

INSERTION TEST SIGNALSINTRODUCTION

The 625-line video waveform contains 25 lines per field free from active picture information.

The last few lines of this blanking period may have test signals or data inserted on them for a number of purposes.

1. HOW DOES THIS AFFECT THE VIEWER'S PICTURE?

A typical receiver takes up to 1ms to achieve field flyback, i.e. about 15 lines after it detects broad pulses. So, forward scan starts about line 15 or 16 and, to give a normal display from active picture, the height control is adjusted to put the start of picture at the top of screen. Any inserted signals on lines 15 - 22 are, therefore, written above the top of the screen and should not be visible. So far so good.

1.1. Problems which may occur.

If an earlier line in field blanking is used, e.g. line 7, the inserted information may overcome the receiver's tube-blanking, applied during field flyback. E.g. Video drive for peak white = 90v and normal field blanking is a -40v pulse. This can cope with variation of the display brightness control over its normal range, but not with a peak white signal appearing during flyback. The flyback would therefore become visible.

If a fault causes slow flyback, the information on lines 15 - 22 may be written on to the screen, as the beam is still flying back.

Some tubes have phosphor coating round the top curve of the screen and then ITS displayed above the normal picture area may cast light down on to the front of the screen. Data blanking is often included in the receiver or monitor signal processing to remove this effect.

2. WHERE EXACTLY ARE THESE SIGNALS ON THE WAVEFORM

Fig. 1 shows the field blanking waveforms for fields 1 & 2. Normally, insertion test signals are repeated on both fields. The waveform on line 'n' of field 1 is repeated on line 'n + 313' of field 2. International ITS can contain different field 1 and field 2 signals.

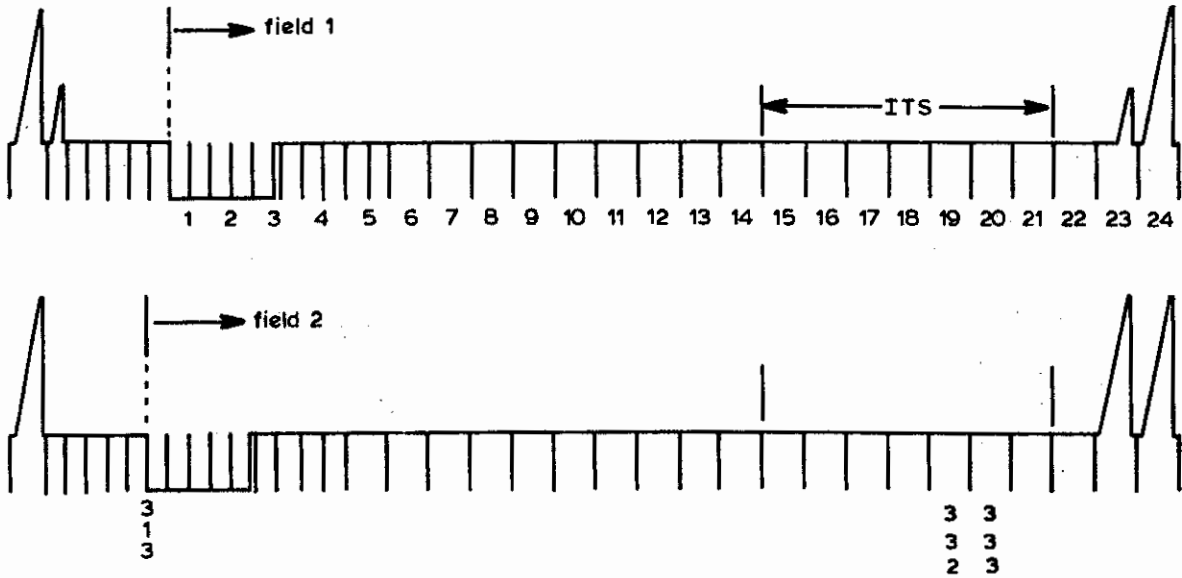


Fig. 1 Field Blanking Periods for Field 1 and Field 2

LINE NO.		Waveform	Comments
Field 1	Field 2		
1	2		
12	325	None	National Noise Measurement Line
13	326	may be used for BBC	Not Radiated as the
14	327	internal Data	line might be visible during flyback signals.
15	328	} 2 pairs of Ceefax Data Lines }	Used for IITs on International Circuits.
16	329		
17	330		
18	331		
19	332	National Insertion	
20	333	Test Signals	
		<u>19 &amp; 20</u> may be used for VITS Colour bars within a studio centre. (Often called IRS. bars)	
21	334	ICE	Transmitted BBC data for internal use only.
22	335	Local line for	Transmitter Tests.

Field Trial  
of 2 Extra lines  
of Teletext

13  
14

DATA RATE 2.5M  
PRESFAX  
COUNT DOWN  
AUTO-OPT  
o/s Teletext  
ICE LOCK  
REGION  
o/s  
YTC Code

Table 1 - Line Usage as at December 1981.

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3. LINE 12.

This line is not re-blanked after Network control in T.V. Centre. The accumulated noise measured on this line indicates the noise degradation due to the distribution path up the country.

4. NATIONAL INSERTION SIGNALS(NITS) on lines 19 & 20 (+ 332 & 333) are as shown in Fig. 2.

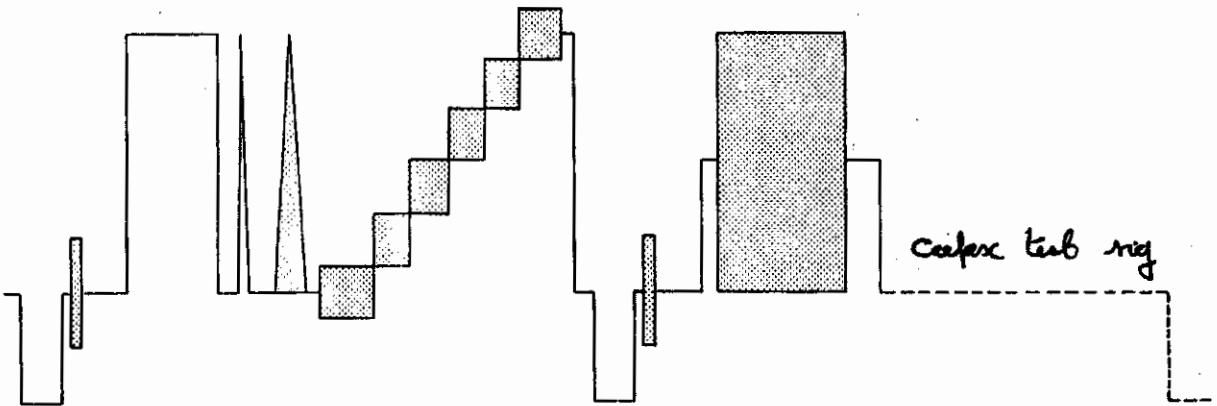


Fig. 2. National Insertion Test Signals.

The NITS waveforms allow automatic monitoring of the quality of the distribution path and automatic correction for errors.

The 10µs bar allows gain measurement for restoring normal level in an a.g.c. amplifier. The bar tilt can be measured for L.F. distortions (\*see notes).

The 2T and 10T composite pulses have their usual purpose, as does the 5 riser staircase + subcarrier.

The second line contains a Chrominance minibar, with two shoulders. (C/F line-by-line P & B) and the last half of the line is currently used for a 'Ceefax' test waveform, although specifications allow for a 300m V p.p. extended burst here.

(See IBA W/Fs)

5. NOTES ON NITS MEASUREMENTS.

The measurements made using NITS are not as positive as the line-by-line test signals.

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5.1. Linear Distortions.

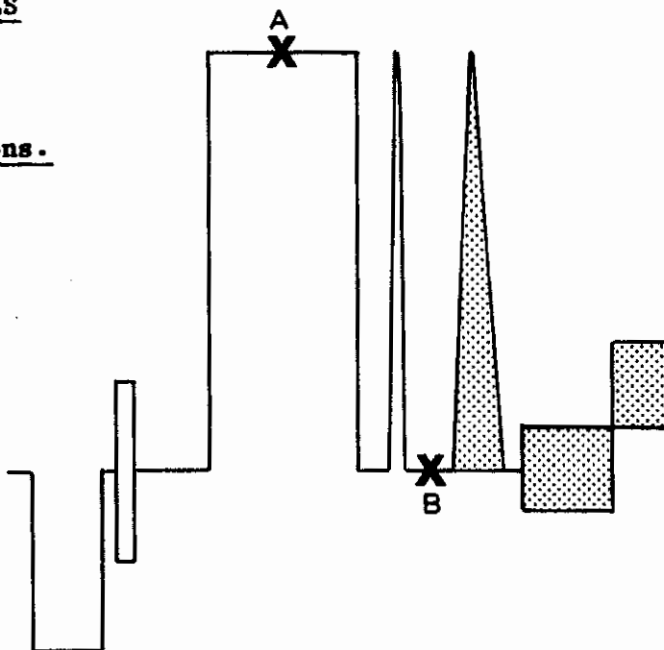


Fig. 3. Measurement on the NITS Luminance Bar.

The bar height standard measurement points are white:-  
 Centre of bar, A; and black level, B:- preceding 10T pulse.  
The bar tilt is measured across the whole top of the bar to allow for its reduced width. (i.e. less L. F. content).  
 On the normal bar, H.A.D. points M1 and M2 mean that  $\Omega$  640ns of the bar edges fall outside the limits box. (Distortions on the edges are due to h.f. problems) On the reduced width ITS bar, rising through M1 and falling through the extra H.A.D. point, M3, it means that the same amount of h.f. edge information is ignored. All other linear distortions are common procedures with P & B.  
 B. *Normally SET RH TO 100% (EXCEPT WHEN tilt excessive)*

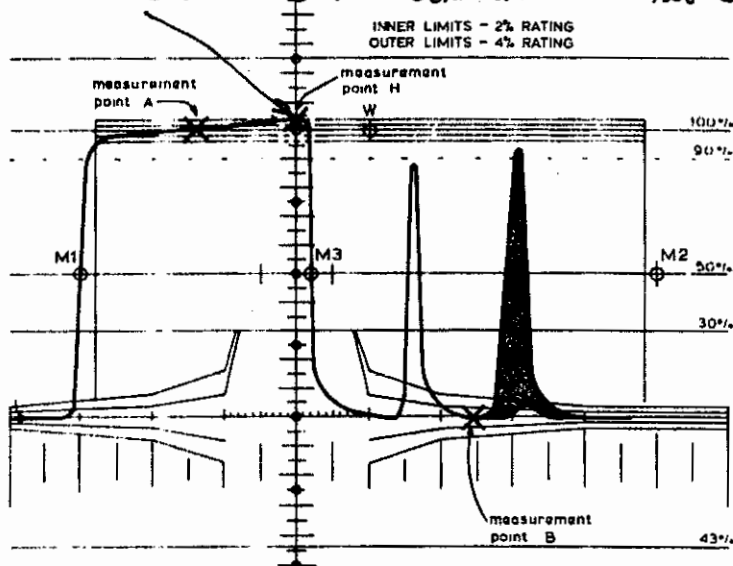


Fig. 4. P & B Graticule + ITS Bar.

5.2. Non-Linear Distortions.

The 5-riser staircase is used as in line-by-line procedures, but there is no control over mean level, which is determined by the radiated programme and may be changing all the time.

6. DISTRIBUTION NETWORK

Automatic measurement and control equipment is used to operate the distribution and transmission of BBC1 and BBC2. The NITS are examined and the signal equalised automatically to bring it within specification. If the input signal quality goes out of the limited correction range, alarms are generated and a reserve feed selected.

The reserve feed at many transmitters is R.B.S. (Re-Broadcast Standby) from another Transmitter. Switching to reserve is inhibited during regional opt-outs to avoid a change in programme material if the main feed fails when an opt-out is running, since the R.B.S. feed is usually from a main station sited in a different BBC region.

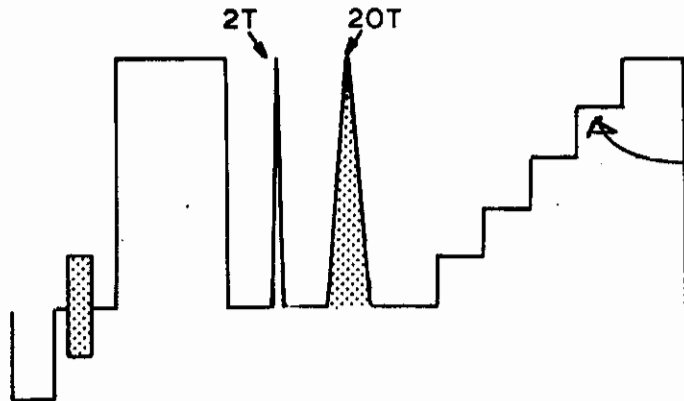
7. I.R.S. (Insertion Reference Signals)

The P.A.L. coders for R.G.B. picture sources in a studio centre are aligned using 100% Colour Bar test signals. These coded bars are then used to check the gain and phasing of the following vision mixers.

These checks can be carried out during programme origination by inserting two lines of R.G.B. colour bars onto the coder inputs of each source. (Timed to occur in the Vertical Interval.) Currently lines 19 and 20 are used within studio centres for I.R.S. bars.

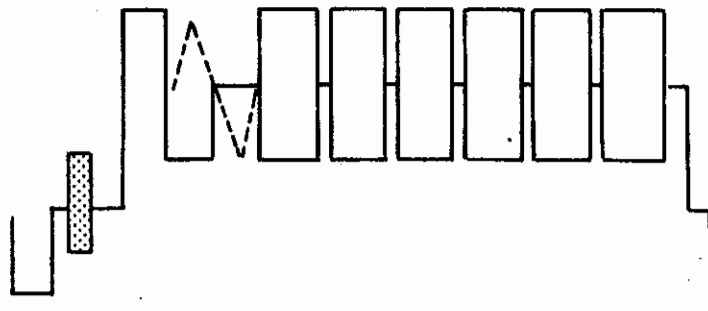
INTERNATIONAL I.T.S

Line 17

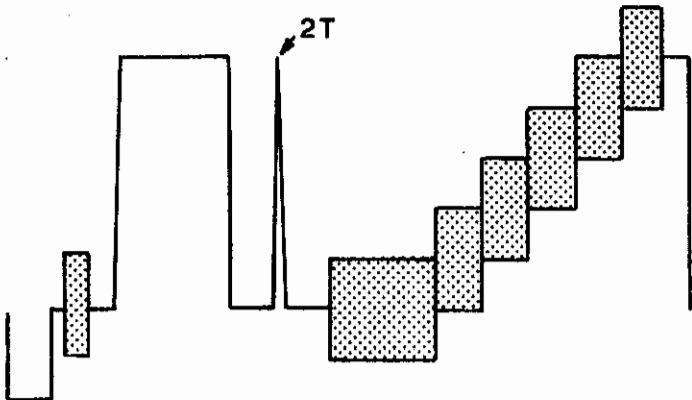


No CSC To Stay  
C/K CROSS TALK Affecting  
Results.

Line 18



Line 330



Line 331

