International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

J.61

Amendment 1

(06/2007)

SERIES J: CABLE NETWORKS AND TRANSMISSION OF TELEVISION, SOUND PROGRAMME AND OTHER MULTIMEDIA SIGNALS

Circuits for analogue television transmission

Transmission performance of television circuits designed for use in international connections

Amendment 1

ITU-T Recommendation J.61 (1988) – Amendment 1

ITU-T

International Telecommunication Union

ITU-T Recommendation J.61

Transmission performance of television circuits designed for use in international connections

Amendment 1

Summary

Amendment 1 to ITU-T Recommendation J.61 clarifies the parameters of 625-line systems, test signal B and the K factor mask for 6 MHz bandwidth and updates some references.

Source

Amendment 1 to ITU-T Recommendation J.61 (1988) was approved on 20 June 2007 by ITU-T Study Group 9 (2005-2008) under the ITU-T Recommendation A.8 procedure.

FOREWORD

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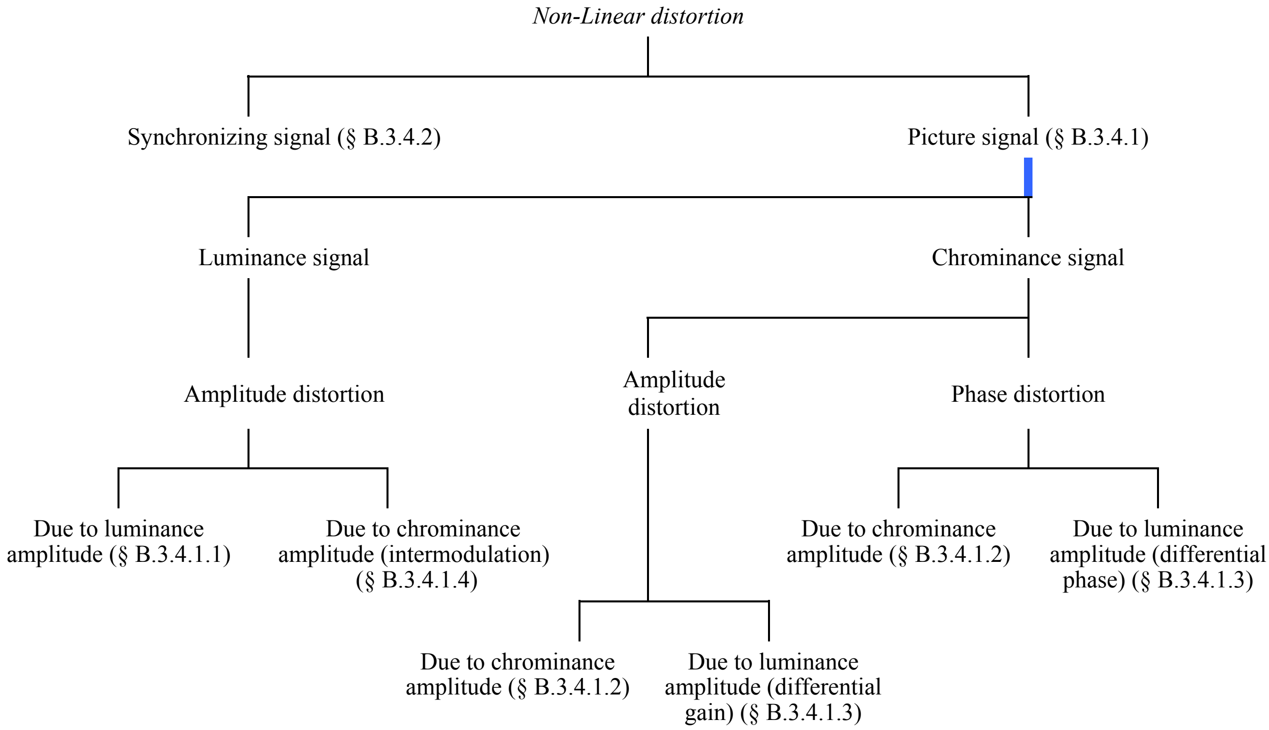
ITU-T Recommendation J.61

Transmission performance of television circuits designed for use in international connections

Amendment 1

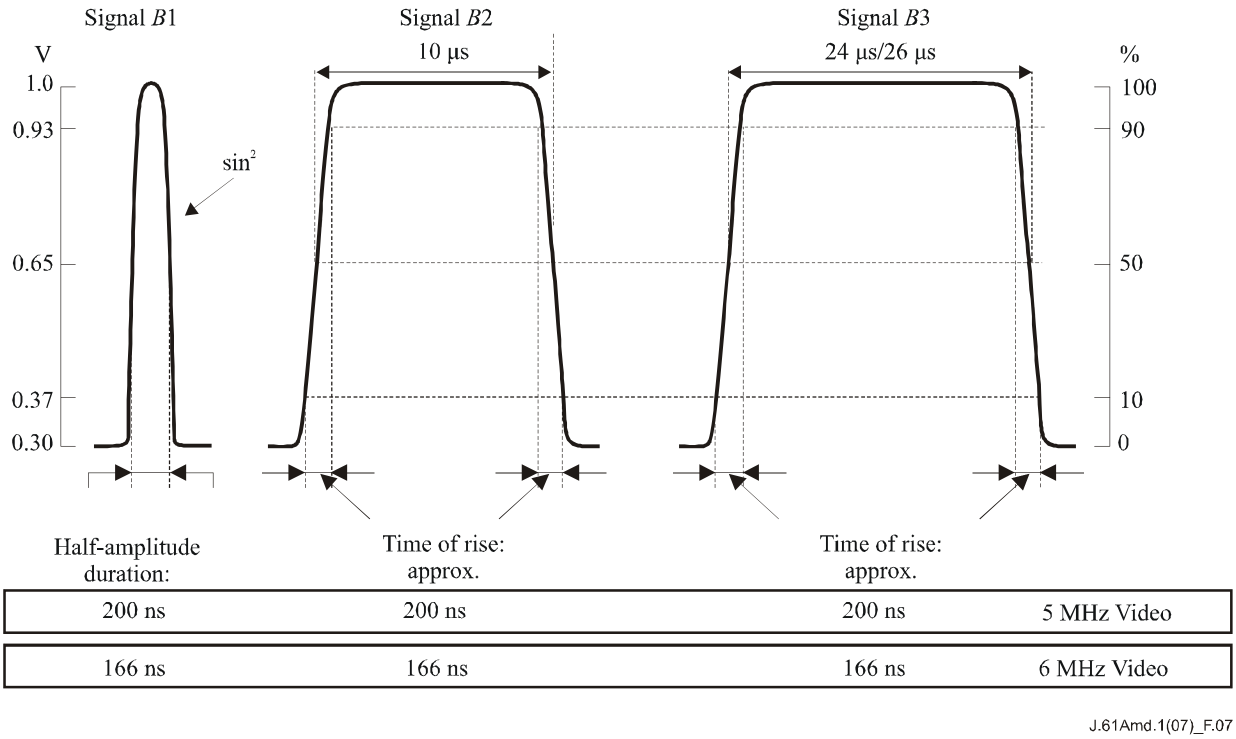
1) Change the Non-linear distortion diagram in B.3.4

Change the Non-linear distortion diagram in B.3.4 by adding missing connecting line from the block "Picture signal (B.3.4.1)" to the next blocks below it as shown:



2) Changes to Figure 7 of Annex I to Part C

In Figure 7 of Annex I to Part C, replace 'T' expression by actual values, add values for 6 MHz, and modify Note 1 as follows:



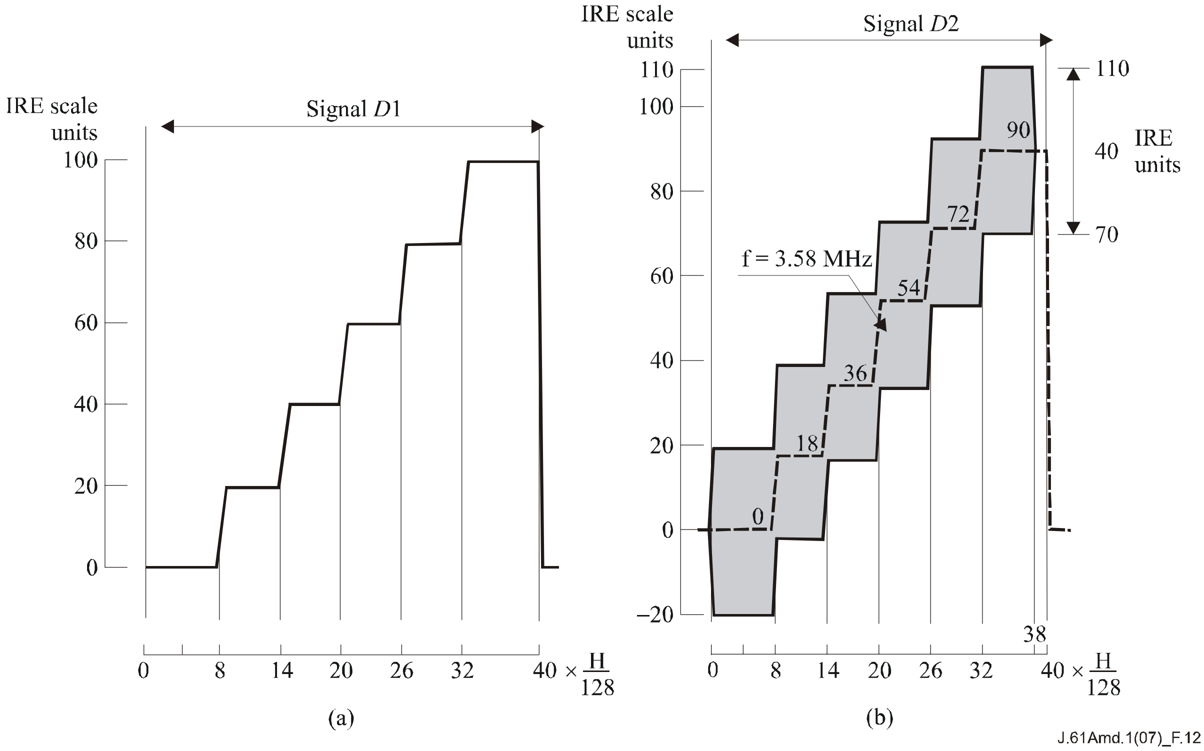
Note 1 – In some 6 MHz countries time of rise of *B*2 is approximately 83 ns.

Note 2 – In France, the normal time of rise of *B*2 and *B*3 is approximately 110 ns.

FIGURE 7 – *Signal B for 625-line systems*

3) Figure 12-b

In Figure 12-b, change superscribe "Scale D2" to "Signal D2".



Note 1 – Vertical scales give signal amplitudes. In Figure 12-b, the tread levels (in IRE units) are indicated on the dashed line.
Note 2 – Sub-carrier amplitude is ±20 IRE units.

FIGURE 12 – *Signal D for 525-line systems*

4) Annex II to Part C, adding references to Figures 17-26

Throughout the text of Annex II to Part C, add references to Figures 17-26, as follows:

ANNEX II TO PART C

DESIGN OF FILTERS USED FOR MEASUREMENTS

1. Low-pass filter for use in noise measurements

Low-pass filter diagram is shown in Figure 17 and its characteristic is given in Figure 18.

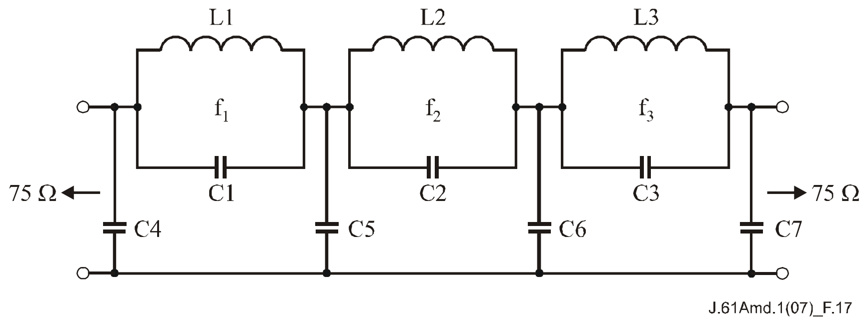


FIGURE 17 – *Low-pass filter diagram*

TABLE OF VALUES

Component	Multistandard value (f_c = 5 MHz)	Tolerance
C1	100	Note 2
C2	545	
C3	390	
C4	428	
C5	563	
C6	463	
C7	259	
L1	2.88	Note 3
L2	1.54	
L3	1.72	
$f1$	9.408	
$f2$	5.506	
$f3$	6.145	

Note 1 – Inductances are given in µH, capacitances in pF, frequencies in MHz.

Note 2 – Each capacitance quoted is the total value, including all relevant stray capacitances, and should be correct to ±2%.

Note 3 – Each inductor should be adjusted to make the insertion loss a maximum at the appropriate indicated frequency.

Note 4 – The *Q*-factor of each inductor measured at 5 MHz should be between 80 and 125.

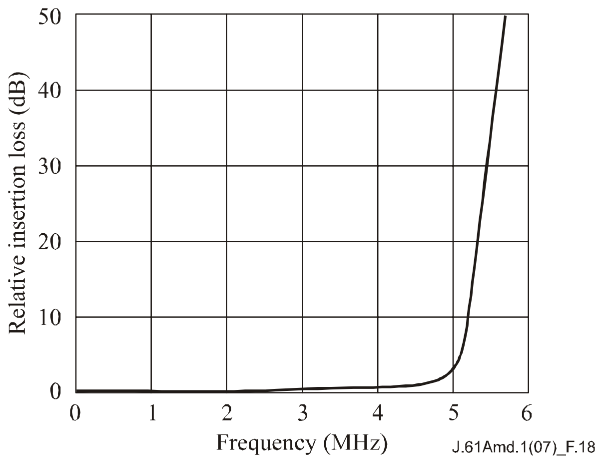


FIGURE 18 – *Low-pass filter characteristic*

2. Combined high-pass, low-pass filter (f_c = 10 kHz)

The high-pass section is used in series with the low-pass filter described in § 1 for measuring continuous random noise.

The low-pass section is used to measure power-supply hum.

Combined filter design diagram is shown in Figure 19, combined filter characteristic is given in Figure 20.

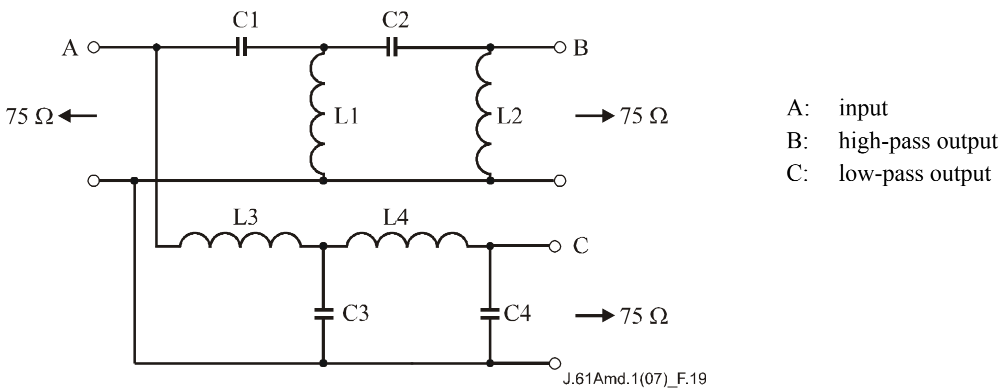


FIGURE 19 – *Combined filter design diagram*

TABLE OF VALUES

Component	Value	Tolerance
C1	139'000	±5%
C2	196'000	
C3	335'000	
C4	81'200	
L1	0.757	±2%
L2	3.12	
L3	1.83	
L4	1.29	

Note 1 – Inductances are given in mH, capacitances in pF.

Note 2 – The *Q*-factor of each inductor should be equal to, or greater than, 100 at 10 kHz.

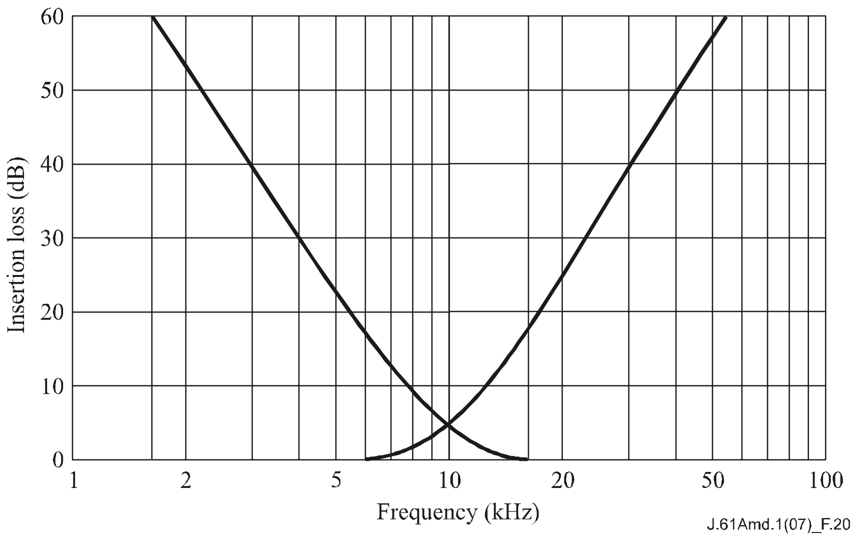


FIGURE 20 – *Combined filter characteristic*

3. Unified weighting network for random noise

3.1 *Network configuration*

Network diagram is shown in Figure 21. Unified weighting characteristic is shown in Figure 22.

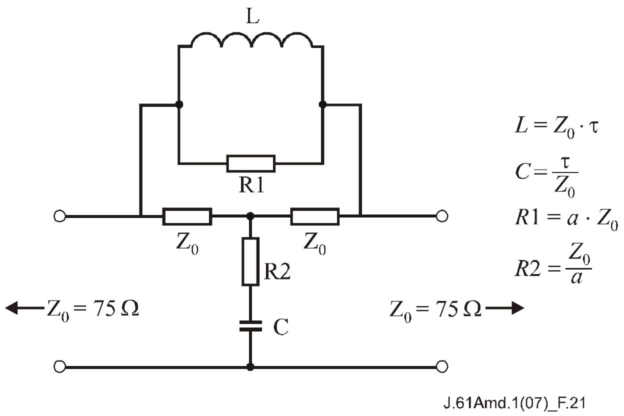


FIGURE 21 – *Network diagram*

3.2 *Insertion loss A*

$$A = 10 \log \frac{1 + \left[\left(1 + \frac{1}{a}\right)\varpi\tau\right]^2}{1 + \left[\frac{1}{a}\varpi\tau\right]^2} \quad \text{dB}$$

at high frequencies: $A_\infty \to 20 \log (1 + a)$

where:

$\tau = 245$ ns; $a = 4.5$ $(A_\infty \to 14.8$ dB).

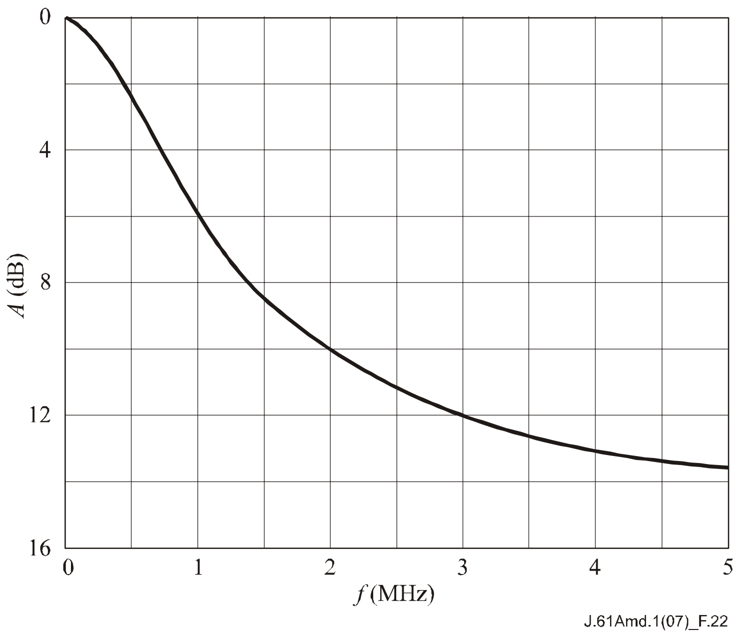


FIGURE 22 – *Unified weighting characteristic*

3.3 *Noise weighting factors in a 5 MHz band*

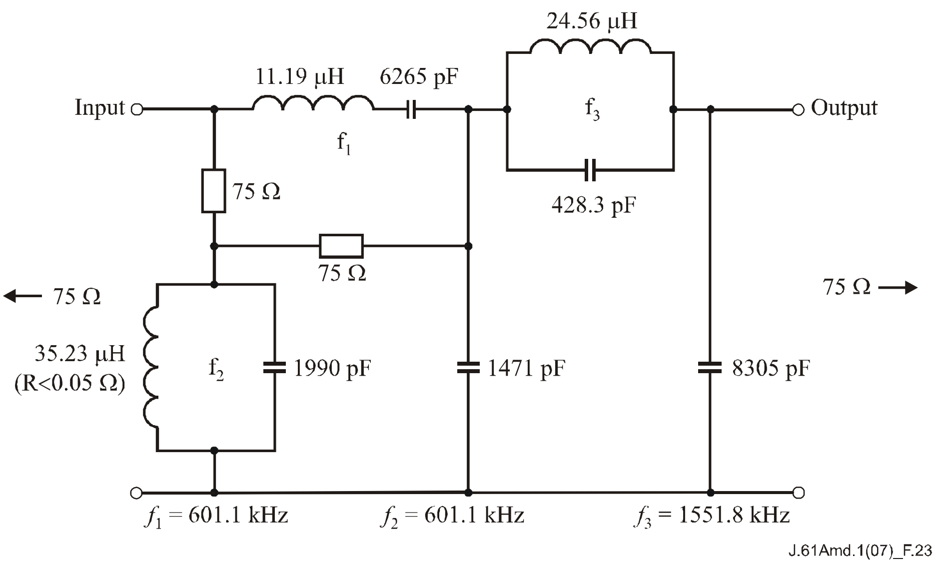
Flat noise: 7.4 dB Triangular noise: 12.2 dB

4. Examples of differentiating and shaping network for luminance non-linearity measurement

Note that the networks shown below have equivalent transfer characteristics.

4.1 *Non-constant resistance form*

Non-constant resistance network diagram is shown in Figure 23.



Note 1 – Capacitor and resistor tolerances ±1%.

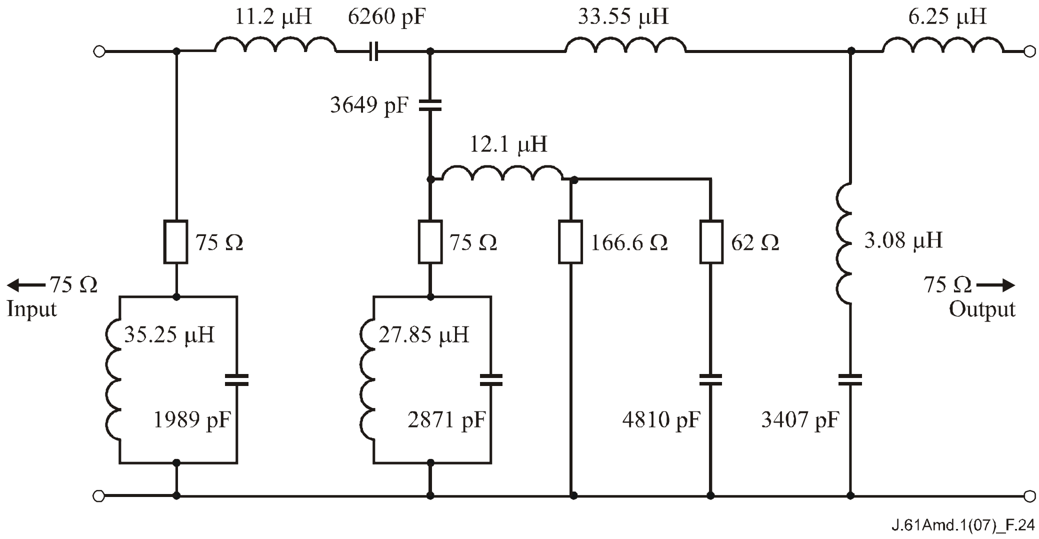
Note 2 – Each inductor should be adjusted to resonate at the appropriate indicated frequency.

Note 3 – This network requires to be operated between 75 Ω terminations for correct performance.

FIGURE 23 – *Non-constant resistance network diagram*

4.2 *Constant resistance form*

Constant resistance network diagram is given in Figure 24.



Note – Capacitor and inductor tolerances ±2%, resistor tolerance ±1%. The *Q*-factor of each inductor should be equal to, or greater than, 80 at 1 Mhz.

FIGURE 24 – *Constant resistance network diagram*

4.3 *Step response of staircase differentiating network*

Figure 25 shows transient response of the differentiating network.

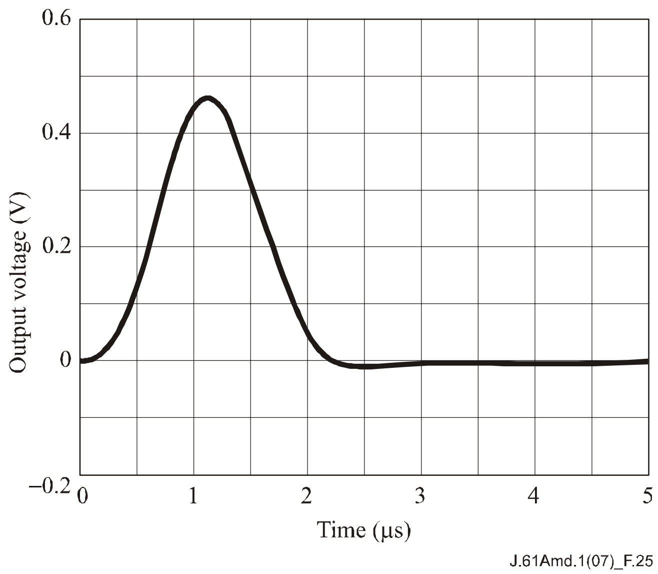


FIGURE 25 – *Transient response of the network*

5. Thomson filter for use in measurement of line-time waveform distortion

Thomson filter diagram is given in Figure 26.

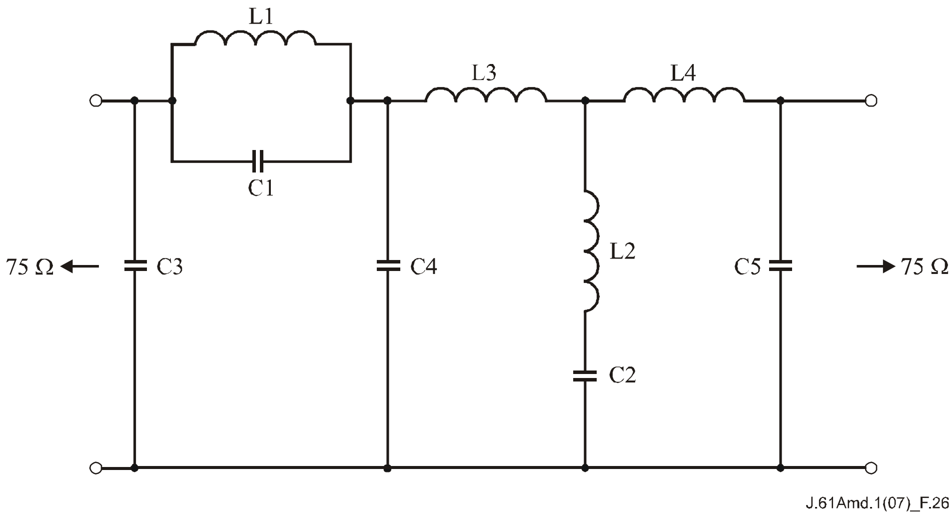


FIGURE 26 – *Thomson filter diagram*

TABLE OF VALUES

Component	Value (f_∞ = 3.3 MHz)
C1	147.7
C2	4044
C3	141.6
C4	1057
C5	310.5
L1	2.948
L2	0.5752
L3	5.767
L4	5.664

Note 1 – f_∞ is the frequency of the first zero of the output/input transfer function.

Note 2 – Inductances are given in µH, capacitances in pF.

Note 3 – For further details see MacDiarmid and Phillips, *Proc. IEE*, Vol. 105B, 440.

5) Figure 29a in Part D

In Figure 29a (Part D), remove 'T' expression and add actual value, add values for 6 MHz and modify legends as follows:

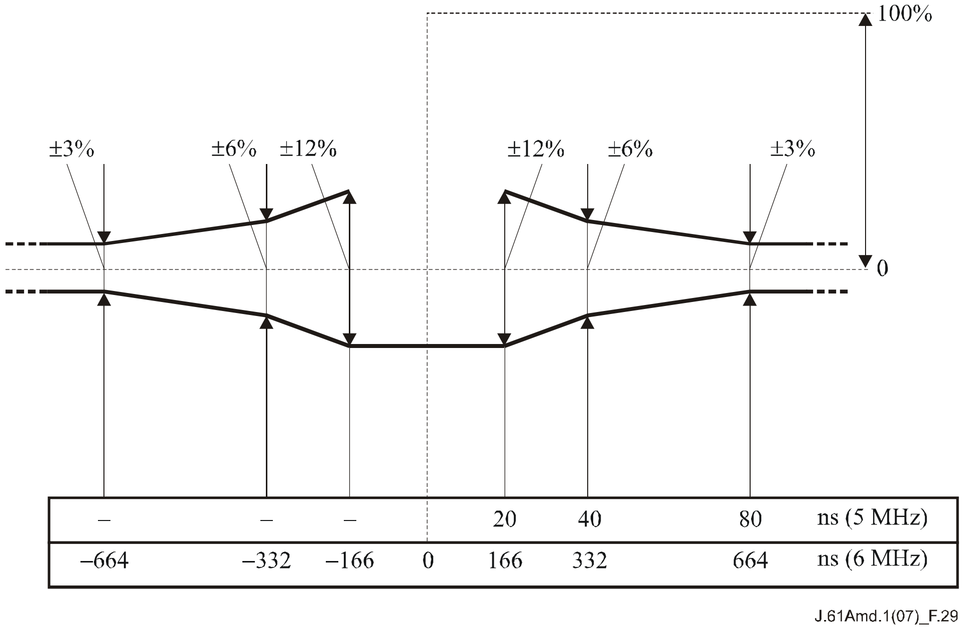


FIGURE 29a – *Mask for response to test signal B1 (625 lines)*
(Half-amplitude duration ~~2T =~~ 200 ns for f_c = 5 MHz and 167 ns for f_c = 6 MHz)

6) Table to Figure 29d

In the Table to Figure 29d (first column, lower row), change the value "≤ 1000" to "≥ 1000", as follows:

t (ns)	Outer dimension (%)	Inner dimension (%)
≤ – 1000	–3	3
–350	–6	6
–175	–9	6
–125	–12	6
0	112/–12	–
125	112	94
175	109	94
350	106	94
~~≤ 1000~~ ≥ 1000	103	97

7) Clause D.3.5.4, adding references to Figures 30 and 31

In clause D.3.5.4, add references to Figures 30 and 31, as follows:

D.3.5.4 *Steady-state characteristics*

Figure 30 gives the limits for gain/frequency characteristic, and Figure 31 gives the limits for delay/frequency characteristic.

The following limits may be found useful by designers but, because the relationships between time domain and frequency domain characteristics are so complex, their use may sometimes give rise to results which conflict with those obtained with test waveforms. If this occurs the waveform results should be considered to be definitive.

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