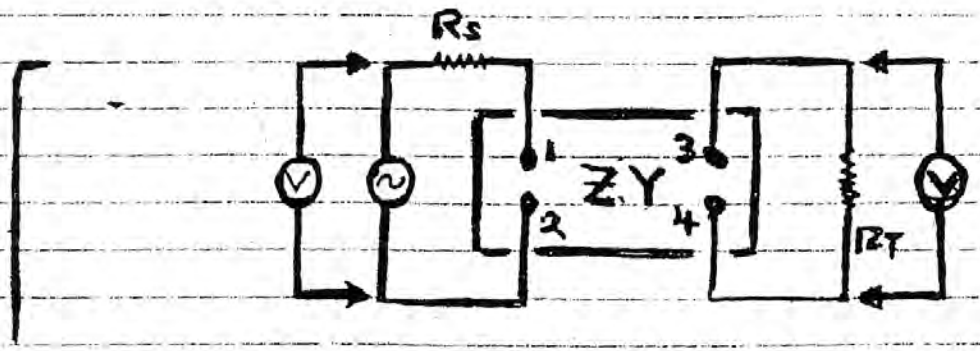
More on the Tesla/Alexanderson System of Wireless Transmission and It's Application at Bolinas, CA Part 2

…where time can flow backward and energy transmission can be instantaneous.

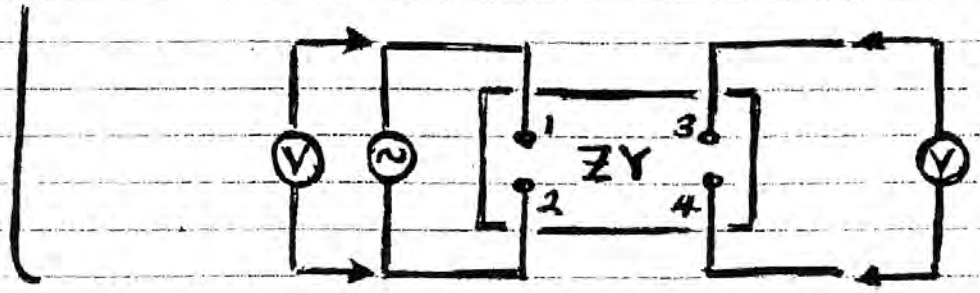
San Francisco Tesla Society



TERMINATED TRANSMISSION NETWORK, $R_S = R_T = Z_0$

NETWORK TEST SET UP FOR MEASUREMENT

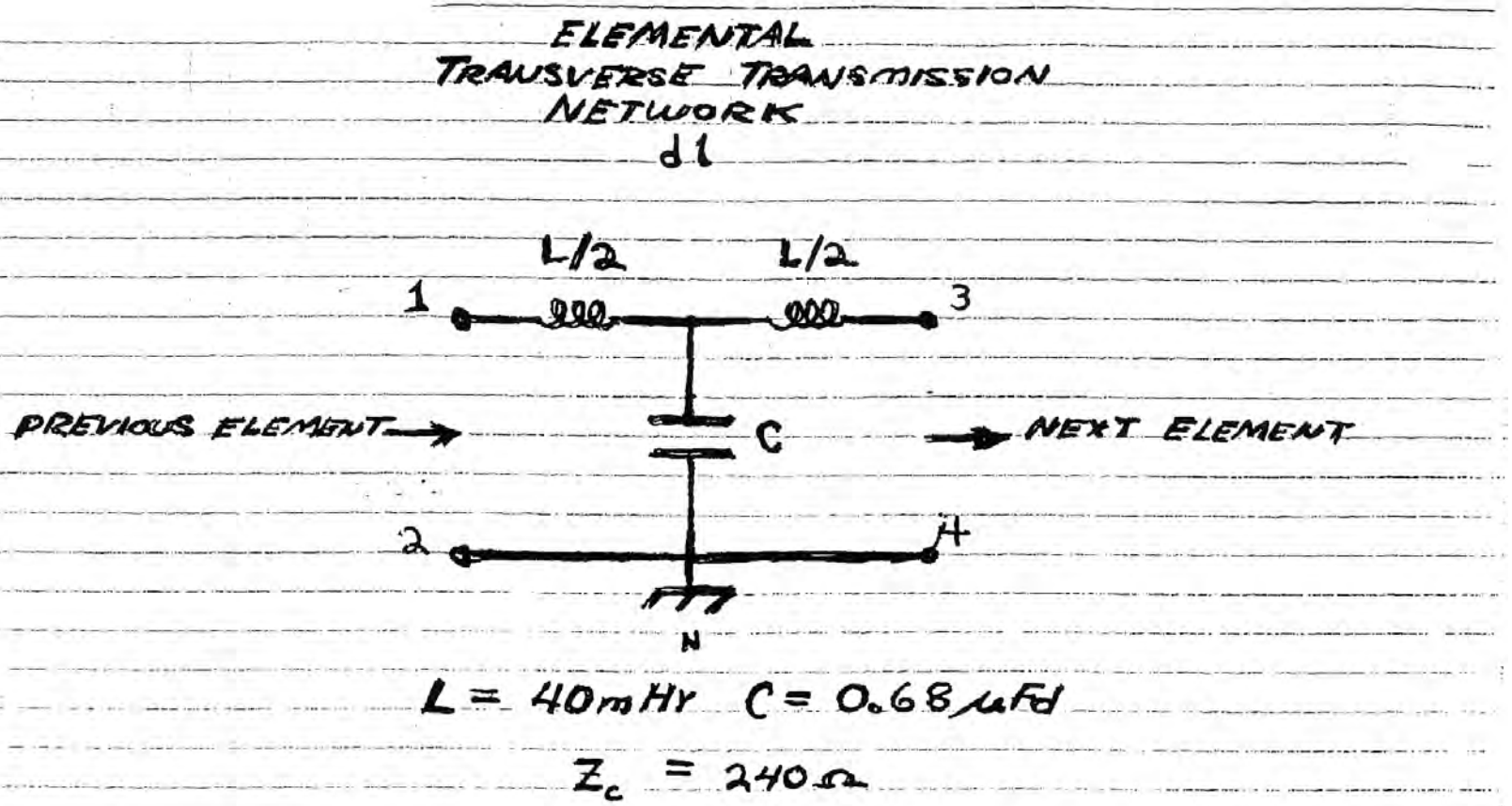
$$\frac{Z}{Y} = Z_0^2$$



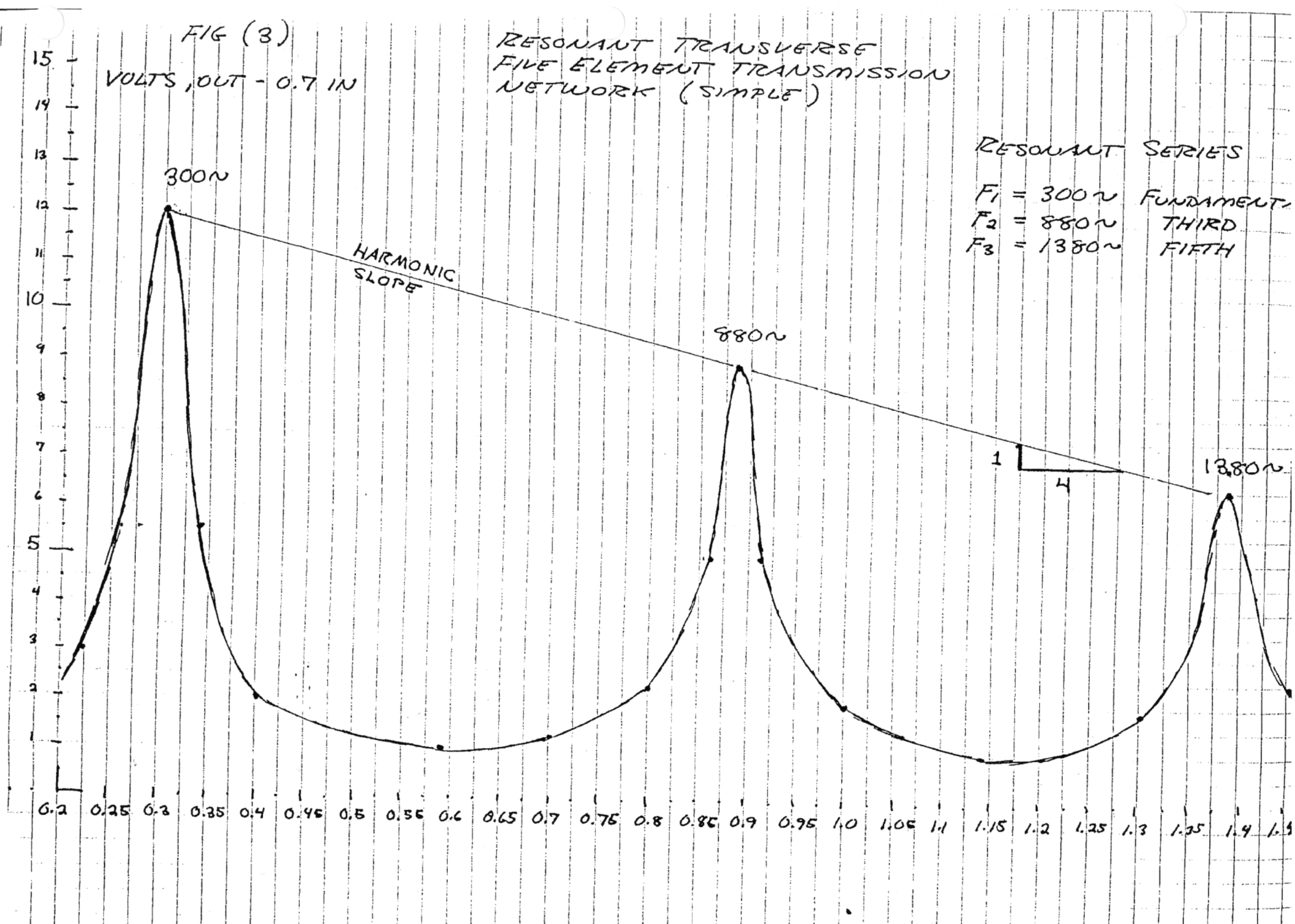
RESONANT TRANSMISSION NETWORK $R_S < Z_0 < R_T$

$R_T = \infty$

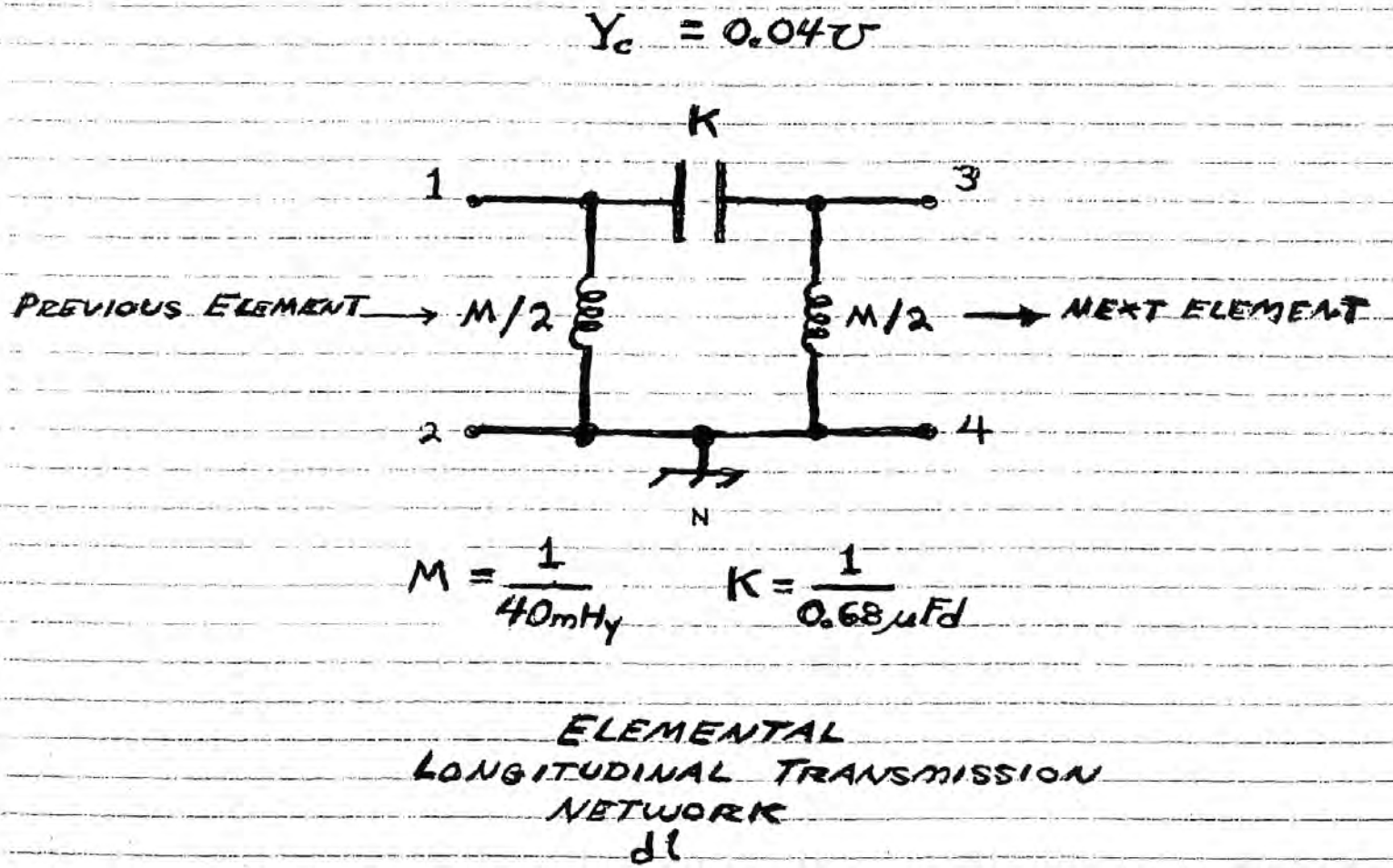
APX I – 6 Network Test Setup for Measurement.



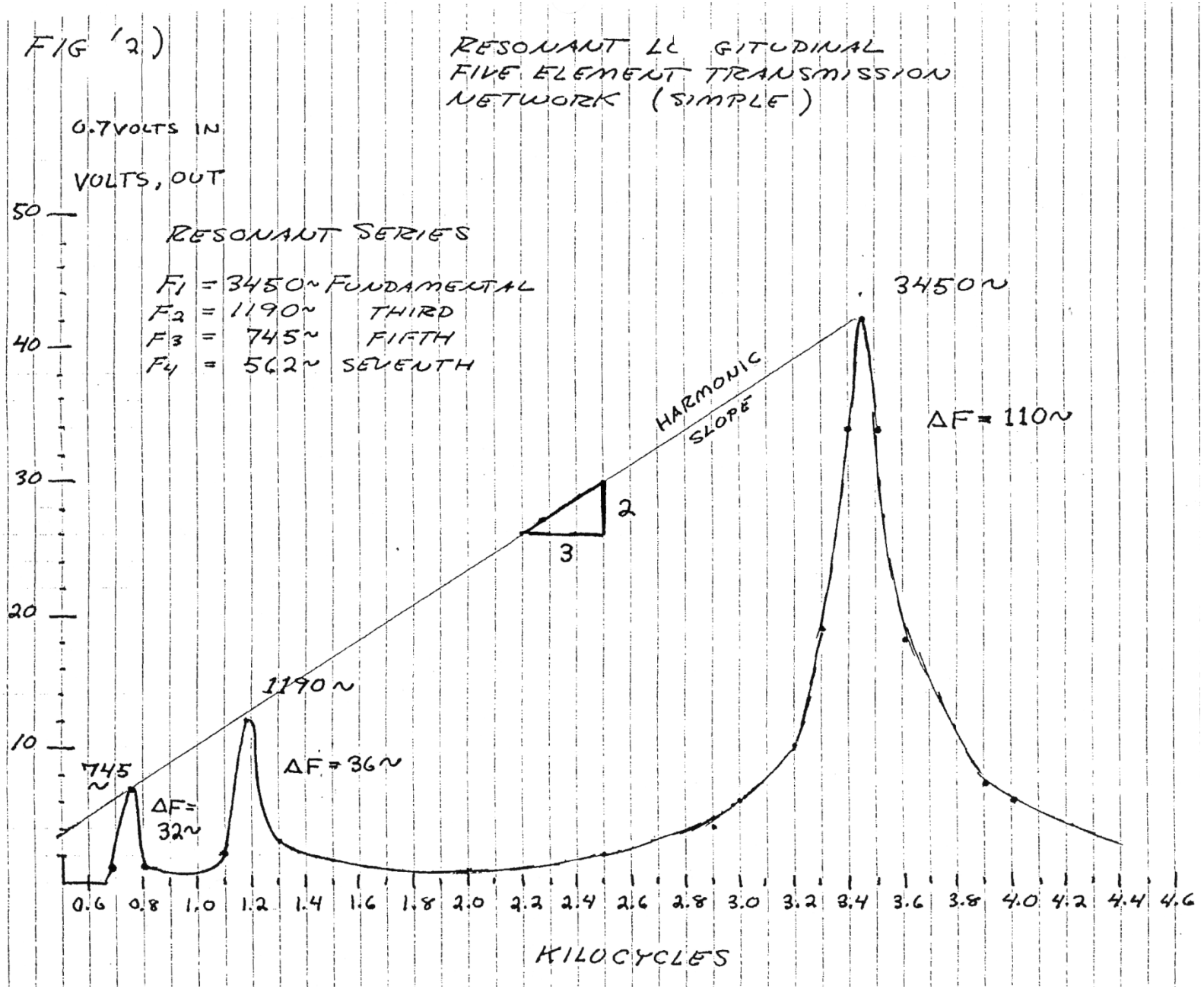
APX I 1 Elemental Transverse Transmission Network.



APX I – 9 (EPD Fig. 3) Resonant Transverse Five Element Transmission Network (Simple).

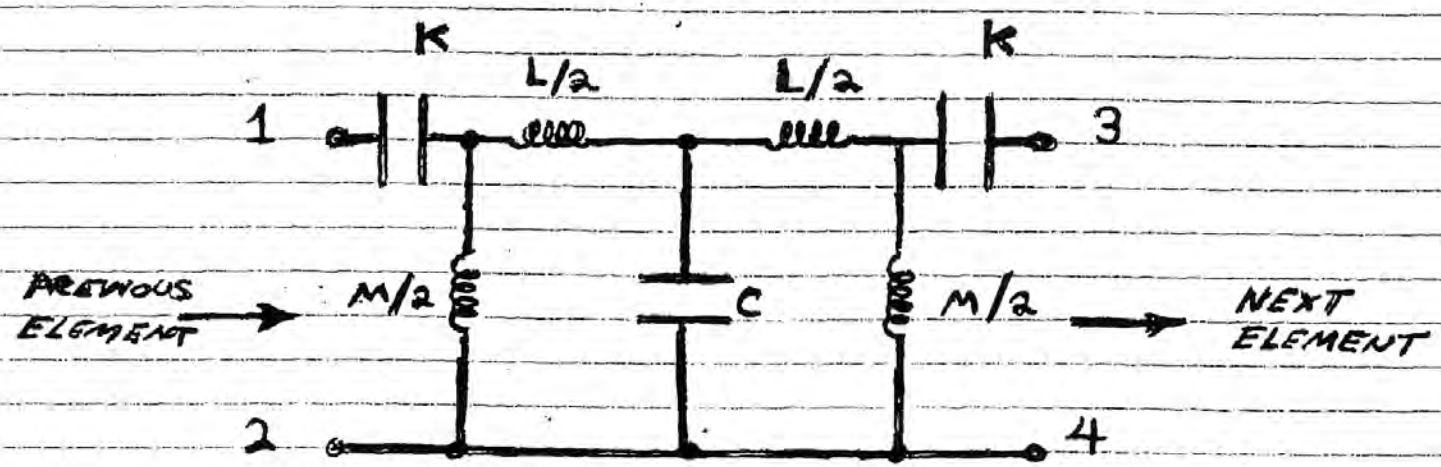


APX I – 2 Elemental Longitudinal Transmission Network.



APIX - 8 Resonant Longitudinal Five Element Transmission Network (Simple) (EPD Fig.2)

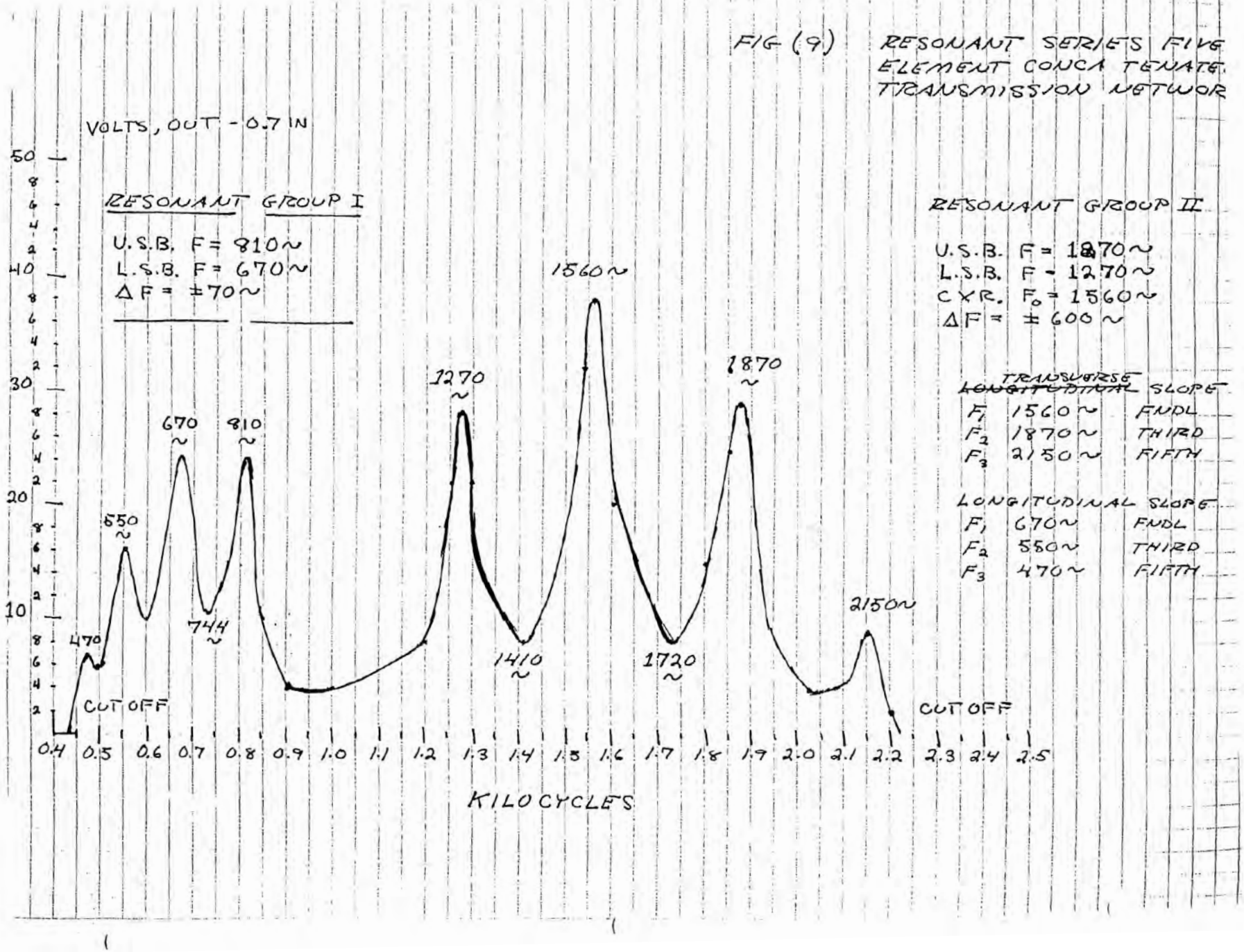
ELEMENTAL SERIES CONCATENATED TRANSMISSION NETWORK dl



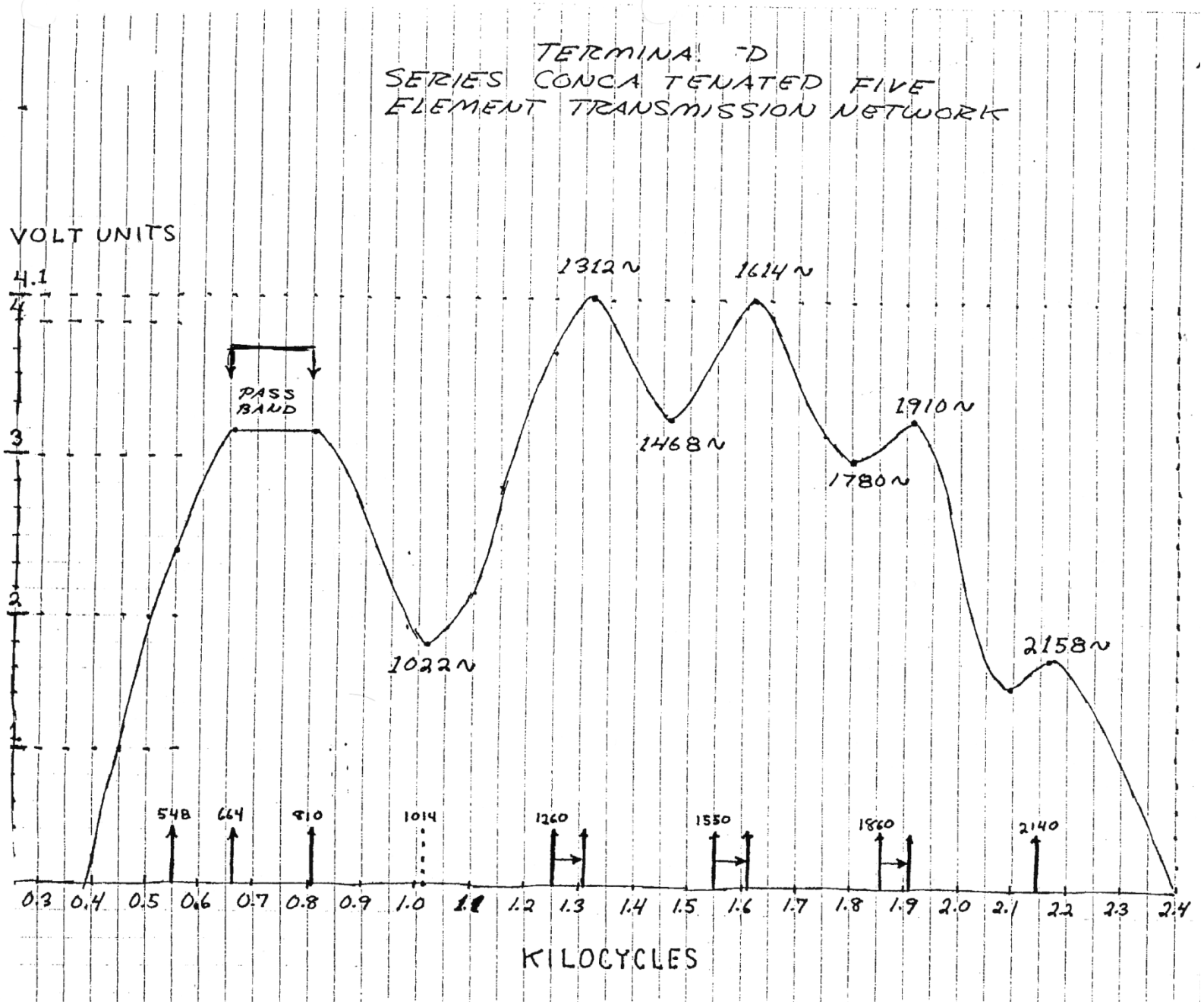
$C = 1/K = 0.68\ \mu Fd$

$L = 1/M = 40\ mHy$

APX I – 3 Elemental Series Concatenated Transmission Network.

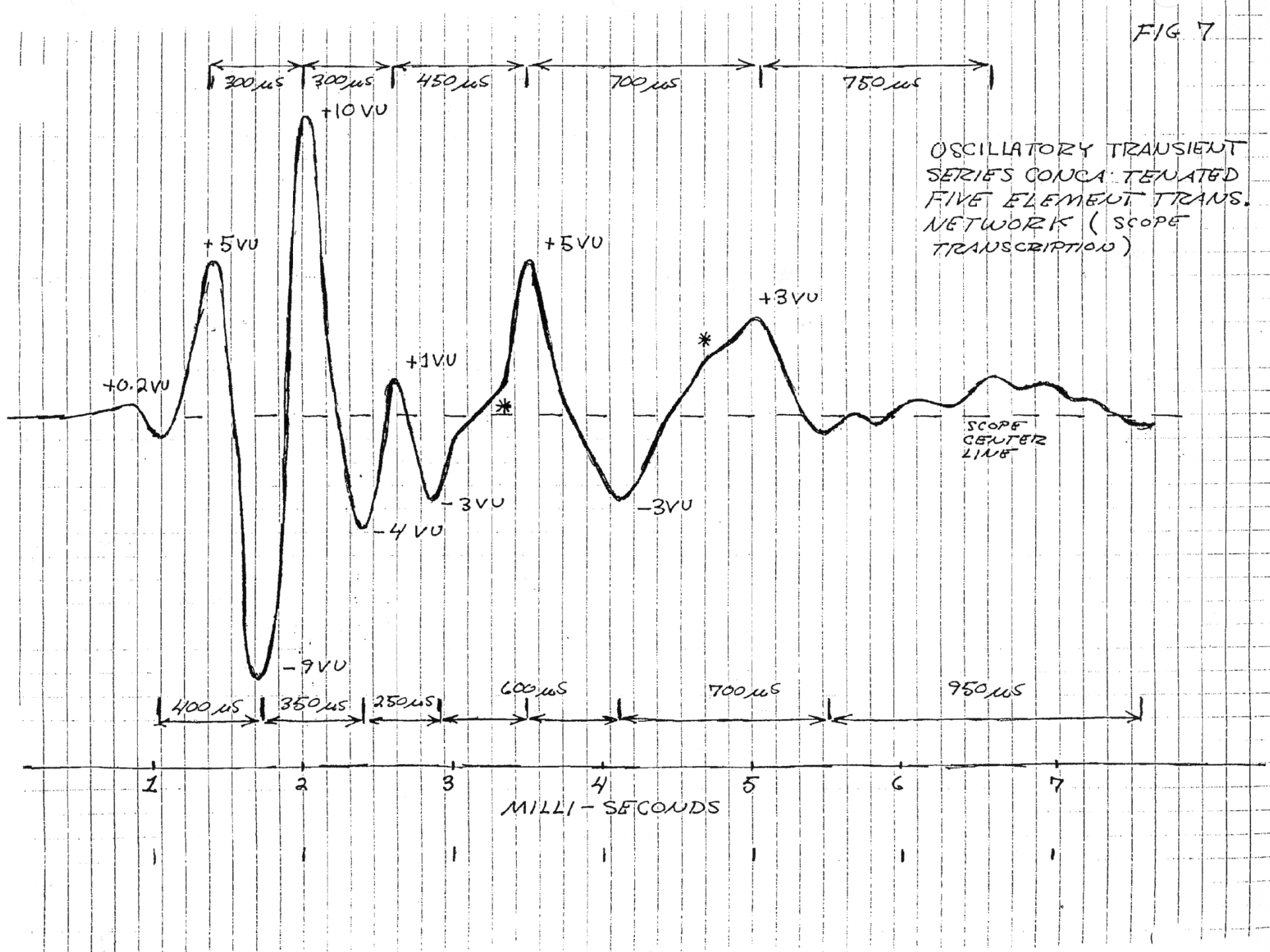


APX I – 15 Resonant Series Five Element Concatenated Transmission Network. (EPD Fig. 9)



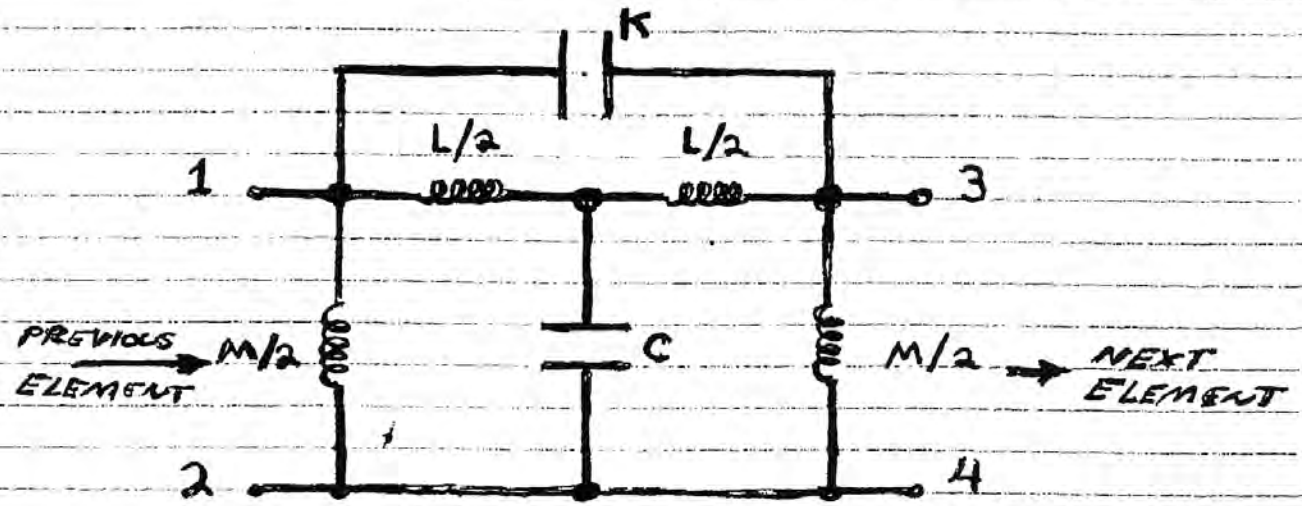
APX I – 14 Terminated Series Concatenated Five Element Transmission Network.

FIG 7



OSCILLATORY TRANSIENT SERIES CONCATENATED FIVE ELEMENT TRANS. NETWORK (SCOPE TRANSCRIPTION)

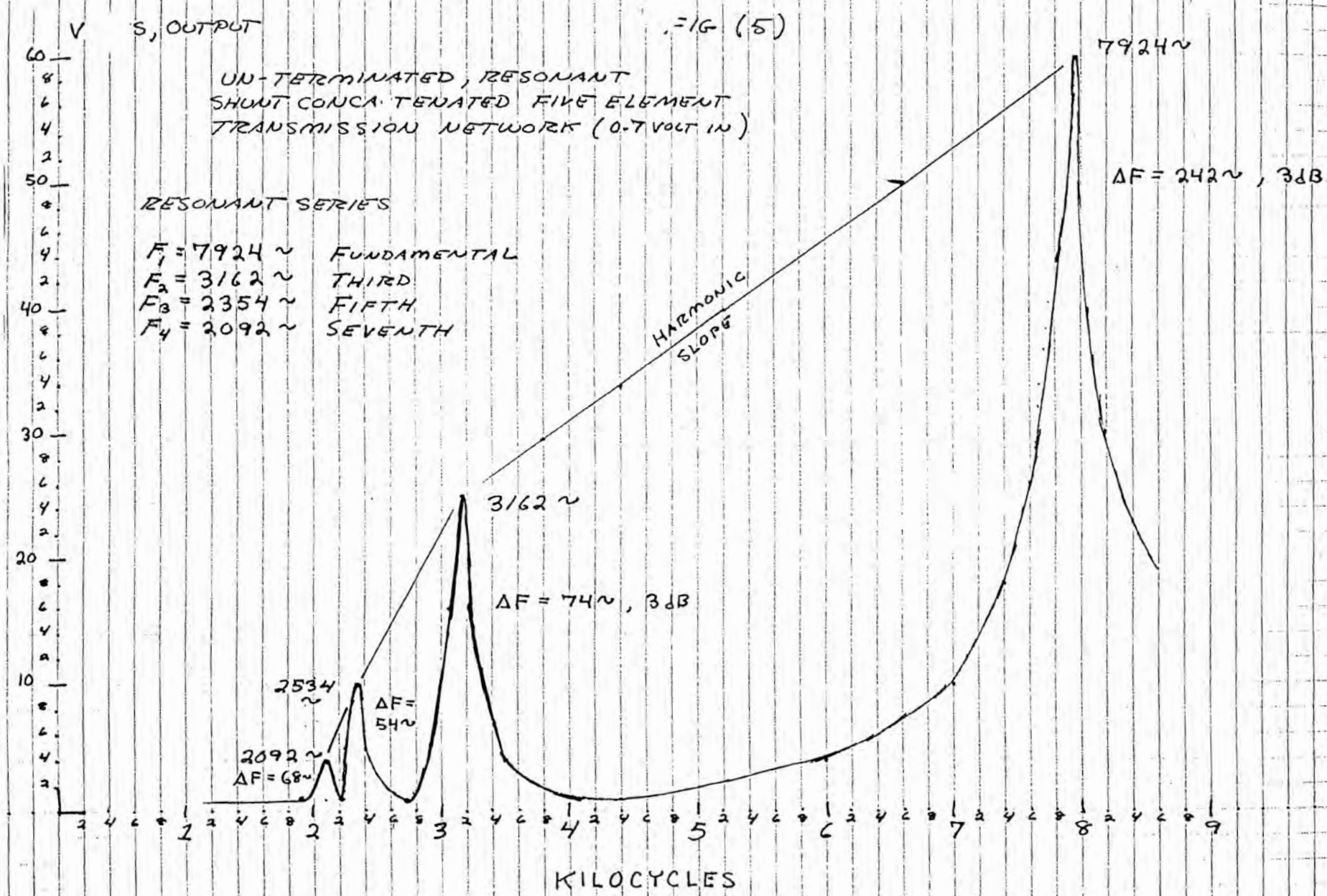
ELEMENTAL SHUNT
CONCATENATED TRANSMISSION
NETWORK dl



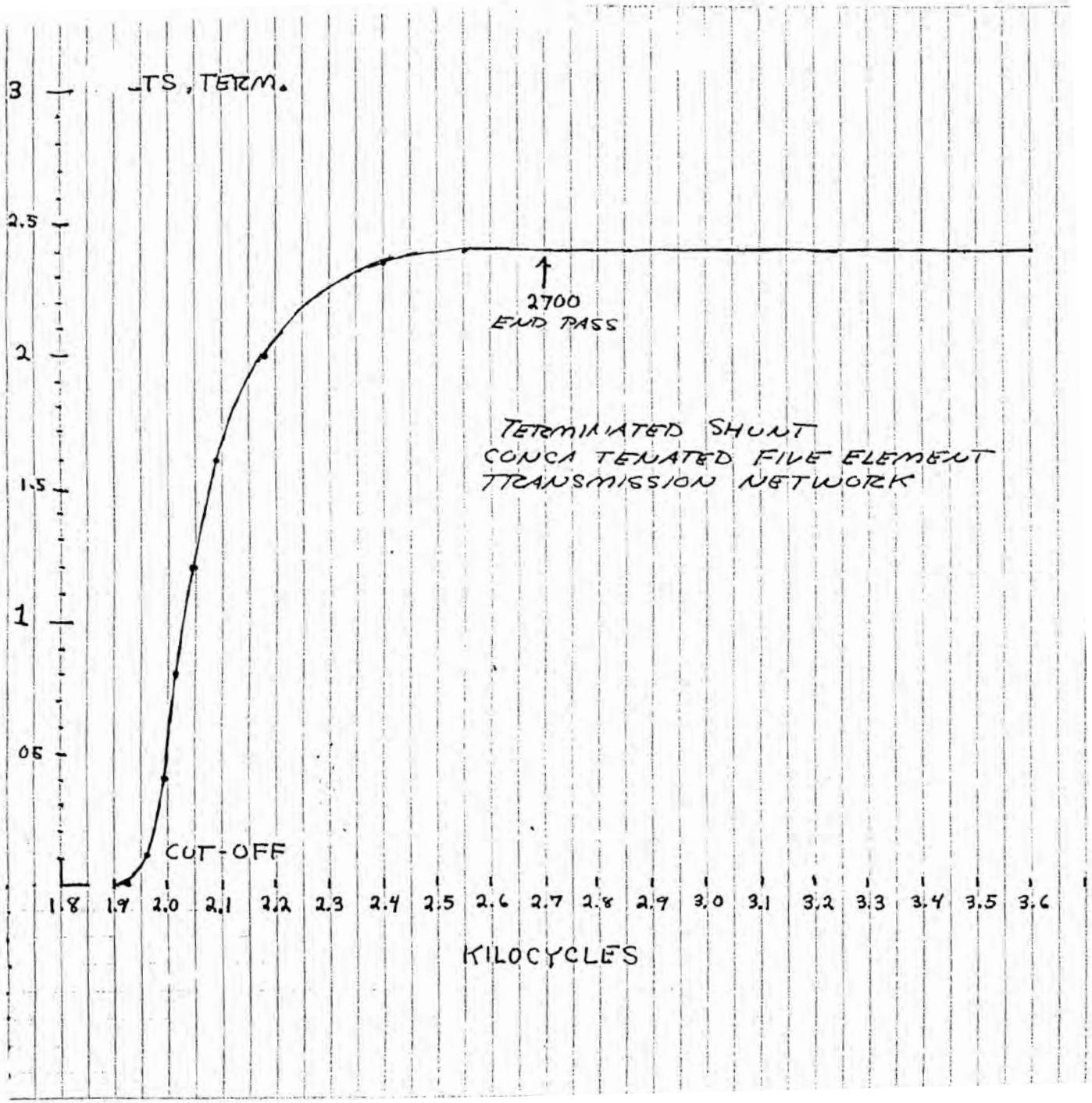
$C = 1/K = 0.68 \mu Fd$

$L = 1/M = 40 mHy$

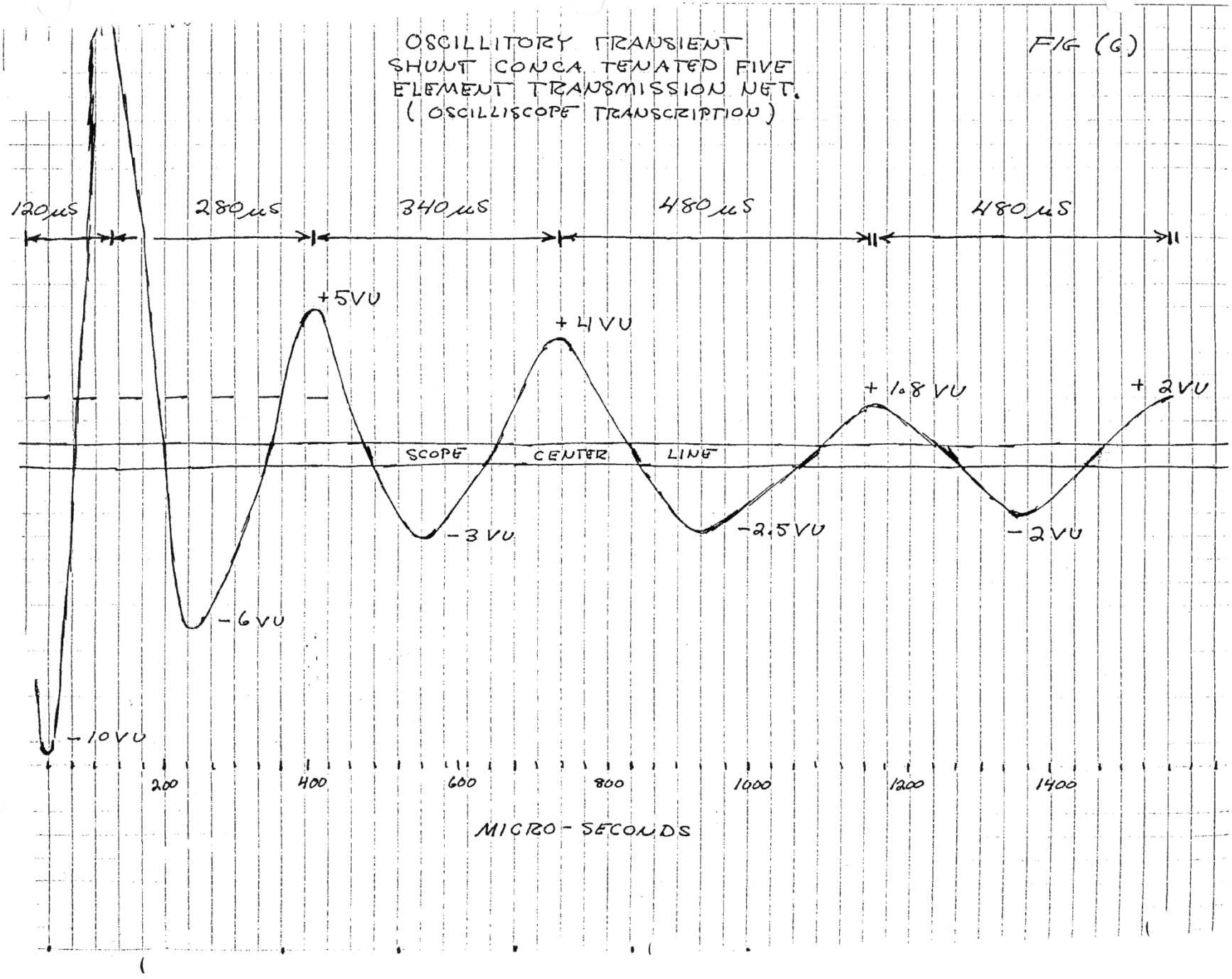
APX I – 4 Elemental Shunt Concatenated Transmission Network.



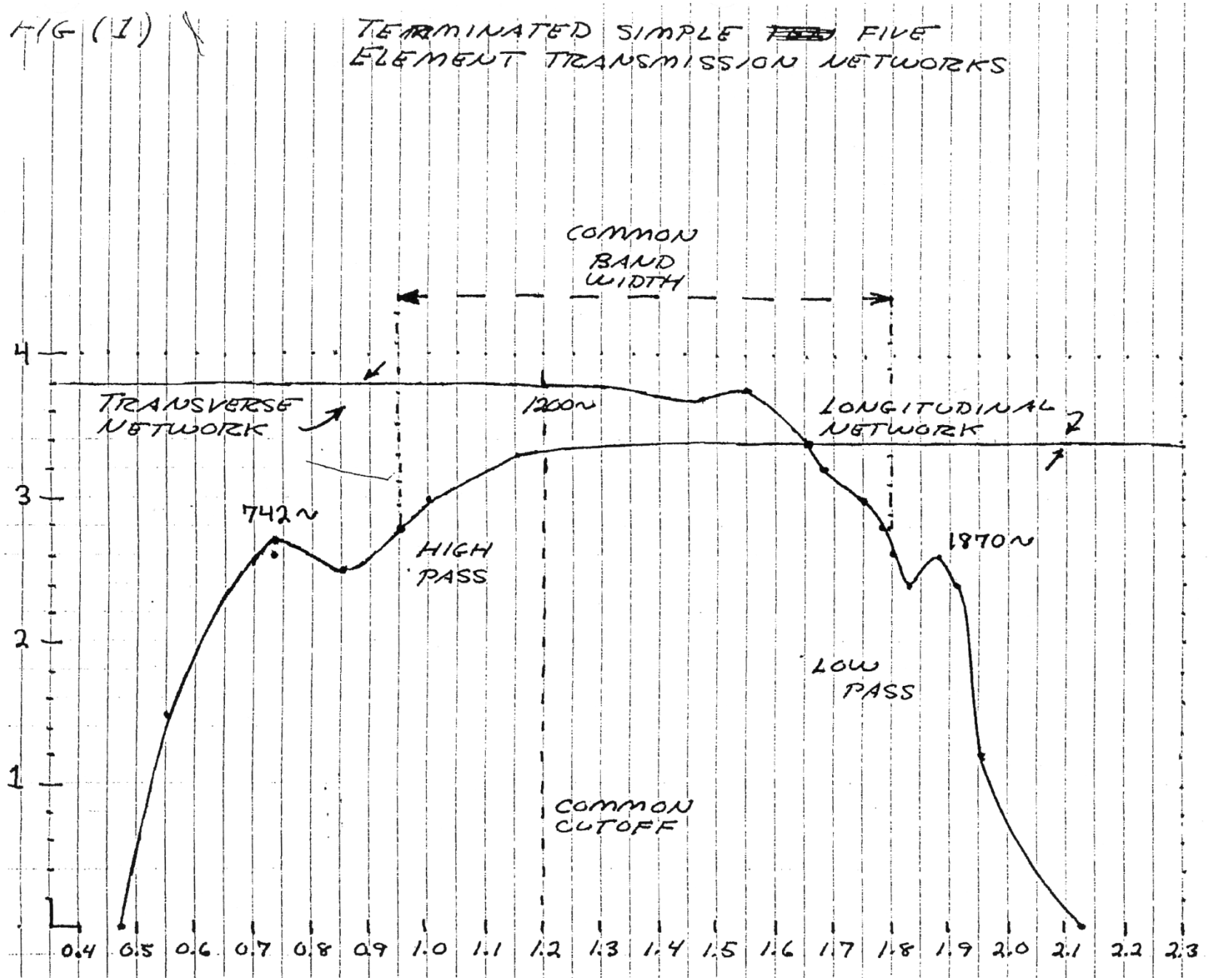
APX I – 11 Un-Terminated, Resonant Shunt Concatenated Five Element Transmission Network (0.7 volt in). (EPD Fig. 5)



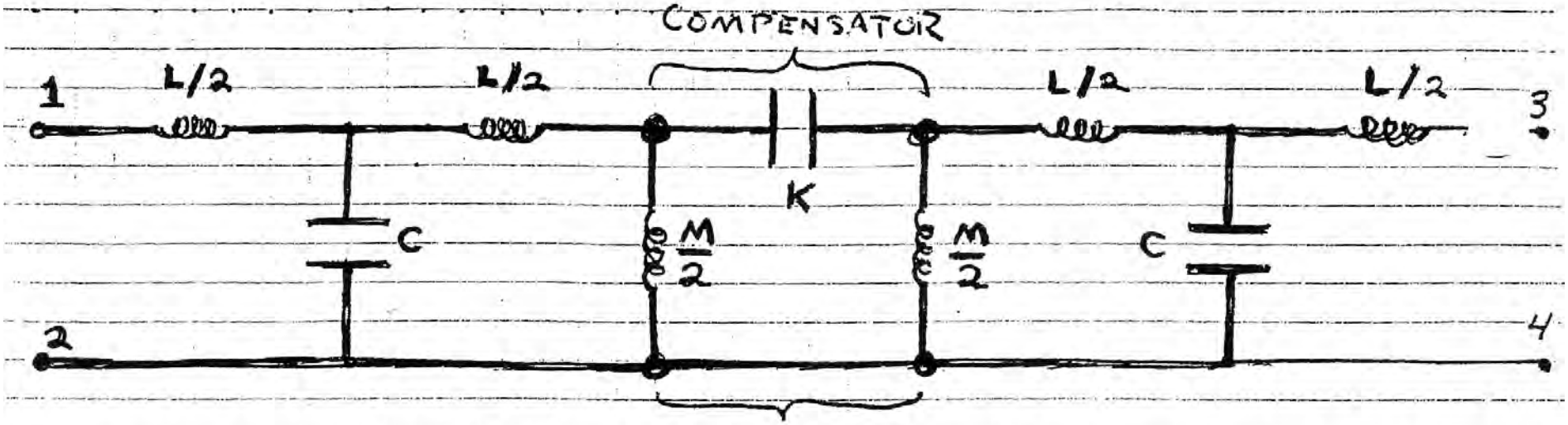
APX I – 10 Terminated Shunt Concatenated Five Element Transmission Network.
(EPD Fig. 4)



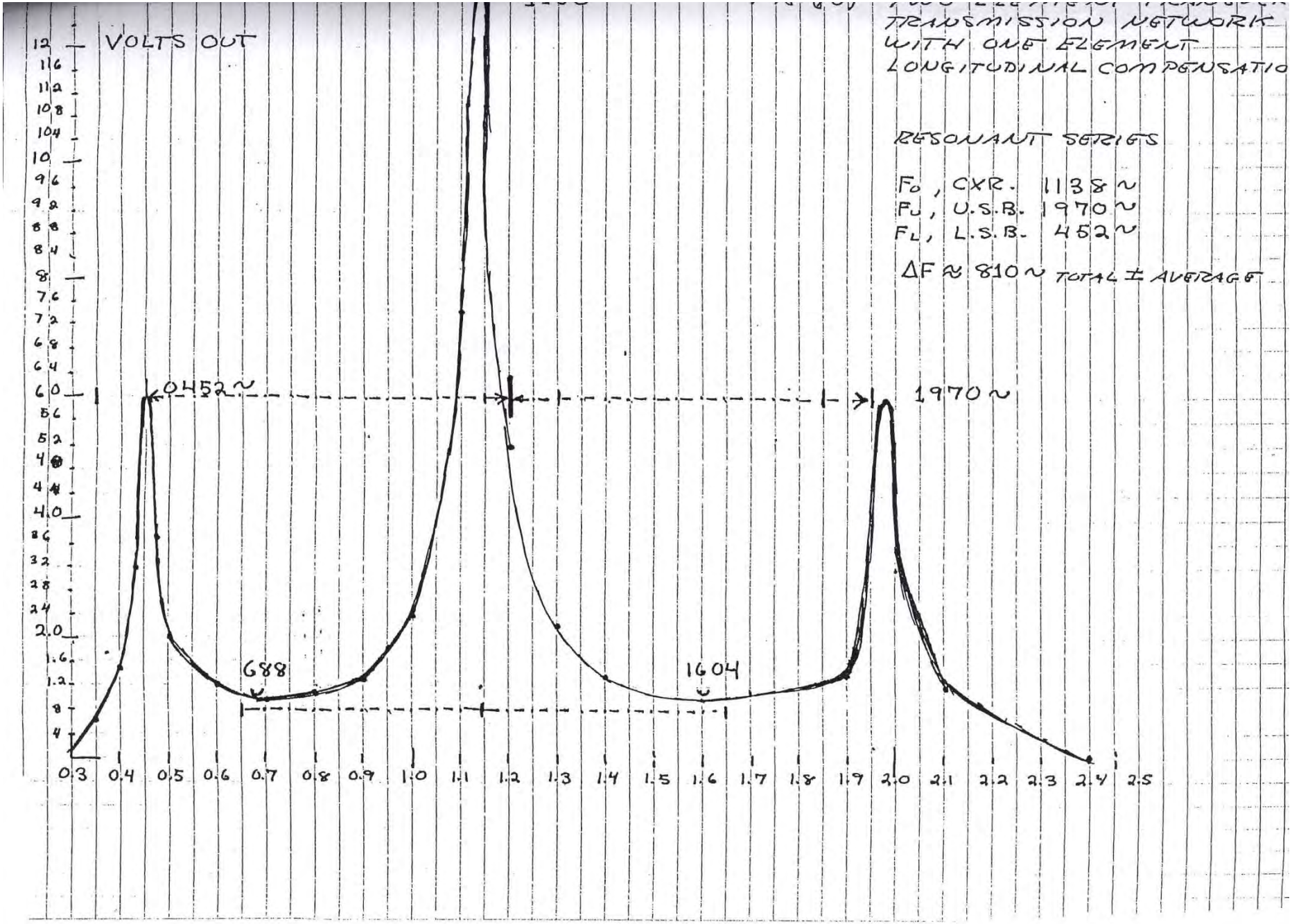
APX I – 12 Oscillatory Transient Shunt Concatenated Five Element Transmission Net (oscilloscope transcription). (EPD Fig. 6)

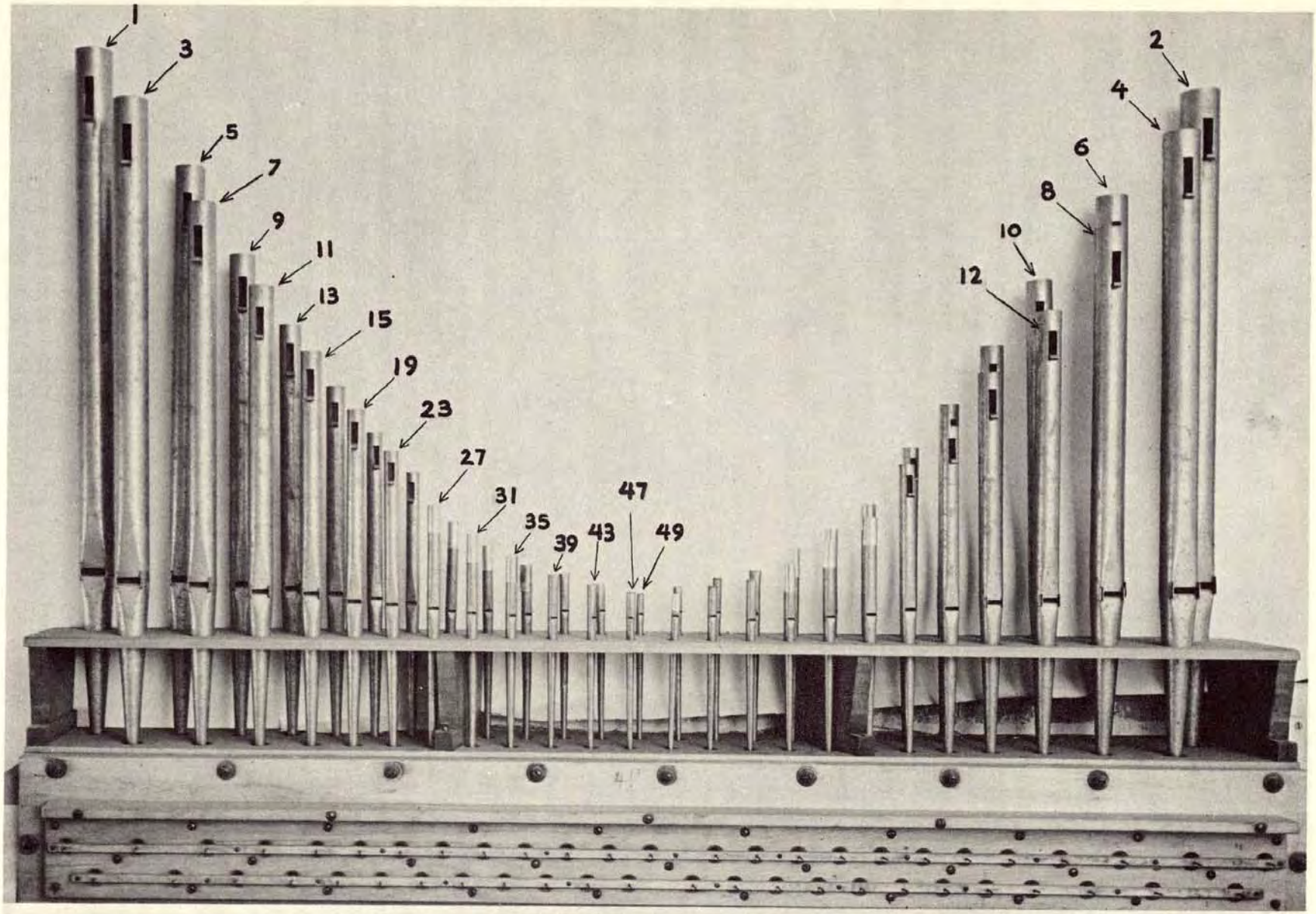


APXI-7 Terminated Simple Five Element Transmission Networks (EPD Fig. 1)



APX I – 5 Partial Compensated Transverse Transmission Network.


VOLTS OUT
TRANSMISSION NETWORK
WITH ONE ELEMENT
LONGITUDINAL COMPENSATIO
RESONANT SERIES
Fo , CXR. 1138 ~
FU , U.S.B. 1970 ~
FL , L.S.B. 452 ~
ΔF ≈ 810 ~ TOTAL ± AVERAGE
0452 ~
1970 ~
688
1604
12
11.6
11.2
10.8
10.4
10
9.6
9.2
8.8
8.4
8
7.6
7.2
6.8
6.4
6.0
5.6
5.2
4.8
4.4
4.0
3.6
3.2
2.8
2.4
2.0
1.6
1.2
.8
.4
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2.0
2.1
2.2
2.3
2.4
2.5



A FOUR OCTAVE ARRAY OF OPEN ORGAN PIPES
256 (NO. 1) TO 4096 (NO. 49) VIBRATIONS PER SECOND
FIGURE 44

LET THE GENERALIZED ELECTRIC WAVE PROPAGATION BE REPRESENTED BY THE FOLLOWING FIGURE:

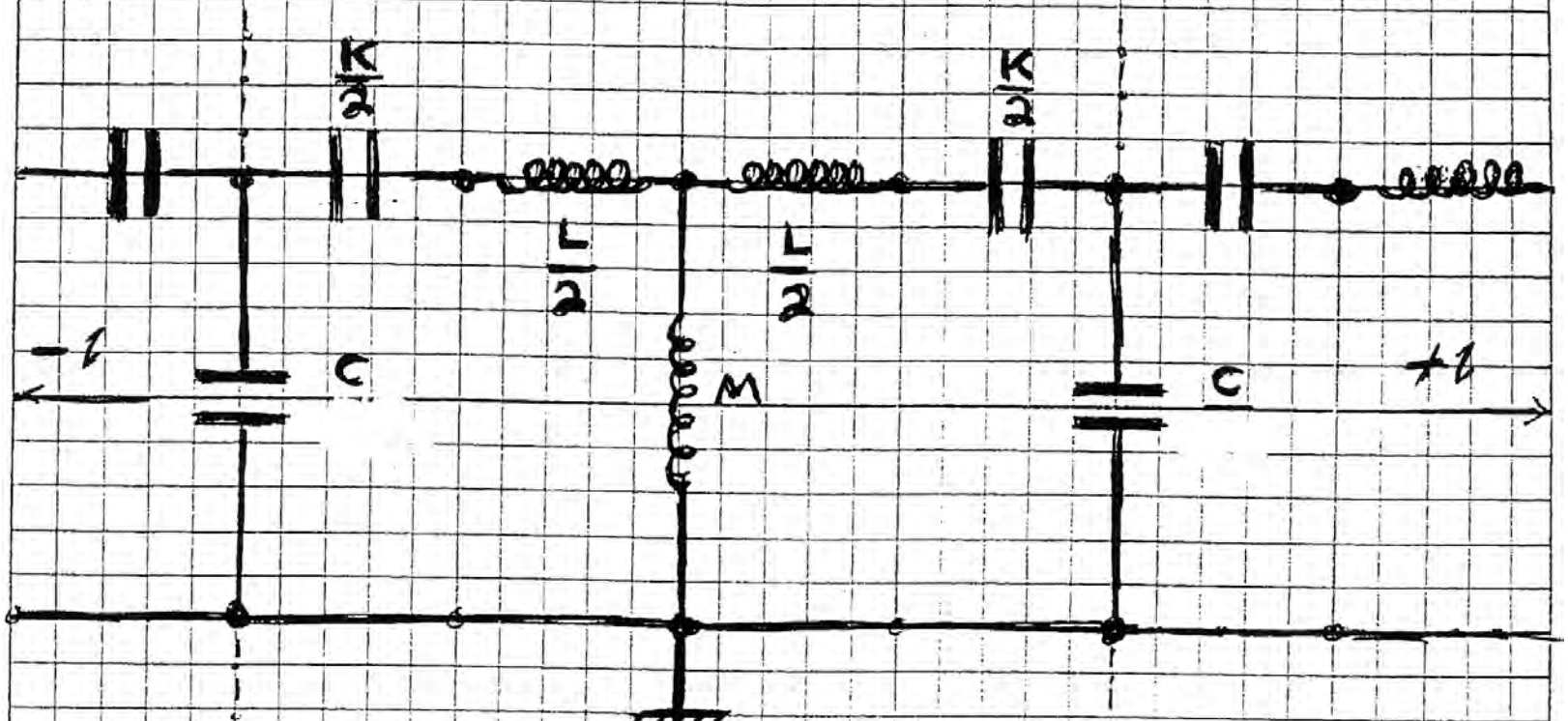


FIG 1

21

WHERE

C IS THE COEFFICIENT OF DIELECTRIC INDUCTION TRANSVERSE TO THE DIRECTION OF PROPAGATION IN FARADS PER CENTIMETRE,

K IS THE COEFFICIENT OF DIELECTRIC INDUCTION LONGITUDINAL WITH THE DIRECTION OF PROPAGATION IN PER FARAD CENTIMETRE,

L IS THE COEFFICIENT OF MAGNETIC INDUCTION TRANSVERSE TO THE DIRECTION OF PROPAGATION IN HENRYS PER CENTIMETRE,

M IS THE COEFFICIENT OF MAGNETIC INDUCTION LONGITUDINAL WITH THE DIRECTION OF PROPAGATION IN PER HENRY CENTIMETRE

THESE COEFFICIENTS ARE DEFINED BY THE ESTABLISHED CONVENTIONAL PHYSICAL DIMENSIONS,

$$C = \frac{t^2}{l^3} \qquad \text{SEC}^2 \text{ PER CM}^3 \qquad (1)$$

$$K = \frac{l}{t^2} \qquad \text{CM PER SEC}^2 \qquad (2)$$

$$L = l \qquad \text{CM} \qquad (3)$$

$$M = \frac{1}{l^3} \qquad \text{PER CM}^3 \qquad (4)$$

These coefficients are defined by the established conventional physical dimensions

$$C = \frac{t^2}{l^3}$$ sec^2 per cm^3 (1)

$$K = \frac{l}{t^2}$$ cm per sec^2 (2)

$$L = l$$ cm (3)

$$M = \frac{1}{l^3}$$ per cm^3 (4)

LET THE SHUNT COEFFICIENTS BE COMBINED BY THE RELATION

$$M + \nu_1^2 C = M + \frac{1}{(k\omega)^2} C \qquad (5)$$

AND LET THE SERIES COEFFICIENTS BE COMBINED BY THE RELATION

$$K - \nu_{11}^2 L = K - \frac{1}{(k\omega)^2} L \qquad (6)$$

WHERE THE FACTOR

$$\nu^{-2} = (k\omega)^{+2} \quad \text{PER SEC}^2 \qquad (7)$$

AND

$$\omega = 2\pi F \quad \text{PER SEC}$$

$k^4 = -1$, A DIMENSIONLESS UNIT.

$k^4 = +1$

Let the shunt coefficients be combined by the relation

$$M + u^2 C = M + \frac{1}{(k\omega)^2} C \qquad (5)$$

And let the series coefficients be combined by the relation

$$K - u^2 L = K - \frac{1}{(k\omega)^2} \qquad (6)$$

Where the factor

$$u^{-2} = (k\omega)^{+2} \qquad \text{per second}^2 \qquad (7)$$

and

$$\omega = 2\pi F \qquad \text{per second}$$

$$k^4 = -1 \qquad \text{A dimensionless unit}$$

THE PRODUCT OF EQ (5) & EQ (6) GIVES THE COMPLETE ALGEBRAIC EXPRESSION OF THE ELEMENTAL SECTION IN FIGURE (1)

$$\left(M+\omega_{,}^{2}C\right)\left(K-\omega_{,,}^{2}L\right)=\Gamma^{4} \qquad (8)$$

AND CARRYING THRU THE PRODUCTS GIVES THE EQUATION

$$\Gamma^{4}=\left[MK+\left(\omega_{,}^{2}\omega_{,,}^{2}\right)LC\right]+\left[\omega_{,}^{2}CK-\omega_{,,}^{2}LM\right] \qquad (9)$$

EQ (9) REPRESENTS THE FOURTH ORDER DIFFERENTIAL EQUATION OF THE COMPLEX PROPAGATION THRU THE ELEMENT, FIG (1).

IT WILL BE SEEN THAT EQ (9) IS DIRECTLY ANALOGOUS WITH THE HEAVISIDE TELEGRAPH EQUATION,

$$(R + \nu_0 L)(G - \nu_0 C) = \Gamma^2$$

$$= (RG + \nu_0^2 LC) + \nu_0 (LG - RC) \qquad (10)$$

WHERE

R IS THE SERIES RESISTANCE IN OHMS PER CM

AND

G IS THE SHUNT CONDUCTANCE IN PER OHM CM

THE FOUR COMPONENTS OF EQ (9) ARE THUS,

I) MK REPRESENTS THE LONGITUDINAL WAVE OF ELECTRIC INDUCTION, AND BY EQ (2), (4) IT IS DEFINED

$$MK = 1/l^2t^2 \text{ , PER } CM^2SEC^2 \qquad (11)$$

II) LC REPRESENTS THE TRANSVERSE WAVE OF ELECTRIC INDUCTION, AND BY EQ (1), (3) IT IS DEFINED

$$LC = t^2/l^2 \text{ , } SEC^2 \text{ PER } CM^2 \qquad (12)$$

III) CK REPRESENTS THE DISTRIBUTION OF DIELECTRIC INDUCTION, AND BY EQ (1), (2) IT IS DEFINED

$$CK = 1/l^2 \text{ , PER } CM^2 \qquad (13)$$

IV) LM REPRESENTS THE DISTRIBUTION OF MAGNETIC INDUCTION, AND BY EQ (3), (4) IT IS DEFINED

$$LM = 1/l^2 \text{ , PER } CM^2 \qquad (14)$$