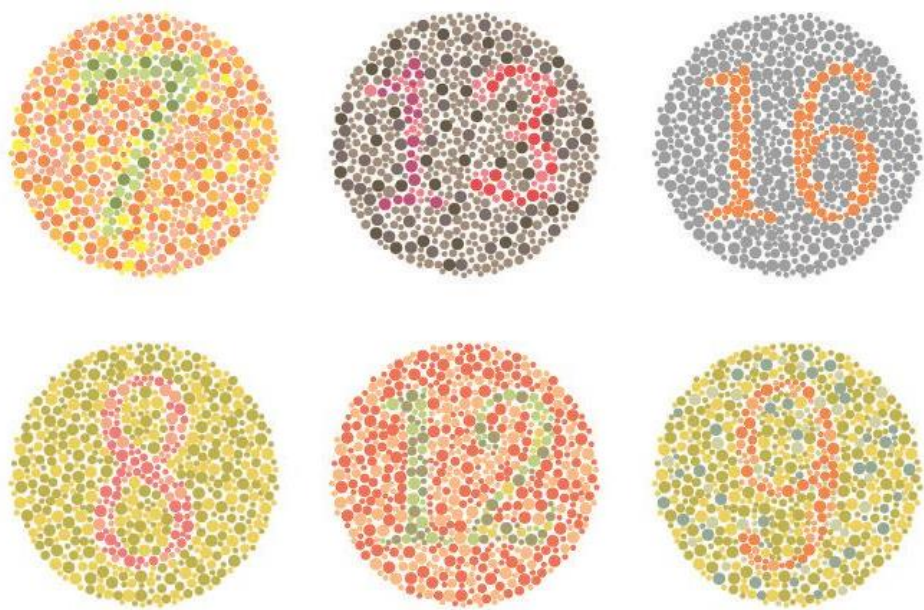
The design of a formal subjective assessment test has to be done to be, as much as possible, reliable and effective in ranking the proposals in terms of visual quality. For this reason, it was decided to select a well-established and reliable subjective testing method, i.e., the DSIS (double stimulus impairment scale; TU-R BT.500 [1]), also known as DCR (Degradation Category Rating; Rec. ITU-T P.910 [2]).

The test was conducted hiring 24 naïve viewing subjects. All viewers were university students, aging from 18 to 24 years; 10 female, 14 male.

All subjects were checked before the test for visual acuity (Snellen chart) and colour blindness (Ishihara tables).

E	1	20/200
F P	2	20/100
T O Z	3	20/70
L P E D	4	20/50
P E C F D	5	20/40
E D F C Z P	6	20/30
F E L O P Z D	7	20/25
D E F P O T E C	8	20/20
L E F O D P C T	9	
F D P L T C E O	10	
P E Z O L C F T D	11	

Example of Snellen chart



Example of Ishihara tables

A post-test check was done, on the raw data, to verify the reliability of the viewers; this check was based on two stages: Pearson correlation and results consistency check.

The results consistency check was made to verify that, for each video clip, the judgements were expressed without a wrong quality order.

According to this protocol (recently successfully adopted in MPEG and JVET and presented to a recent VQEG meeting) a viewer could be excluded from the results analysis if three or more violations in the quality assessment ranking was noted.

No viewing subjects was excluded after the post-tests.

2.1 DSIS protocol

This test method is commonly adopted when the material to be evaluated shows a range of visual impairment that is distributed well across the grading scale.

This method was used under the schema of evaluation of the impairment, using an impairment scale made of 11 levels, ranging from "0" (lowest quality) to "10" (highest quality). The tests were held in multiple laboratories located in countries speaking different languages: this implies that it is better not to use categorical adjectives (e.g. excellent, good, fair etc.) to avoid any bias due to a possible different interpretation by naïve subjects speaking different languages. All the video material used for these tests consisted of video clips of 10 seconds duration each. The structure of the basic test cell (BTC) of the DSIS method is made by two consecutive presentations of the video clip under test; at first the original version of the video clip (SRC, i.e., source reference content) is displayed, announced by the letter "A" on a mid-grey screen (for half a second); immediately afterwards, the coded version of the video clip (PVS, i.e., processed video sequence), announced by the letter "B" on a mid-grey screen (for half a second), is presented; then a message is displayed for 5 seconds asking the viewers to vote (see Figure 1)

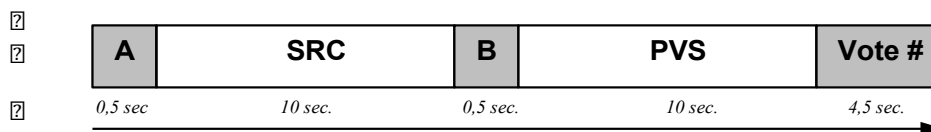


Figure 1 – DSIS BTC

The use of the DSIS test method required the availability of an unimpaired set of video clips to be used as reference. The set of reference clips were provided by QR as Y4M files; these were converted into MP4 files using FFMPEG.

The video player was selected to allow the payout of the test sessions in the desired random order according to the DSIS rules. The MPV player was selected and a set of 6 playlist were designed to allow a smooth and continuous layout of the MP4 files. The message on the screen required by the DSIS protocol were obtained creating MP4 video clips showing the "Vote N" messages and the letter "A" and "B".

A short example of a M3U playlist file is reported here below (from Session 1).

#EXTM3U
#EXTLIST:1
D:\DR\new_test\session1.mp4
#EXTLIST:2
D:\DR\new_test\A.mp4
#EXTLIST:3
D:\DR\new_test\CSGO_Part1.mp4
#EXTLIST:4
D:\DR\new_test\B.mp4
#EXTLIST:5
D:\DR\new_test\CSGO_Part1-SVT-AV1_P7_2177kbps.mp4

#EXTLIST:6
D:\DR\\new_test\v01.mp4

Figure 2 – example of M3U script

The above list of commands lines allows the presentation on the screen of a PC the test session title (“Session1”) for 4 seconds; then the letter A was shown for half a second followed by the reference video clip (in this case the file <CSGO_Part1.mp4>); then the letter “B” announces the playout of the coded video clip (in this case the file <CSGO_Part1-SVT-AV1_P7_2177kbps.mp4>) the BTC is concluded by the presentation on the screen of the message “Vote1” (in this case the file <v01.mp4>.

2.2 How to express the visual quality opinion with DSIS

The viewers were asked to express their vote by putting a number in a box on a scoring sheet.

The scoring sheet for the DSIS test was made with a section for each BTC; each section had a series of numbered boxes (see Figure). The viewers would write a number in the box that corresponded to the number of the message “**Vote N**” that was shown on the screen. For example, by writing "10", the subject could declare that he/she saw no difference between the SRC and the PVS, while by writing "0" the subject could declare that he/she saw a significant and clearly visible amount of difference between the SRC and the PVS across the entire observed image. The vote was required to be written when the message "Vote N" appears on the screen, where the number "N" was a numerical progressive indication on the screen aiming to help the viewing subjects to use the appropriate box on the scoring sheet.

Test name																			
Session #																			
1	2	3	4	5	6	7	8	9	10										
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>										
11	12	13	14	15	16	17	18	19	20										
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>										
21	22	23	24	25	26	27	28	29	30										
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>										
31	32	33	34	35	36	37	38	39											
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>											
<div style="display: flex; justify-content: space-around;"> <div>seat</div> <div>subject</div> </div> <div style="display: flex; justify-content: space-around;"> <div>1 <input type="text"/></div> <div>2 <input type="text"/></div> <div>3 <input type="text"/></div> <div>4 <input type="text"/></div> <div><input type="text"/></div> <div><input type="text"/></div> </div>																			

Figure 3 – Example of DSIS test method scoring sheet

2.3 Training and stabilization phase

The outcome of such a subjective test is highly dependent on a proper training of the test subjects.

For this purpose, each subject was trained by means of a short practice (training) session.

The video materials used for the training session were carefully selected from those of the test, taking care to represent as much as possible the range of visual quality and the type of impairment expected to appear during the test.

The stabilization phase used the test material of a test session; three BTCs, containing one sample of best quality, one of the worst quality and one of medium quality, which were duplicated at the beginning of the test session. In this way, the test subjects were given an immediate impression of the quality range they were expected to evaluate during that session.

The scores of the stabilization phase were discarded. Consistency of the behaviour of the subjects was checked by inserting in the session a BTC in which the original was compared to the original.

2.4 *The laboratory setup*

The laboratories for the subjective assessments were set up following ITU Recommendations ([1] [2]).

A 55" commercially available OLED TV set was used as test screen; this arrangement allowed the seating of three subjects at the same time in front of the display.

The viewing distance was $3H$, where H is equal to the height of the active part of the screen. For sequences having a portrait size the sequence was shown in the middle of a mid gray background.

2.4.1 Viewing environment

The test laboratory was carefully protected from any external visual or audio pollution.

Internal general, light was kept low (just enough to allow the viewing subjects to fill out the scoring sheets) and a uniform light was placed behind the monitor; this light had an intensity of maximum 30 nits. No light source was allowed to be directed to the screen or to create reflections; the ceiling, floor and walls of the laboratory were made of non-reflecting black or dark grey material (e.g., carpet or velvet).

3 Test results and graphs

The table 2 shows the results of the test for each test sequence; the first four rows show the bit rate the MOS and CI values for the the files coded by the DR codec; the following four rows show the same values for the the files coded by the SVT-AV1_P7 codec.

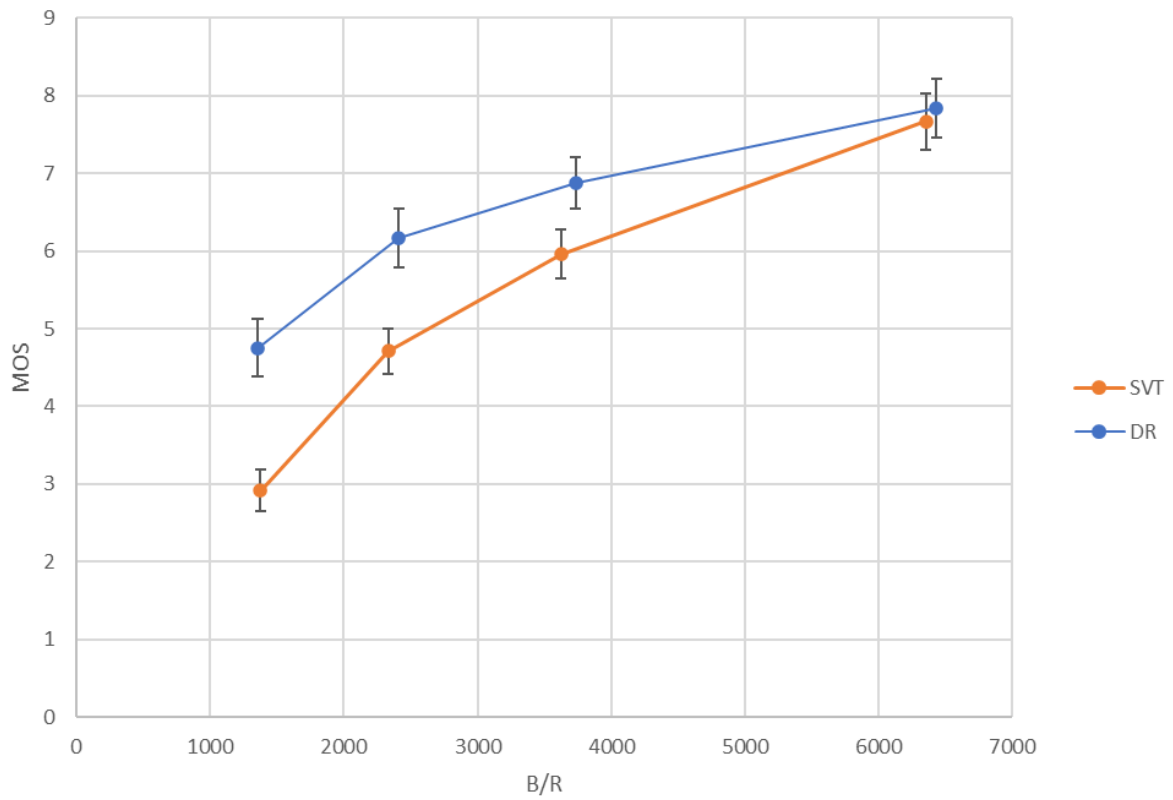
<i>file name</i>	<i>bit-rate</i>	<i>Algo</i>	<i>MOS</i>	<i>CI</i>
Adventure_SRC09-DR_v25_FLOAT	1356	DR	4,75	0,37
Adventure_SRC09-DR_v25_FLOAT	2411	DR	6,17	0,38
Adventure_SRC09-DR_v25_FLOAT	3735	DR	6,88	0,33
Adventure_SRC09-DR_v25_FLOAT	6431	DR	7,83	0,38
Adventure_SRC09-SVT-AV1_P7	1378	SVT	2,92	0,27
Adventure_SRC09-SVT-AV1_P7	2331	SVT	4,71	0,29
Adventure_SRC09-SVT-AV1_P7	3624	SVT	5,96	0,31
Adventure_SRC09-SVT-AV1_P7	6354	SVT	7,67	0,36
Adventure-SRC01_DR_v25_FLOAT	1951	DR	5,83	0,36
Adventure-SRC01_DR_v25_FLOAT	3772	DR	6,63	0,24
Adventure-SRC01_DR_v25_FLOAT	6330	DR	7,17	0,20
Adventure-SRC01_DR_v25_FLOAT	12839	DR	8,21	0,27
Adventure-SRC01-SVT-AV1_P7	1967	SVT	4,04	0,26
Adventure-SRC01-SVT-AV1_P7	3600	SVT	5,13	0,22
Adventure-SRC01-SVT-AV1_P7	6065	SVT	6,33	0,23
Adventure-SRC01-SVT-AV1_P7	12605	SVT	7,58	0,24
CSGO_Part1-DR_v25_FLOAT	1233	DR	2,75	0,28
CSGO_Part1-DR_v25_FLOAT	2104	DR	3,83	0,29
CSGO_Part1-DR_v25_FLOAT	4461	DR	5,00	0,27
CSGO_Part1-DR_v25_FLOAT	8422	DR	6,58	0,27
CSGO_Part1-SVT-AV1_P7	1265	SVT	2,08	0,32
CSGO_Part1-SVT-AV1_P7	2177	SVT	3,21	0,32
CSGO_Part1-SVT-AV1_P7	4389	SVT	4,38	0,29
CSGO_Part1-SVT-AV1_P7	8278	SVT	5,83	0,36
CSGO_Part2-DR_v25_FLOAT	1233	DR	3,54	0,37
CSGO_Part2-DR_v25_FLOAT	2104	DR	4,79	0,32
CSGO_Part2-DR_v25_FLOAT	4461	DR	6,17	0,31
CSGO_Part2-DR_v25_FLOAT	8422	DR	7,46	0,32
CSGO_Part2-SVT-AV1_P7	1265	SVT	2,50	0,24
CSGO_Part2-SVT-AV1_P7	2177	SVT	3,92	0,30
CSGO_Part2-SVT-AV1_P7	4389	SVT	5,25	0,49
CSGO_Part2-SVT-AV1_P7	8278	SVT	6,96	0,46
Franken-DR_v25_FLOAT	273	DR	4,79	0,24
Franken-DR_v25_FLOAT	362	DR	5,79	0,34
Franken-DR_v25_FLOAT	505	DR	6,96	0,39
Franken-DR_v25_FLOAT	808	DR	7,79	0,32
Franken-SVT-AV1_P7	282	SVT	3,25	0,39
Franken-SVT-AV1_P7	384	SVT	4,50	0,42
Franken-SVT-AV1_P7	542	SVT	5,42	0,34
Franken-SVT-AV1_P7	836	SVT	6,79	0,34
Invincible-DR_v25_FLOAT	519	DR	4,71	0,19
Invincible-DR_v25_FLOAT	745	DR	6,00	0,30
Invincible-DR_v25_FLOAT	1280	DR	7,58	0,21
Invincible-DR_v25_FLOAT	1958	DR	7,92	0,12
Invincible-SVT-AV1_P7	537	SVT	3,04	0,38
Invincible-SVT-AV1_P7	774	SVT	4,17	0,34
Invincible-SVT-AV1_P7	1223	SVT	4,63	0,32
Invincible-SVT-AV1_P7	1938	SVT	5,25	0,37
Monster_DR_v25_FLOAT	338	DR	4,08	0,27
Monster_DR_v25_FLOAT	433	DR	5,04	0,29
Monster_DR_v25_FLOAT	796	DR	6,38	0,29
Monster_DR_v25_FLOAT	1183	DR	7,29	0,26

Monster-SVT-AV1_P7	355	SVT	3,67	0,20
Monster-SVT-AV1_P7	461	SVT	4,46	0,30
Monster-SVT-AV1_P7	830	SVT	5,38	0,32
Monster-SVT-AV1_P7	1226	SVT	6,38	0,24
SCR2143-DR_v25_FLOAT	964	DR	4,92	0,32
SCR2143-DR_v25_FLOAT	1336	DR	5,83	0,26
SCR2143-DR_v25_FLOAT	2368	DR	6,92	0,30
SCR2143-DR_v25_FLOAT	3582	DR	7,54	0,34
SCR2143-SVT-AV1_P7	973	SVT	3,50	0,27
SCR2143-SVT-AV1_P7	1356	SVT	4,54	0,30
SCR2143-SVT-AV1_P7	2359	SVT	5,50	0,32
SCR2143-SVT-AV1_P7	3568	SVT	6,33	0,42
SDR_Health_sowp_DR_v25_FLOAT	357	DR	6,42	0,34
SDR_Health_sowp_DR_v25_FLOAT	488	DR	7,13	0,25
SDR_Health_sowp_DR_v25_FLOAT	1106	DR	7,92	0,32
SDR_Health_sowp_DR_v25_FLOAT	1744	DR	8,71	0,23
SDR_Health_sowp_SRC09-SVT-AV1_P7	364	SVT	5,54	0,21
SDR_Health_sowp_SRC09-SVT-AV1_P7	508	SVT	6,58	0,21
SDR_Health_sowp_SRC09-SVT-AV1_P7	1112	SVT	7,46	0,32
SDR_Health_sowp_SRC09-SVT-AV1_P7	1702	SVT	8,21	0,34
SRC019_DR_v25_FLOAT	106	DR	5,00	0,32
SRC019_DR_v25_FLOAT	169	DR	6,00	0,27
SRC019_DR_v25_FLOAT	433	DR	7,38	0,36
SRC019_DR_v25_FLOAT	754	DR	8,04	0,35
SRC019_SVT-AV1_P7	107	SVT	4,21	0,30
SRC019_SVT-AV1_P7	172	SVT	5,17	0,29
SRC019_SVT-AV1_P7	427	SVT	6,33	0,31
SRC019_SVT-AV1_P7	756	SVT	7,33	0,36
SRC023_DR_v25_FLOAT	95	DR	5,08	0,44
SRC023_DR_v25_FLOAT	138	DR	5,67	0,42
SRC023_DR_v25_FLOAT	216	DR	6,29	0,41
SRC023_DR_v25_FLOAT	465	DR	7,29	0,35
SRC023_SVT-AV1_P7	99	SVT	3,04	0,31
SRC023_SVT-AV1_P7	141	SVT	4,08	0,42
SRC023_SVT-AV1_P7	226	SVT	4,92	0,40
SRC023_SVT-AV1_P7	458	SVT	5,67	0,48
SRC0246-DR_v25_FLOAT	1022	DR	5,75	0,39
SRC0246-DR_v25_FLOAT	1644	DR	7,04	0,31
SRC0246-DR_v25_FLOAT	2857	DR	7,83	0,26
SRC0246-DR_v25_FLOAT	5268	DR	8,58	0,24
SRC0246-SVT-AV1_P7	1041	SVT	4,38	0,32
SRC0246-SVT-AV1_P7	1682	SVT	5,88	0,25
SRC0246-SVT-AV1_P7	2839	SVT	7,04	0,31
SRC0246-SVT-AV1_P7	5266	SVT	7,54	0,24
SRC055-DR_v25_FLOAT	242	DR	5,46	0,32
SRC055-DR_v25_FLOAT	331	DR	5,92	0,44
SRC055-DR_v25_FLOAT	469	DR	6,88	0,37
SRC055-DR_v25_FLOAT	1155	DR	7,88	0,37
SRC055-SVT-AV1_P7	243	SVT	3,38	0,32
SRC055-SVT-AV1_P7	338	SVT	4,25	0,30
SRC055-SVT-AV1_P7	487	SVT	5,46	0,32
SRC055-SVT-AV1_P7	1148	SVT	7,75	0,48
SRC080_DR_v25_FLOAT	159	DR	4,67	0,29
SRC080_DR_v25_FLOAT	211	DR	5,63	0,50
SRC080_DR_v25_FLOAT	356	DR	6,17	0,31
SRC080_DR_v25_FLOAT	713	DR	7,38	0,40
SRC080_SVT-AV1_P7	160	SVT	3,42	0,45
SRC080_SVT-AV1_P7	214	SVT	4,13	0,28
SRC080_SVT-AV1_P7	369	SVT	5,42	0,40

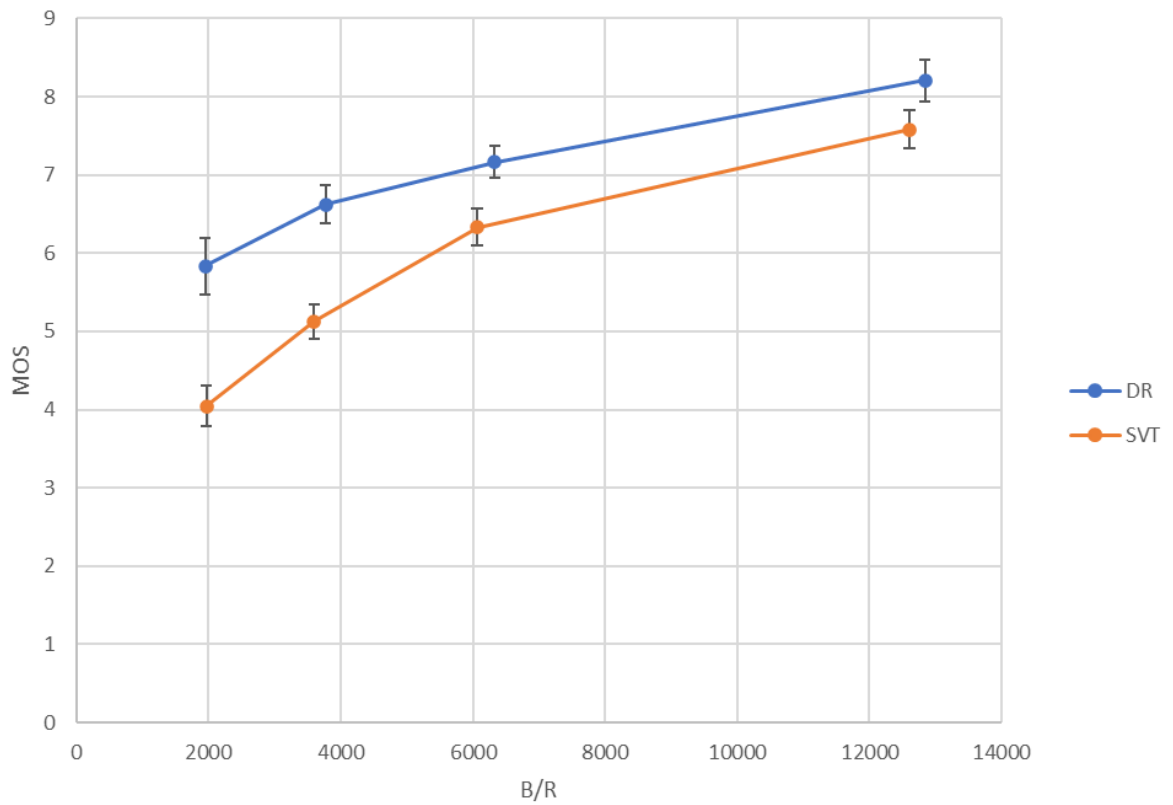
SRC080_SVT-AV1_P7	704	SVT	7,33	0,47
SRC123_DR_v25_FLOAT	108	DR	5,96	0,33
SRC123_DR_v25_FLOAT	139	DR	6,75	0,49
SRC123_DR_v25_FLOAT	214	DR	7,00	0,34
SRC123_DR_v25_FLOAT	421	DR	7,58	0,44
SRC123_SVT-AV1_P7	107	SVT	2,04	0,41
SRC123_SVT-AV1_P7	140	SVT	3,58	0,30
SRC123_SVT-AV1_P7	217	SVT	5,79	0,42
SRC123_SVT-AV1_P7	416	SVT	6,75	0,35
TOM-Jerry-DR_v25_FLOAT	317	DR	5,38	0,47
TOM-Jerry-DR_v25_FLOAT	451	DR	6,96	0,38
TOM-Jerry-DR_v25_FLOAT	746	DR	7,54	0,42
TOM-Jerry-DR_v25_FLOAT	1386	DR	8,13	0,41
TOM-Jerry-SVT-AV1_P7	332	SVT	3,83	0,26
TOM-Jerry-SVT-AV1_P7	467	SVT	4,79	0,37
TOM-Jerry-SVT-AV1_P7	787	SVT	5,92	0,47
TOM-Jerry-SVT-AV1_P7	1433	SVT	6,54	0,44
videoSRC04_DR_v25_FLOAT	1941	DR	4,00	0,32
videoSRC04_DR_v25_FLOAT	3597	DR	5,54	0,34
videoSRC04_DR_v25_FLOAT	6986	DR	6,71	0,38
videoSRC04_DR_v25_FLOAT	12570	DR	7,79	0,42
videoSRC04_SRC09-SVT-AV1_P7	1885	SVT	2,63	0,38
videoSRC04_SRC09-SVT-AV1_P7	3705	SVT	3,92	0,30
videoSRC04_SRC09-SVT-AV1_P7	6706	SVT	4,75	0,43
videoSRC04_SRC09-SVT-AV1_P7	12270	SVT	6,25	0,44
videoSRC11_DR_v25_FLOAT	768	DR	4,29	0,29
videoSRC11_DR_v25_FLOAT	1066	DR	5,54	0,34
videoSRC11_DR_v25_FLOAT	1673	DR	6,88	0,25
videoSRC11_DR_v25_FLOAT	3021	DR	7,75	0,39
videoSRC11_SRC09-SVT-AV1_P7	772	SVT	3,71	0,26
videoSRC11_SRC09-SVT-AV1_P7	1076	SVT	4,83	0,23
videoSRC11_SRC09-SVT-AV1_P7	1693	SVT	5,83	0,20
videoSRC11_SRC09-SVT-AV1_P7	3017	SVT	6,67	0,20
videoSRC14_DR_v25_FLOAT	1366	DR	5,00	0,27
videoSRC14_DR_v25_FLOAT	2084	DR	6,21	0,27
videoSRC14_DR_v25_FLOAT	3205	DR	7,46	0,42
videoSRC14_DR_v25_FLOAT	4705	DR	8,08	0,32
videoSRC14_SRC09-SVT-AV1_P7	1363	SVT	3,13	0,37
videoSRC14_SRC09-SVT-AV1_P7	2038	SVT	4,96	0,35
videoSRC14_SRC09-SVT-AV1_P7	3172	SVT	6,38	0,40
videoSRC14_SRC09-SVT-AV1_P7	4731	SVT	6,75	0,35
videoSRC17_DR_v25_FLOAT	1049	DR	4,21	0,24
videoSRC17_DR_v25_FLOAT	1646	DR	5,79	0,24
videoSRC17_DR_v25_FLOAT	2599	DR	7,29	0,38
videoSRC17_DR_v25_FLOAT	3643	DR	7,96	0,39
videoSRC17_SVT-AV1_P7	1058	SVT	3,42	0,27
videoSRC17_SVT-AV1_P7	1597	SVT	4,58	0,30
videoSRC17_SVT-AV1_P7	2607	SVT	6,00	0,32
videoSRC17_SVT-AV1_P7	3616	SVT	6,54	0,39

Table 2 – Results of the test

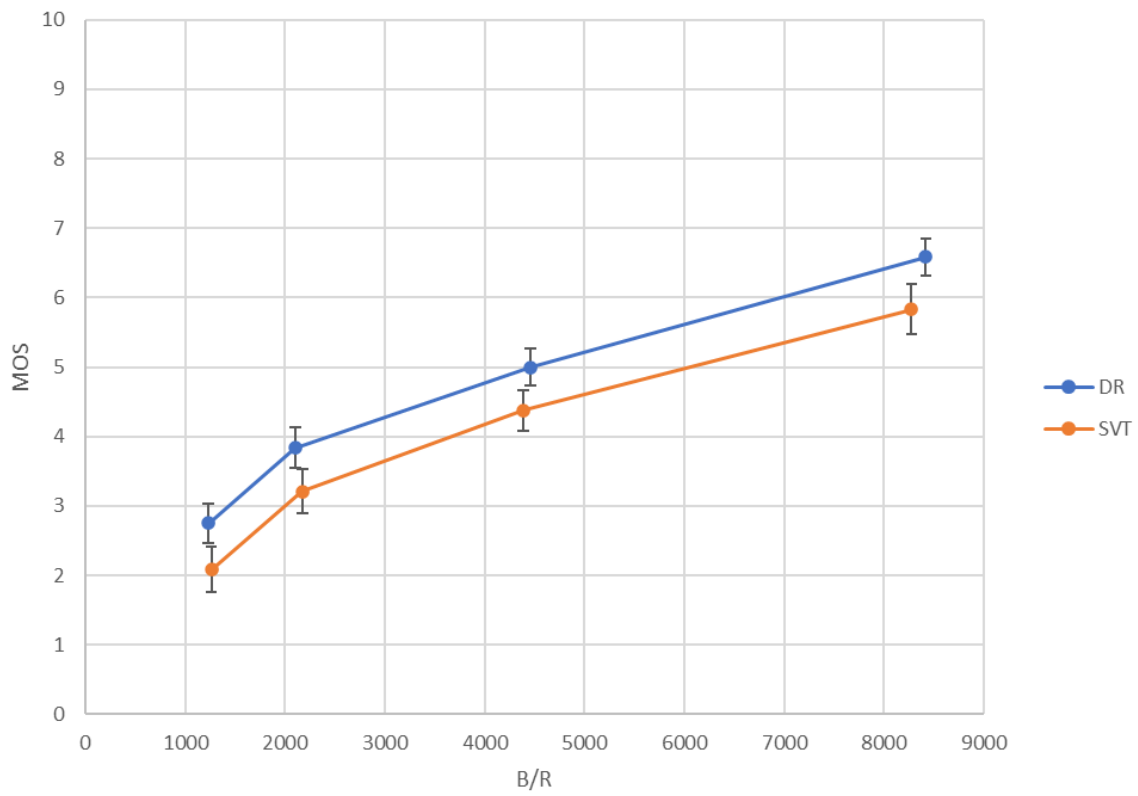
ADV-SRC09



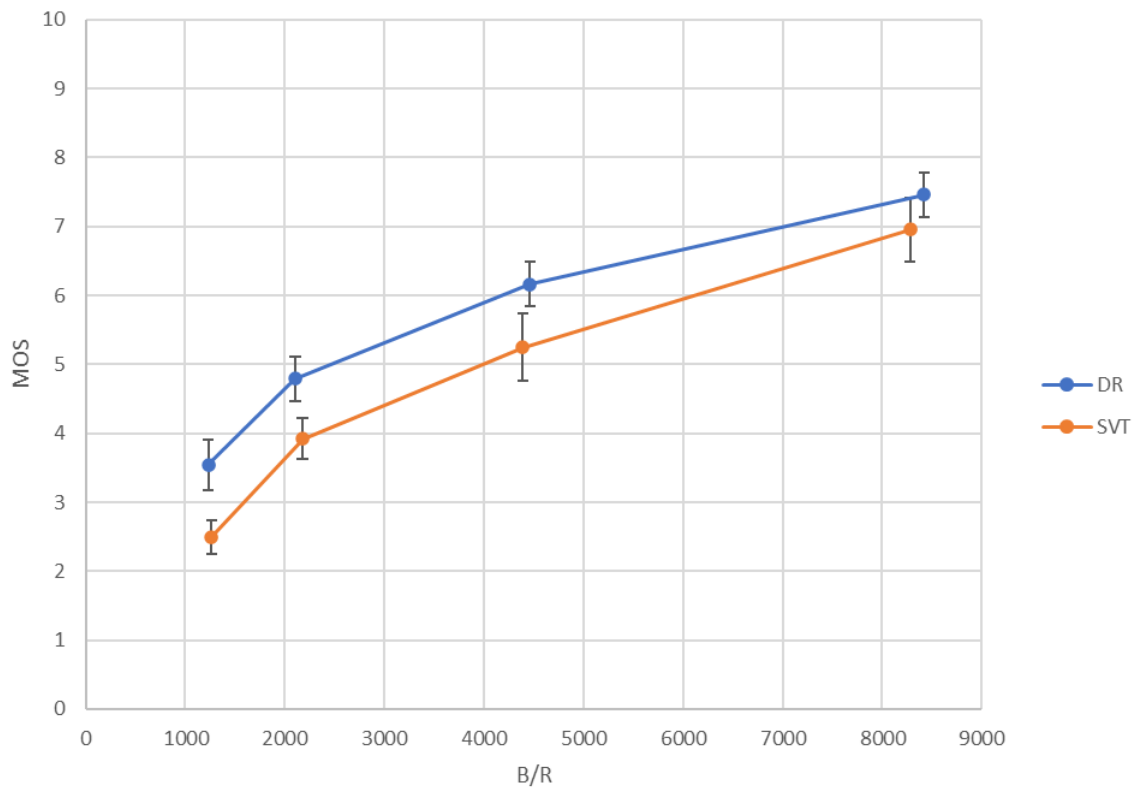
ADV-SRC01

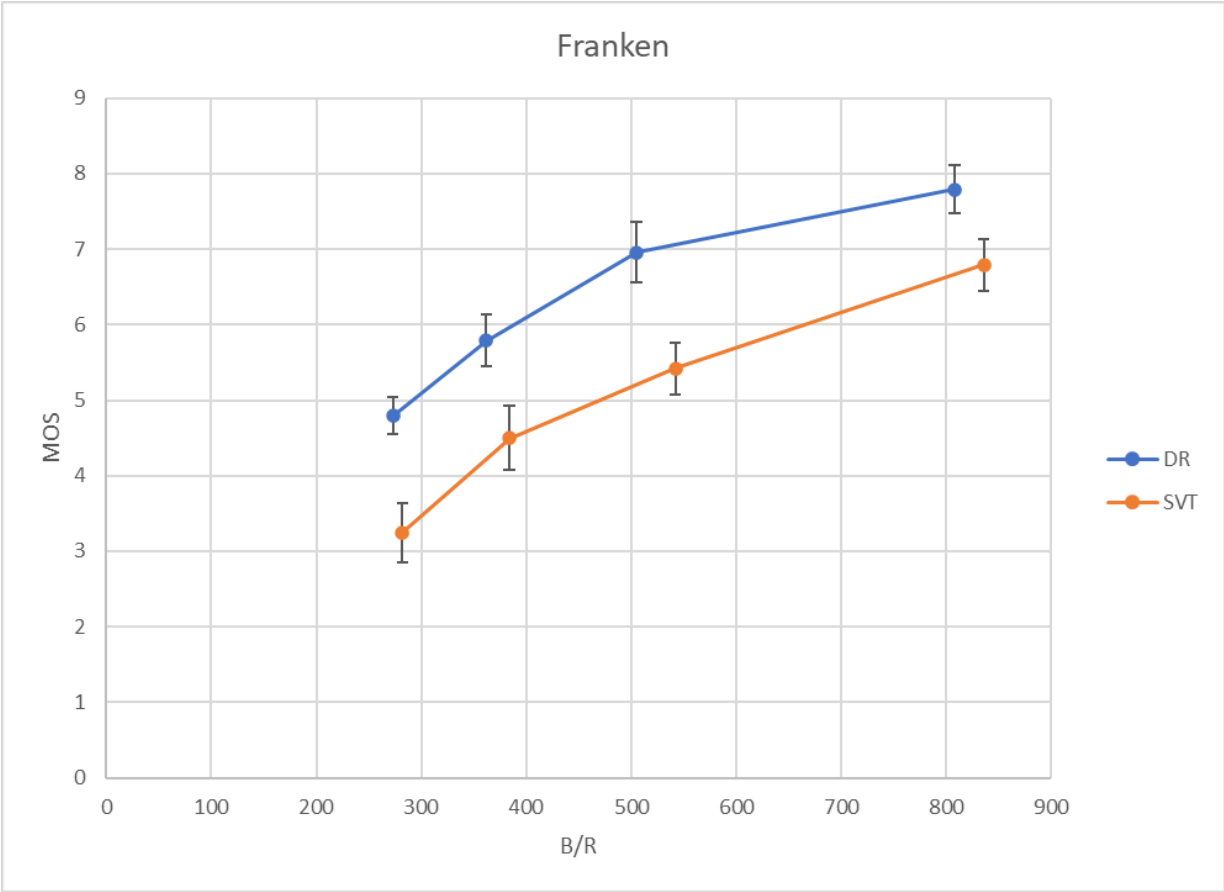
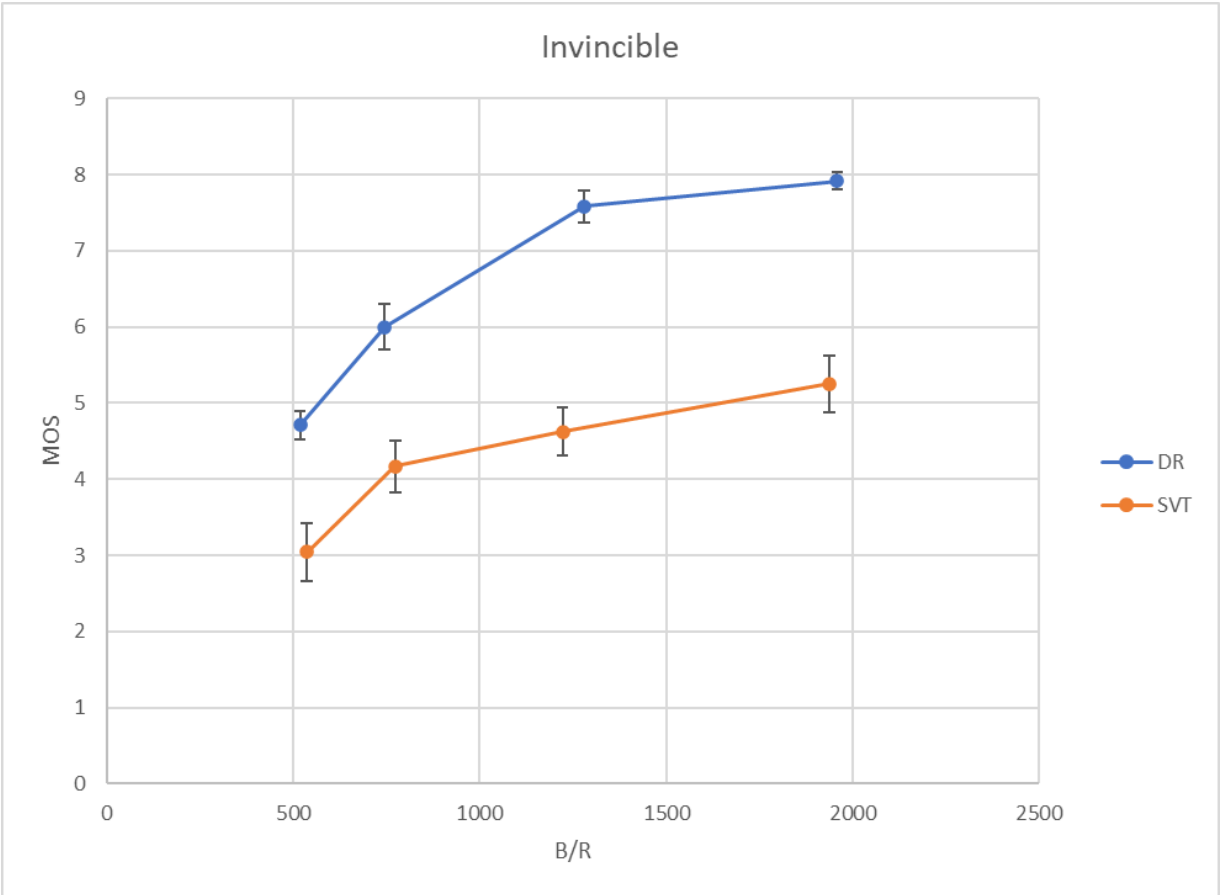


CSGO_Part1

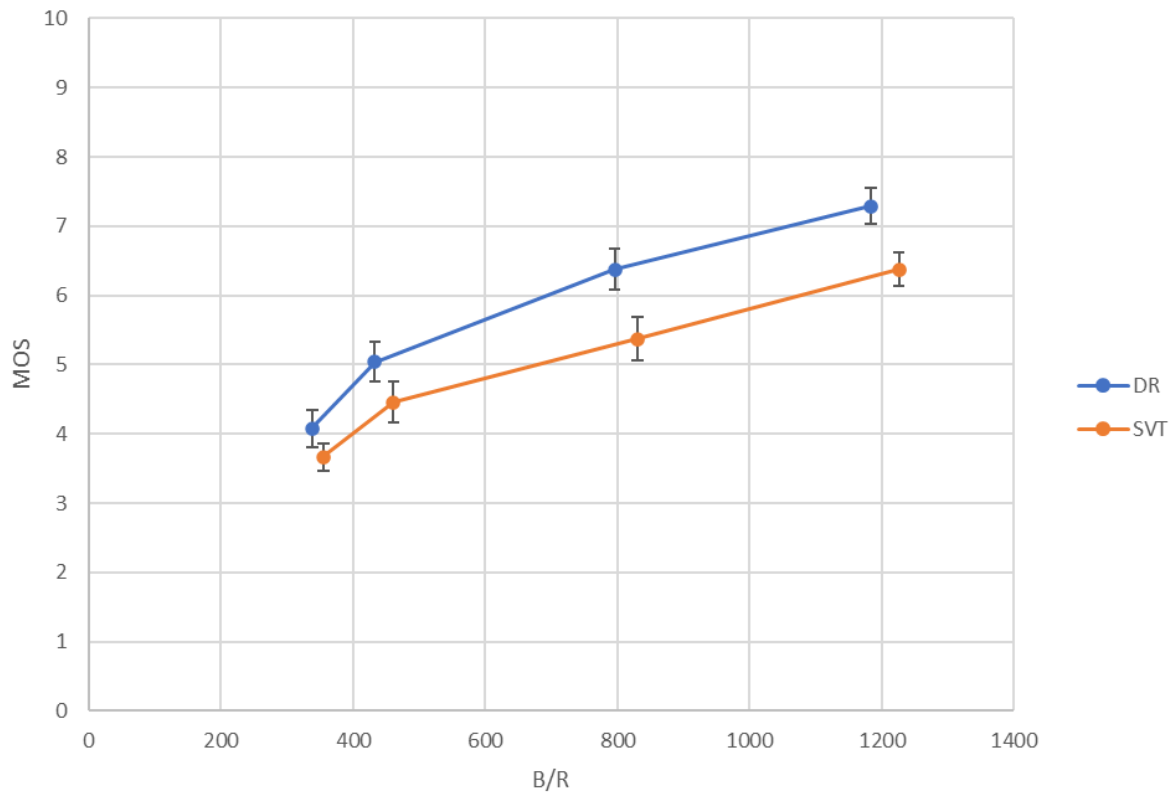


CSGO_Part2

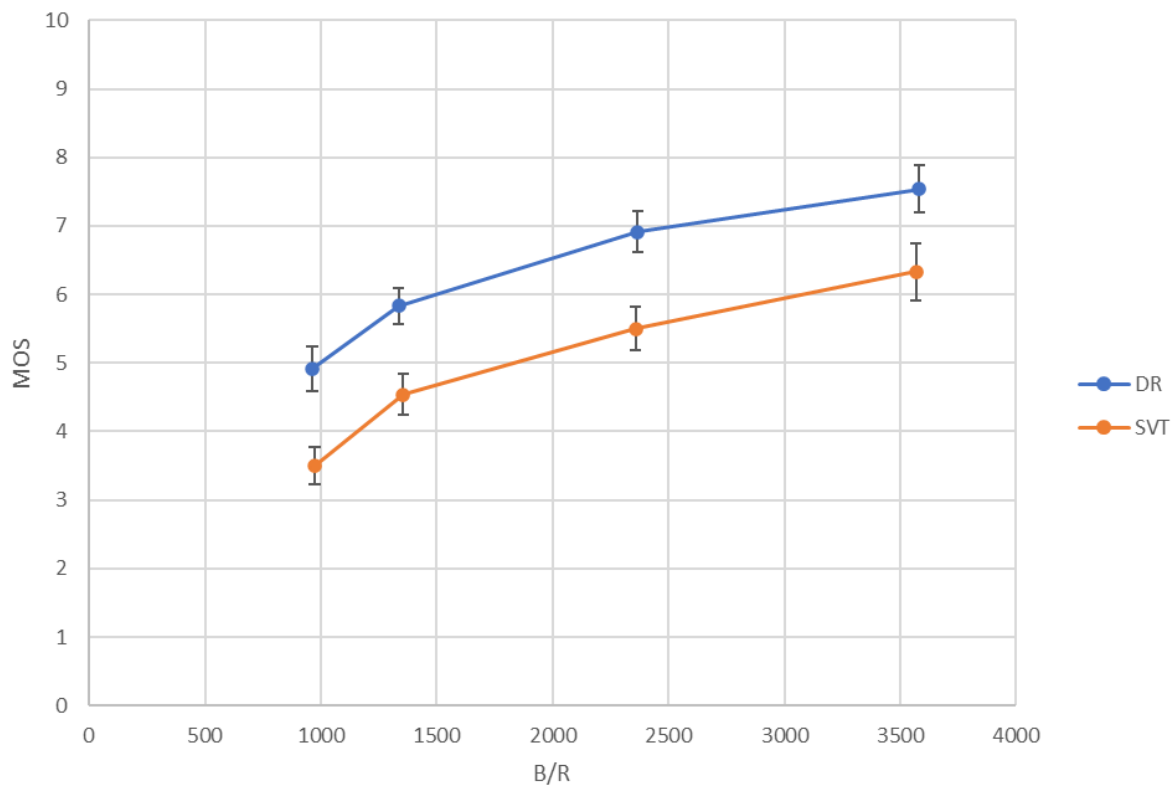


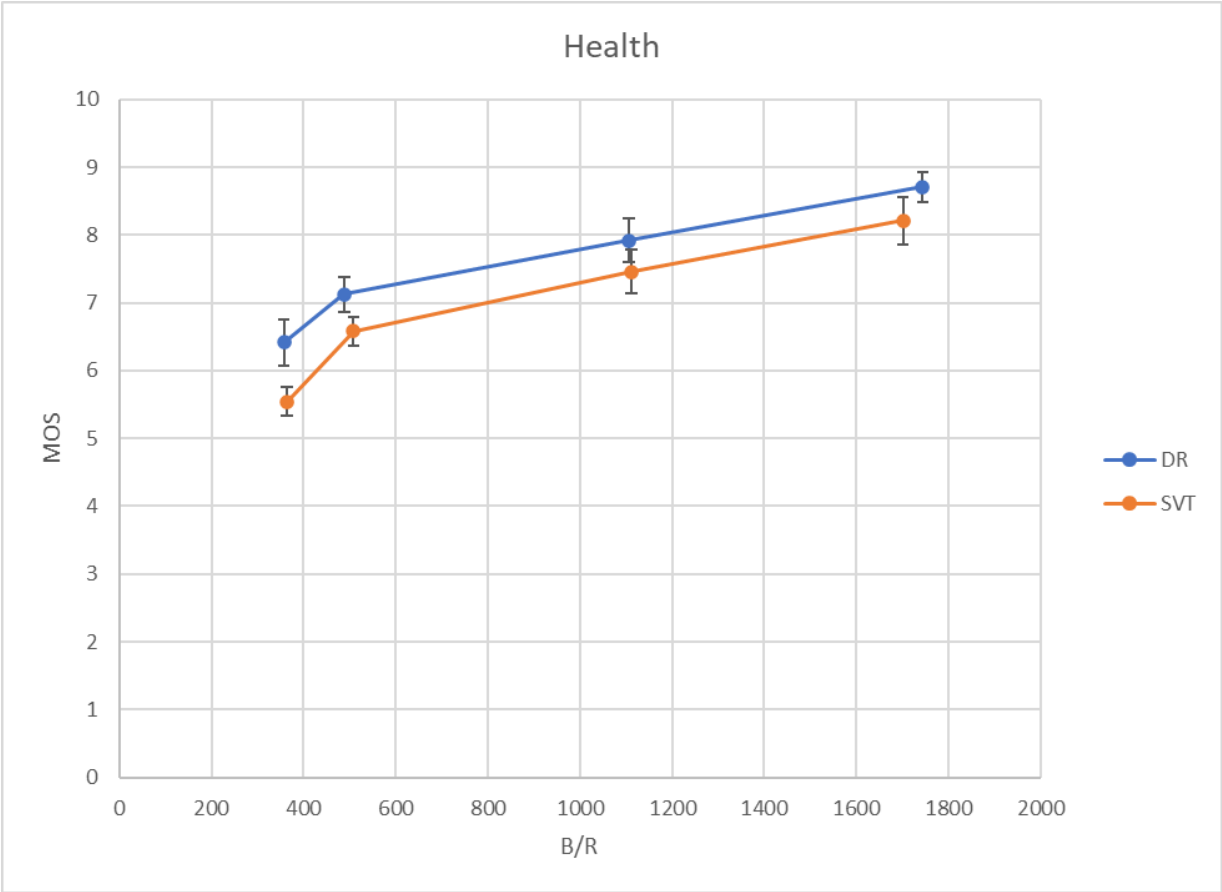
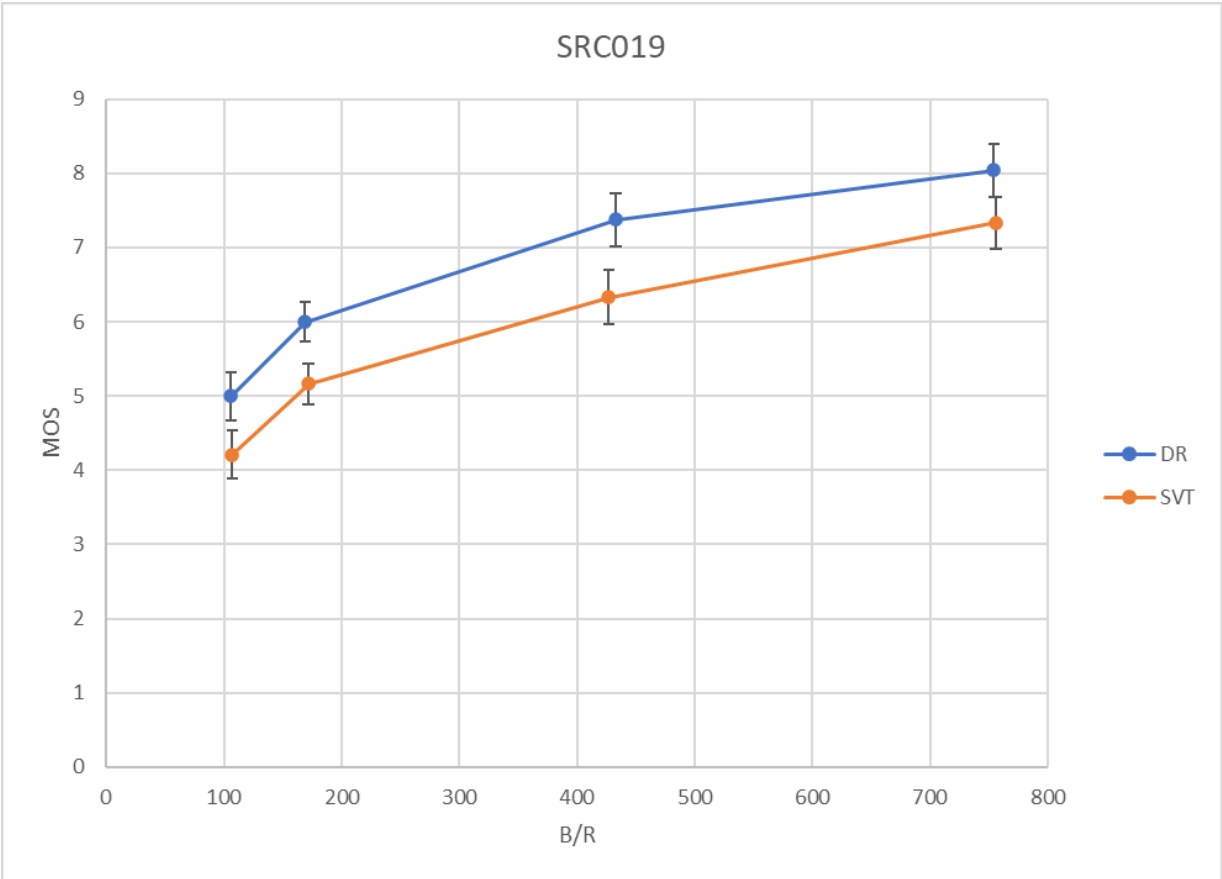


Monster

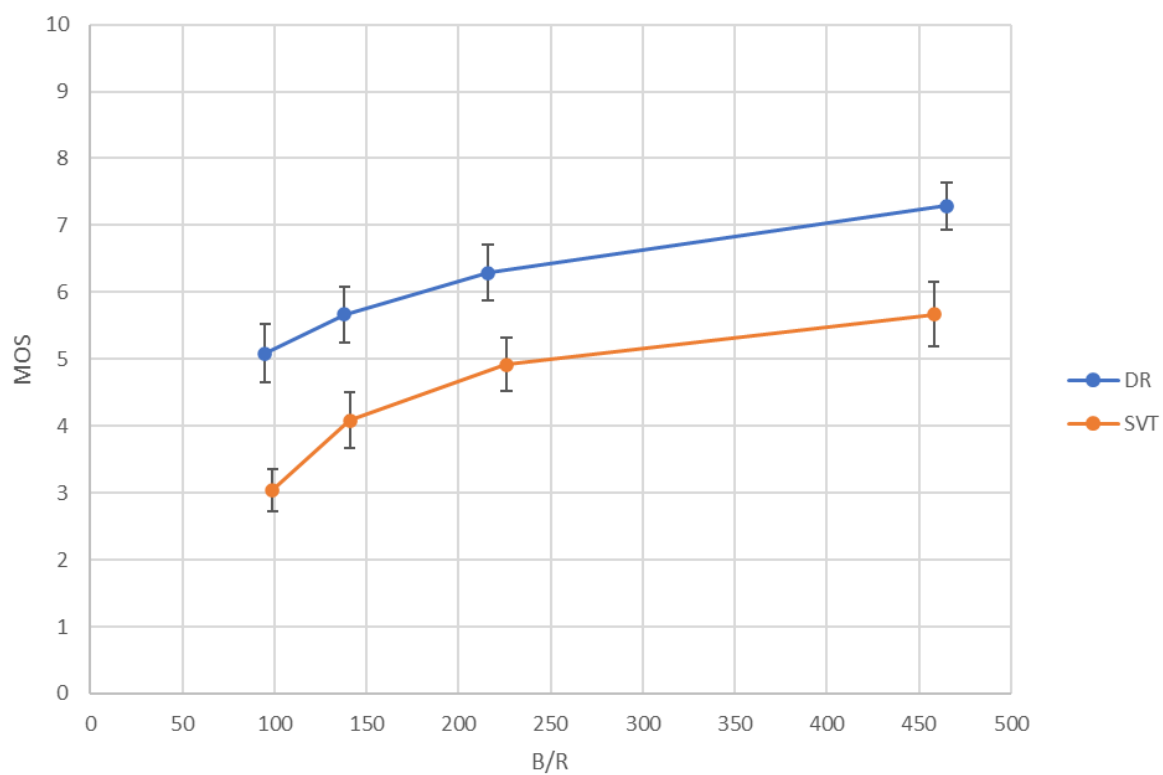


SCR2143

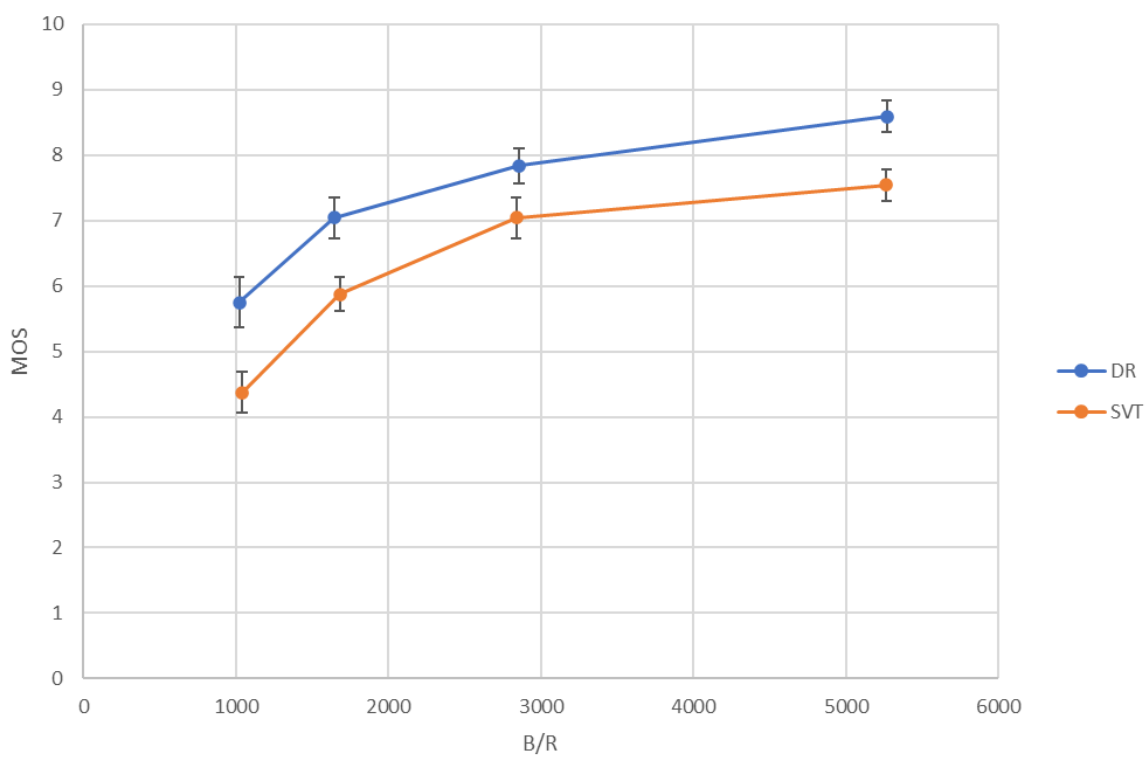




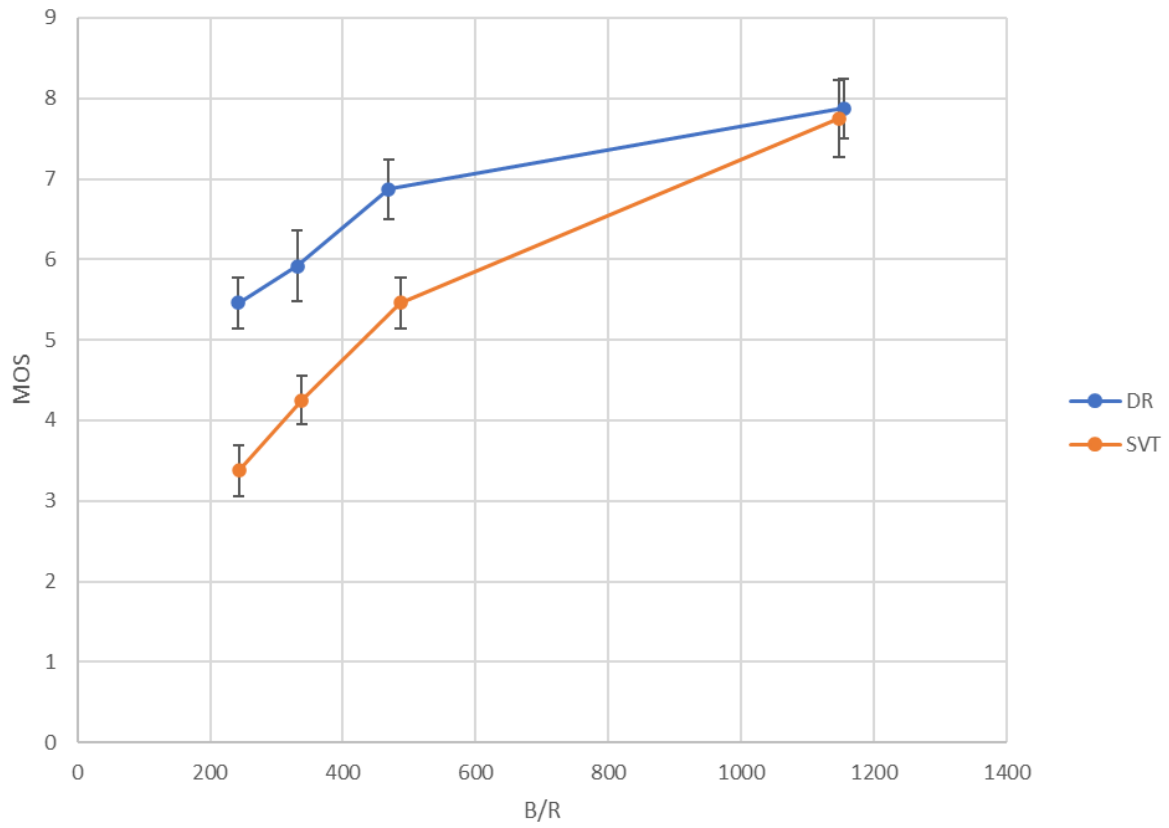
SRC023



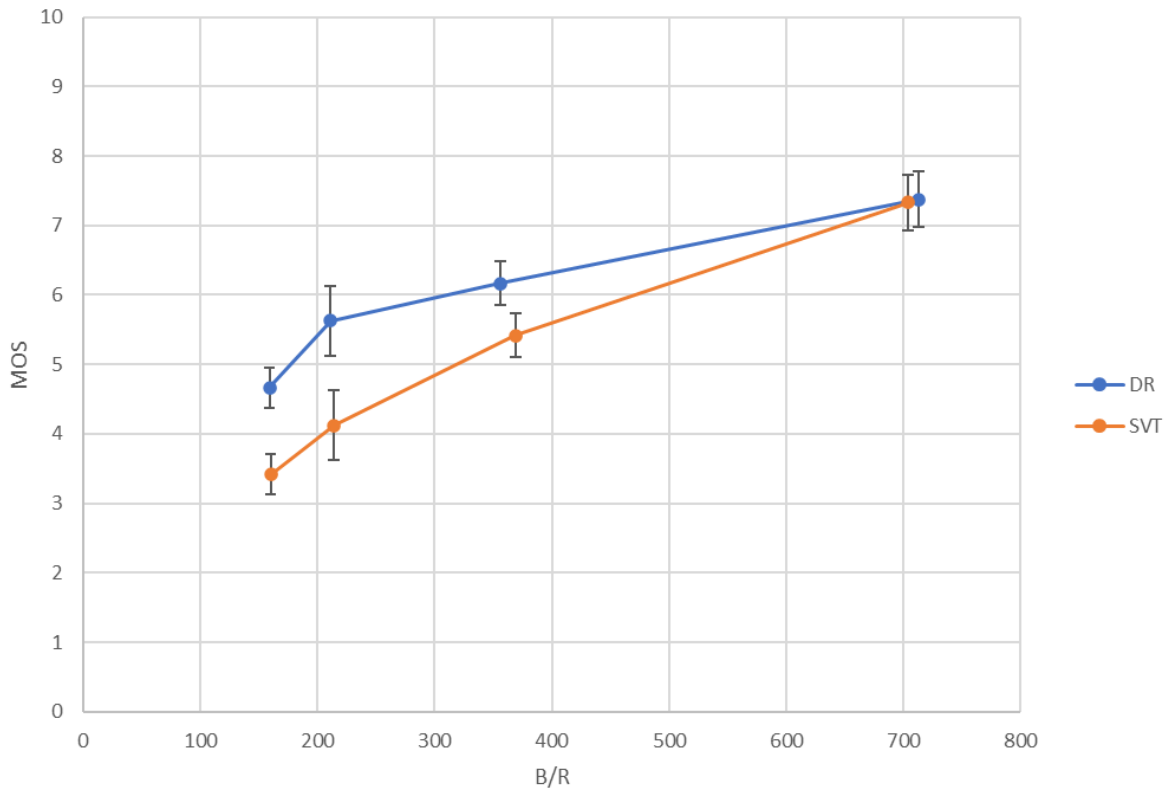
SRC0246

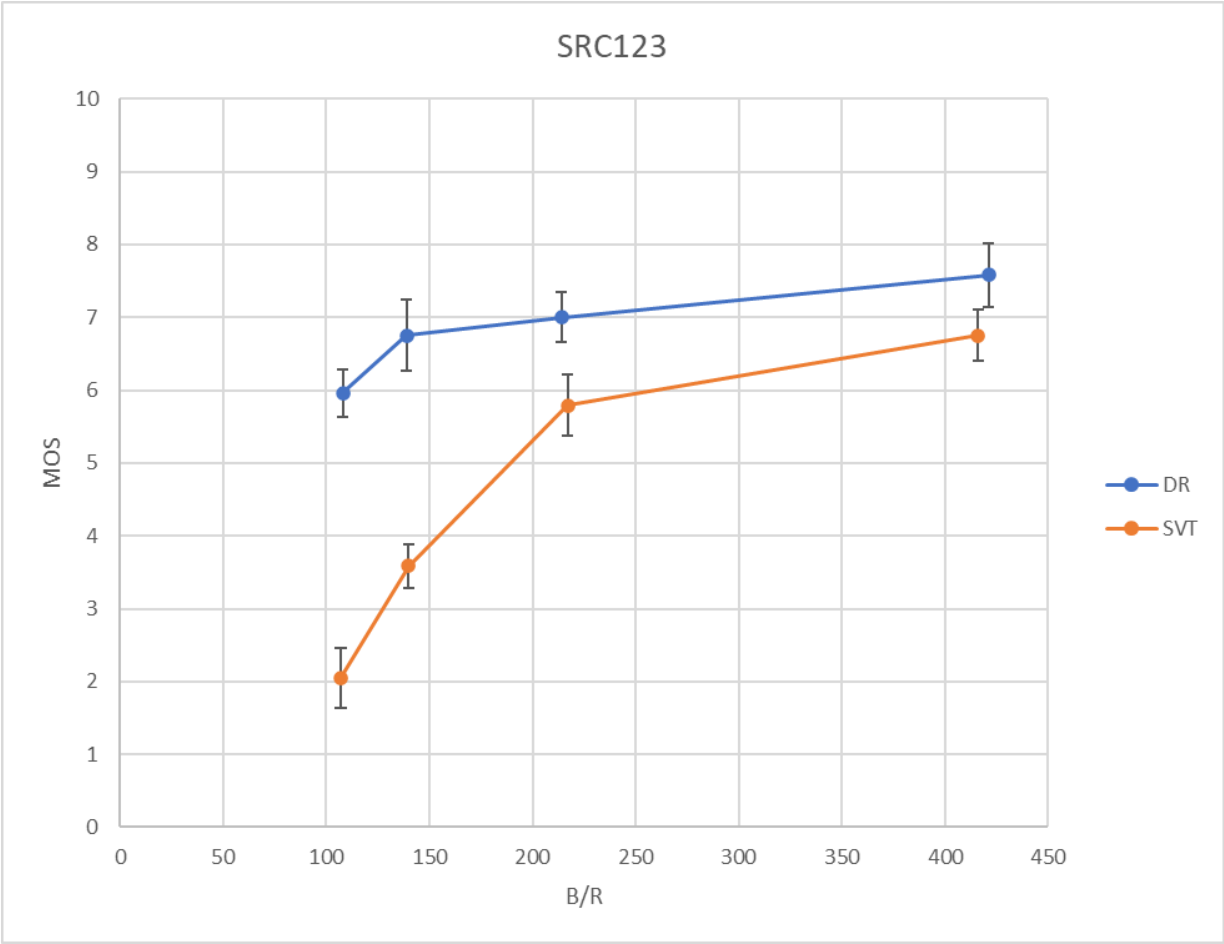


SRC055

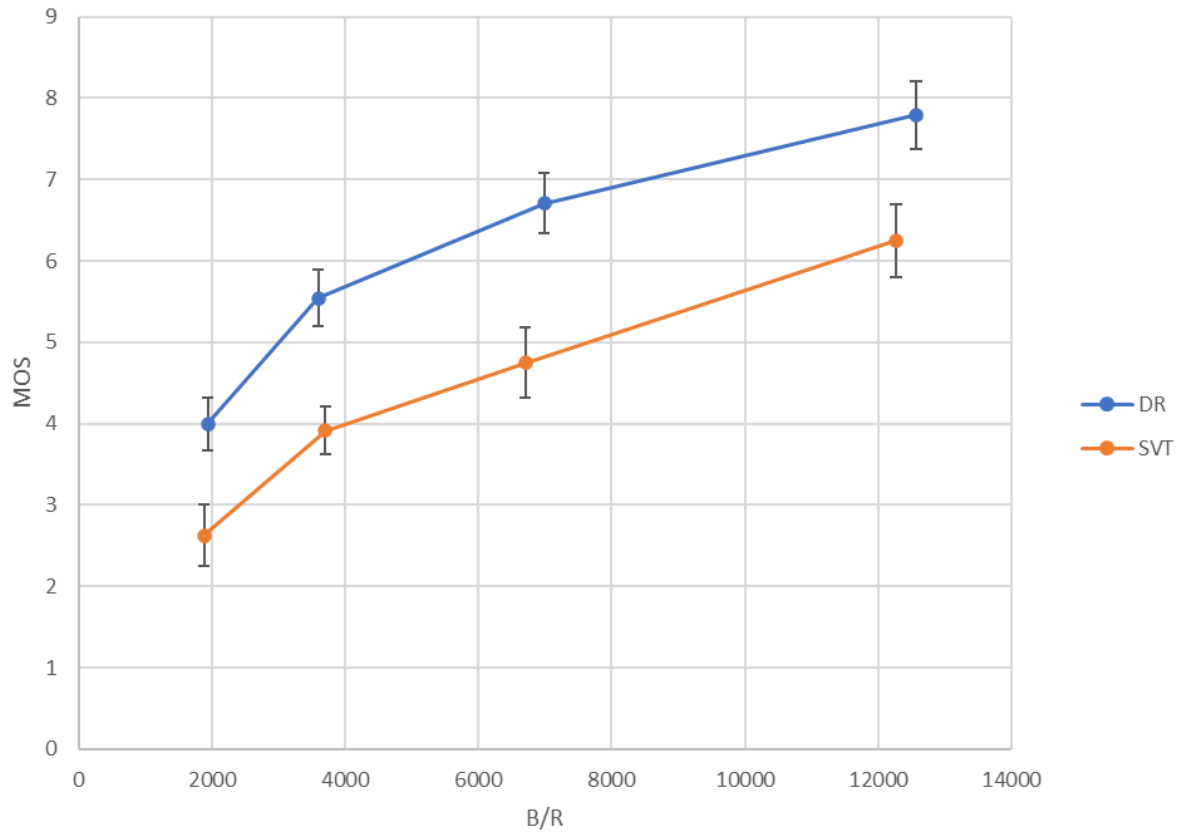


SRC080

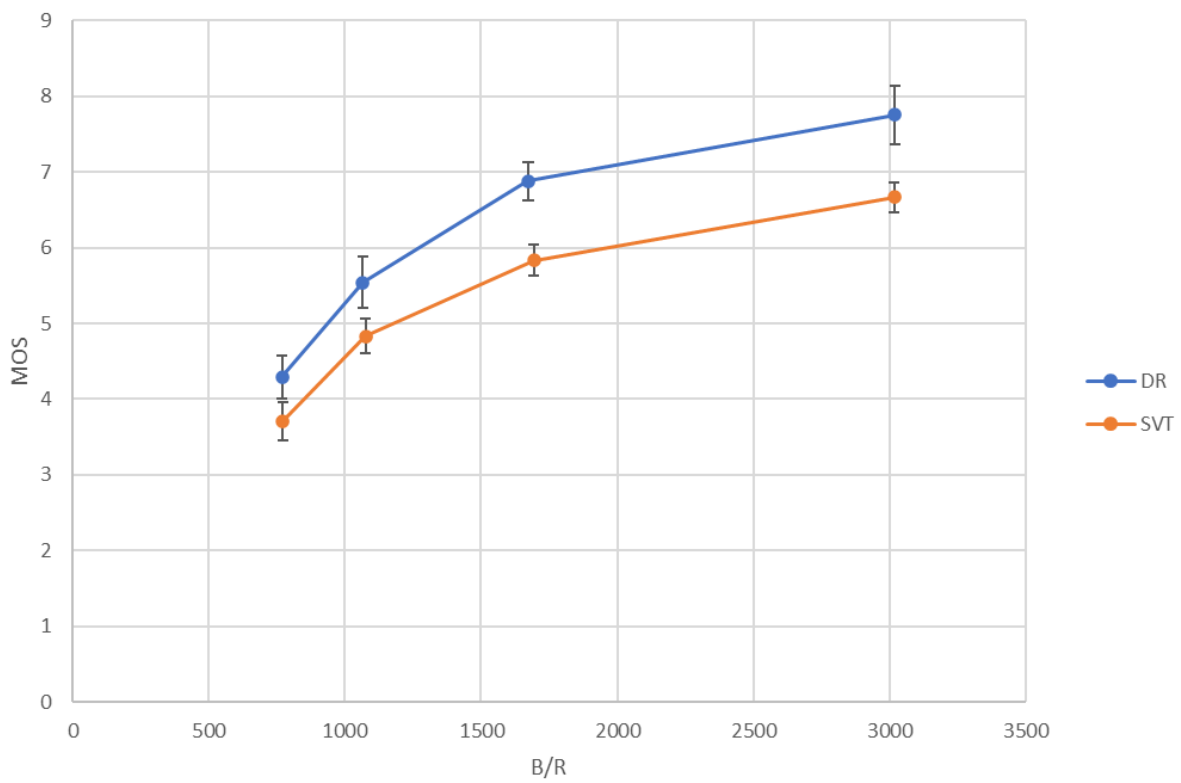




SRC04



SRC11





Figures 4 to 24 – Graphs of the results of the test

4 BD rates

Table 5 shows the results of the computation of the BD rates for each test sequence.

<i>file name</i>	<i>BD</i>	<i>file name</i>	<i>BD</i>
Adventure_SRC09-DR_v25_FLOAT	0,67	SRC023_DR_v25_FLOAT	0,34
Adventure-SRC01_DR_v25_FLOAT	0,55	SRC0246-DR_v25_FLOAT	0,58
CSGO_Part1-DR_v25_FLOAT	0,71	SRC055-DR_v25_FLOAT	0,61
CSGO_Part2-DR_v25_FLOAT	0,66	SRC080_DR_v25_FLOAT	0,68
Franken-DR_v25_FLOAT	0,59	SRC123_DR_v25_FLOAT	0,39
Invincible-DR_v25_FLOAT	0,35	TOM-Jerry-DR_v25_FLOAT	0,40
Monster_DR_v25_FLOAT	0,67	videoSRC04_DR_v25_FLOAT	0,39
SCR2143-DR_v25_FLOAT	0,50	videoSRC11_DR_v25_FLOAT	0,71
SDR_Health_sowp_DR_v25_FLOAT	0,68	videoSRC14_DR_v25_FLOAT	0,68
SRC019_DR_v25_FLOAT	0,54	videoSRC17_DR_v25_FLOAT	0,69

Table 3 - DB rates values for each test sequence

5 Conclusions

This report shows the results of the formal subjective experiment conducted on the Deep Render encoder capabilities.

To provide a better indication of the Deep Render codec performances, the graphs in the spreadsheet were drawn plotting the curves using on the x-axis the bit rates (as indicated in the name of each coded bitstream); this allow you to draw a DB-rate analysis to have a more complete comparison of Deep Render vs. SVT-AV1-P7 across all the bit rates considered.

The reported results show in an evident way the better performances of Deep Render vs. SVT-AV1-P7, in terms of visual quality and bit rates savings across the almost majority of the considered test material.

References

- [1] Recommendation ITU-R BT.500-15 (05/2023) BT Series: Broadcasting service (television) ***Methodologies for the subjective assessment of the quality of television images***
- [2] Recommendation ITU-T P.910 (10/2023); SERIES P: Telephone transmission quality, telephone installations, local line networks Audiovisual quality in multimedia services ***Subjective video quality assessment methods for multimedia applications***