RECOMMENDATION ITU-R BR.1289

**SCANNED AREA OF 16 mm AND 35 mm RELEASE FILM
USED FOR 16:9 CONVENTIONAL TELEVISION SYSTEMS**

(Question ITU-R 240/11)

(1997)

The ITU Radiocommunication Assembly,

considering

a)   that it is normal practice in broadcasting organizations to transfer TV programmes released on film to videotape for transmission or distribution to other organizations;

b)   that more and more often, films are transferred to tape by external post-production or facilities houses;

c)   that there is a need for broadcasters to have recommendations on operational practices when scanning films for transmission or transfer to video carrier;

d)   that the broadcasting organizations would like to specify exactly the picture area on film that they received on video carrier by other organizations;

e)   that many frame formats exist for 35 mm, 16 mm and Super 16 mm motion picture films, as listed below, and preferred dimensions for the area used on the frame of all those formats should be recommended:

–   1.37:1 ("Academy" format, close to 4:3),

–   1.66:1 (European wide-screen format, close to 16:9),

–   1.85:1 (United States wide-screen format, close to 16:9),

–   2.35:1 (anamorphic "Cinemascope" format);

f)   that the scanned area dimensions should be related to the recommended maximum projectable image area dimensions being specified in:

–   International Organization for Standardization (ISO) Standard 2907-1994 "Maximum projectable image area on 35 mm motion picture film - Position and dimensions";

–   ISO Standard 359-1993 "Projectable image area on 16 mm motion-picture prints - Position and dimensions";

–   ISO Standard DIS 5768-1996 "Image produced by camera aperture Type W on 16 mm motion-picture film - Position and dimensions";

g)   that two methods are currently used in the world to scan widescreen film programmes in conventional television:

–   the letter-box method, in which the width of the film frame fills the width of the television image, leaving black bars at the top and bottom of the television image if the film aspect ratio is wider than the television aspect ratio; this method is used when it is desired to preserve the original image composition of the film;

–   the pan-scan method in which the height of the film image fills the height of the television image, and the area scanned on the film frame is made to travel as appropriate over the width of the frame if this is wider; this method is used when it is desired that programme material should fill the television screen,

recommends

1   that a number of pre-set areas to be scanned on 35 mm, 16 mm and Super 16 mm release print films should be selectable at choice; Table 1 and Table 2 propose the dimensions of the areas used on the various film formats with 16:9 full screen and with 16:9 letter-box method respectively; in the latter case the used areas should be centred on the film projectable area.

TABLE 1

16:9 "Full screen" display

Picture aspect ratio		Used frame area dimensions (mm)	Notes
Film	Displayed on TV		
35 mm		(Centre 18.75)[1]	
1.37:1	1.78:1	21.11 × 11.87	1
1.66:1	1.78:1	21.11 × 11.87	2
1.85:1	1.78:1	20.14 × 11.33	3
2.35:1	1.78:1	16.19 × 18.21	4
Standard 16 mm		(Centre 7.98)[1]	
1.37:1	1.78:1	9.65 × 5.43	5
Super 16 mm		(Centre 9.00)[1]	
1.66:1	1.78:1	11.86 × 6.67	6

[1]   Distance from picture centre to guiding edge.

TABLE 2

16:9 "Letter-box" display

Picture aspect ratio		Used frame area dimensions (mm)	Notes
Film	Displayed on TV		
35 mm		(Centre 18.75)[1]	
1.37:1	1.37:1	21.11 × 15.29	7
2.35:1	2.06:1	18.74 × 18.21	8
2.35:1	2.35:1	21.29 × 18.21	9
Standard 16 mm		(Centre 7.98)[1]	
1.37:1	1.37:1	9.65 × 7.26	7

[1]   Distance from picture centre to guiding edge.

Notes to Tables 1 and 2:

NOTE 1 – These dimensions apply to the case of films photographed according to the "shoot and protect" concept; they will cause a cropping of 11% at the top and bottom of the film image. It should be noted that the telecine operator may not be in a position to be able to tell whether a film has indeed been photographed according to the shoot and protect concept.

NOTE 2 – This width is equal to that specified in ISO Standard 2907 for the maximum projectable image area; it will cause a cropping of about 3% at the top and bottom of the film frame.

NOTE 3 – This height is equal to that specified in ISO Standard 2907 for the maximum projectable image area; it will cause a cropping of about 2% on the left and right side of the film frame.

NOTE 4 – This area is used for anamorphic Cinemascope films; in this case only 76% of the film frame width will be displayed; if it is necessary to display important picture content in the two cropped side panels (each of them 12% of picture width) recourse should be made to pan-scanning.

NOTE 5 – These dimensions apply to the case of films photographed according to the "shoot and protect" concept; they will cause a cropping of about 13% at the top and bottom of the film frame. It should be noted that the resolution of 16 mm film is not sufficient for high definition television (HDTV); it should be used for only conventional resolution television.

NOTE 6 – This area has an aspect ratio of 16:9 and a width which nearly fully exploits the maximum projectable image width; it will cause a cropping of about 4% at the top and bottom of the film frame.

NOTE 7 – These dimensions apply to the case of vintage archive films in which essential picture content is likely to cover the full height of the frame; in this case two vertical black panels will appear at the right and left of the display, the width of each being 11% of image width.

NOTE 8 – This area is sometimes used for anamorphic Cinemascope films; it presents a compromise between the pan-scan and the letter-box methods; it displays 88% of the film frame width and causes two black bars to appear at the top and bottom of the displayed image, each being 6% of image height.

NOTE 9 – This area is used for anamorphic Cinemascope films; these dimensions apply when the letter-box method is used. In this case, two black bars will appear at the top and bottom of the displayed image, each being 12% of image height.