Appendix 2 - Lifesize Icon 600 - Detailed Video Tests

Note: The LifeSize Icon 600™ system supports H.263+ and H.264 however it is not possible to select the video protocol in calls between LifeSize units. In the detailed video tests below only H.264, the default protocol selection between LifeSize units was tested.

For the following tests the video resolution was:

Connection Speed	Resolution
384 Kbit/s	928 x 528 @ 30
768 Kbit/s	1280 x720 @ 30
2 Mbit/s	1776 x 1000 @ 60
4 Mbit/s	1920 x 1080 @ 60
6 Mbit/s	1920 x 1080 @ 60

For all the following tests at 384 Kbit/s the corresponding audio standard was G.722.1c and for all connection speeds > 384 Kbit/s was 16KHz AAC-LC.

Objective Video Tests: Signal measurements

1. 75% EBU bars
2. Grey scale

Subjective Video Impairments Tested:

Lip synchronisation	**LS**
Block distortion (tiling)	**BLK**
Blurring (reduced edge sharpness and spatial detail)	**BLR**
Colour errors	**CLR**
Jerkiness (distortion of smooth motion)	**JRK**
Object persistence (lagging images from previous frames as faded or outline images)	**OP**
Scene cut response (i.e. time to build up the new image)	**SCR**

Scale of impairments:

Imperceptible **1**

Perceptible **2**

Slightly annoying **3**

Annoying **4**

Very annoying **5**

MII Test Tape:

Signals recorded Time on tape

1. EBU colour bars 1min 30secs
2. Grey scale 1.40 - 2.40
3. Blue field 2.50 - 3.50
4. Medium close up female face, still 4.00 - 5.00
5. Medium close up female face, talking 5.10 - 6.10
6. Close up face, nodding 6.20 - 7.20
7. Close up face, shaking head side to side 7.30 - 8.30
8. Zoom out slowly to wide angle three people 8.40 - 9.40
9. Zoom in quickly to close up of centre person 9.50 - 10.50
10. Turntable speeds: 1,2,3 and 4 11.00 - 15.30
11. Football sequence 15.40 - 16.40
12. Zoom in and out of “A to Z” map 16.50 - 17.50
13. Text legibility, font sizes 20 to 12 pt 20.30 - 20.50
14. Cut tests, scenes various with camera movements 21.00 - 22.00
15. Man teaching at whiteboard 22.10 - 23.23

(Insert 75% EBU bars at local site, measure at remote site)

Test 1 (H264): Colour bar test

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s

BLK	1	1	1	1	1
BLR	1	1	1	1	1
CLR	1	1	1	1	1

Test 2 (H.264): Grey scale

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	1	1	1	1	1
BLR	2	1	1	1	1
CLR	1	1	1	1	1

Test 3 (H.264): Blue screen

Any waveform aberrations? None

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	1	1	1	1	1
CLR	1	1	1	1	1

Test 4 (H.264): Medium close up female (still)

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	1	1	1	1	1
BLR	2	2	1	1	1
CLR	1	1	1	1	1

Test 5 (H.264): Medium close up female (talking)

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
LS	1	1	1	1	1
BLK	2	2	1	1	1
BLR	2	1	1	1	1
CLR	1	1	1	1	1
JRK	1	1	1	1	1

Test 6 (H.264): Close up head (nodding)

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s

BLK	3	2	1	1	1
BLR	2	2	1	1	1
CLR	1	1	1	1	1
JRK	1	1	1	1	1

Test 7 (H.264): Close up head (shaking side to side)

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	4	4	1	1	1
BLR	3	3	2	1	1
CLR	1	1	1	1	1
JRK	1	1	1	1	1

Test 8 (H.264): Medium close up, slow zoom out to three shot

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	2	2	1	1	1
BLR	2	1	1	1	1

CLR	1	1	1	1	1
JRK	1	1	1	1	1

Test 9 (H.264): Three shot, quick zoom in to medium close up centre person

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	2	2	1	1	1
BLR	2	1	1	1	1
CLR	1	1	1	1	1
JRK	2	1	1	1	1

Test 10a (H.264): Turntable speed 1

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	2	2	1	1	1
BLR	1	1	1	1	1
CLR	1	1	1	1	1
JRK	2	1	1	1	1

Test 10b (H.264): Turntable speed 2

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	2	2	1	1	1
BLR	1	1	1	1	1
CLR	1	1	1	1	1
JRK	2	2	1	1	1

Test 10c (H.264): Turntable speed 3

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	2	2	1	1	1
BLR	2	2	2	2	2
CLR	1	1	1	1	1
JRK	3	2	1	1	1

Test 10d (H.264): Turntable speed 4

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s

BLK	3	2	1	1	1
BLR	3	3	3	2	2
CLR	2	1	1	1	1
JRK	3	2	1	1	1

Test 11 (H.264): Football sequence

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	5	4	2	2	1
BLR	4	3	2	2	2
CLR	2	2	2	2	2
JRK	2	1	1	1	1

Test 12 (H.264): Zoom in and zoom out of ‘A to Z’ map

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	5	4	2	1	1
BLR	5	3	2	2	1

CLR	1	1	1	1	1
JRK	3	2	1	1	1

Test 13 (H.264): Text legibility (% of screen height) at viewing distance approx. 5x screen diagonal

Legibility H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
20 pt (3.5%)	Yes	Yes	Yes	Yes	Yes
16 pt (3%)	Yes	Yes	Yes	Yes	Yes
14 pt (2.5%)	Yes	Yes	Yes	Yes	Yes
12 pt (2.3%)	No	No	Yes	Yes	Yes

Test 14 (H.264): Video with several vision cuts

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
BLK	5	3	2	2	2
BLR	4	2	2	1	1
CLR	1	1	1	1	1
OP	1	1	1	1	1

SCR	3	2	2	2	1
JRK	2	2	1	1	1

Test 15 (H.264): Man teaching with flip chart

Subjective Impairments H.323	384 kbit/s	768 kbit/s	2 Mbit/s	4 Mbit/s	6 Mbit/s
LS	1	1	1	1	1
BLK	2	2	1	1	1
BLR	2	1	1	1	1
CLR	1	1	1	1	1
JRK	1	1	1	1	1

Test 16: Playback from a domestic VHS videotape player. Is picture stable?

As there is no analogue video input this test could not be carried out.