

ALPHABETICAL INDEX
TRANSMISSION ENGINEERING PRACTICES

1. GENERAL

1.01 This section provides an alphabetical index of active Bell System Practices covering Transmission Engineering.

1.02 Listings are arranged for the most part through the use of general or principal headings such as CORROSION, CROSSTALK, NOISE, etc., under which more specific subjects are listed alphabetically, either directly or under subheadings as appropriate. For example, a section dealing with corrosion testing methods is indexed under "CORROSION — Testing Methods," and one concerning the characteristics of internal noise is listed as "NOISE — Internal — Characteristics."

1.03 Where more than one listing seems desirable, duplicate listings have been provided. For example, the sections on crosstalk coupling data are indexed under both "CROSSTALK" and "TRANSPPOSITION SYSTEMS," since the information contained in those sections pertains to both general subjects. Cross references have been made parenthetically in the case of sections more appropriately listed under a general heading along with other practices related to the main subject, e.g., DIAL CONTACT NOISE — (see "NOISE — Internal").

A

Acoustic Shock Reduction

In Operators' Telephone Circuits AB63.227

Alternate Arm Transposition

Systems — (see "Transposition Systems")

American Standards Association

Incorporated — Standards AB91.011

Amplifiers

Types of Amplifiers

KS-16547, L1 Amplifier 024-150-108

KS-16607, L1 Amplifier 024-150-102

KS-16608, L1 Amplifier 024-150-106

KS-16608, L1 and KS-16610,

Input 024-150-105

Circuit Arrangements

KS-16610, L1 Amplifier 024-150-107

KS-16611, L1 Transformer 024-150-103

KS-16612, L1 Mixer Unit 024-150-104

KS-16622, L1 Amplifier 024-125-100

KS-16740 Amplifier System 024-130-100

KS-16754 Amplifier 024-176-100

6B — Used in Noise and Cross-

talk Testing AB63.377

14A, 14B, or 14C — Used in Open

Wire Program System —

Engineering Considerations AB26.125

103C Amplifier 024-100-101

103D Amplifier 024-100-102

116B Amplifier 024-100-103

124A Amplifier 024-104-101

124B Amplifier 024-104-102

124C Amplifier 024-104-103

124D Amplifier 024-104-104

104E Amplifier 024-104-105

124F Amplifier 024-104-106

141A Amplifier 024-105-101

Announcement Systems

Preliminary Notes on Trans-
mission Features AB22.330

2B and 2C Subscriber Operated

Systems AB22.342

3A Weather Announcement

System AB22.341

4A System AB22.343

8A Announcement System AB22.345

9A Announcement System AB22.346

11A Announcement System AB22.347

Emergency Announcement

System AB22.348

Intercept Announcement

System AB22.338

*Announcing Machines — Trans-
mission Features*

With Intercepting Service AB22.172.4

SECTION AB10.001

Anodes, Galvanic 877-306-100

Answering and Recording, Automatic

1A Telephone Answering Set AB22.360.1
Peatophone (KS-14580) AB22.360.2

***Anti-Aircraft Control System for
Defended Cities and Strategic***

Areas AB22.370
Interim Data Circuits AB27.402.00

Armored Cable — (see “CABLE”)

Attenuation of Cable or Open Wire —
(see “CABLE — Characteristics” or
“OPEN WIRE — Characteristics”)

Autotransformers — Bell System

Equivalent T-Networks —
(see “NETWORKS”)
Losses — (see “LOSSES — Equipment”)
Used in Open Wire Toll Circuits . AB23.075.4
24A Type
Arrangement for Nonloaded
Cable Facilities AB25.112
Used with HC Drop Wire for
Temporary Repair of Open
Wire Carrier Facilities AB25.110
KS-12048 024-191-100
KS-14417 024-191-101

B

***Balancing Network Data and
Building Out Facilities***

Use in Toll Switching Offices AB23.331
Exchange Line Network Data AB24.078
General Data AB24.075
Line Balancing Network Data for
Repeatered Circuits
General Considerations AB23.331
Loading Spacing Limits and
Building-Out Practices AB23.195
Networks, 115 Type, Used in Toll
Circuits AB24.074
Toll Switching Offices —
Balance Considerations AB23.331

Balance Tests

Office Balance — Toll Switching
Offices AB23.331

Terminal Balance —
Toll Switching Offices
General Considerations AB23.340

Battery Supply Circuit Noise —
(see “NOISE — Internal”)

Bell System Practices

Alphabetical Index AB10.001
Checking Lists, General AB11.110
General Outline AB12.002
Issuing Plan AB12.101
Scope and Arrangement AB12.001

***Bonding of Aerial Cable Sheaths
to Multigrounded Power Neutrals***
— *Effects* AB63.251

Bridge, 2A Capacity AB45.176
Bridge Lifters

Bridge Lifters AB22.095.00
AB22.095.01

***Bridged Taps and Drop Wire —
Loss Allowances in Common
Battery Loop Design*** AB43.518

“B” Rural Distribution Wire —
(see “RURAL WIRE”)

Building-Out Facilities —
(see “BALANCING NETWORK
DATA AND BUILDING-OUT
FACILITIES”)

Building-Out Practices for
Paired Cable AB23.194

C

Cable

Attenuation — (see “CABLE —
Characteristics”)
B Rural Wire — (see “RURAL
WIRE”)
Characteristics
Impedance, Attenuation, and
Phase Loaded
16-Gauge H-44-25 304-175-105
16-Gauge H-86-32 304-175-102
19-Gauge B-88-50 304-175-104
19-Gauge H-44-25 304-175-105
19-Gauge H-86-32 304-175-102
19-Gauge H-88-50 304-175-103

Cable (Cont'd)

Nonloaded	
10-, 13-, 16- and 19-Gauge Cable	304-175-100
Resistance	
Nonloaded Cable	AB43.521
Related to Losses —	
(see "LOSSES")	
Split-Gauge Resistances	
Allowances for Drop Wire,	
Bridge Taps, etc.	AB43.518
Exchange Grade Battery Supply	
24 Volts	
19-, 22-, 24-, and 26-Gauge	
High Capacitance Cable Pairs	AB43.538.3
48 Volts	
19-, 22-, 24-, and 26-Gauge	
High Capacitance Cable Pairs	AB43.538.1
.104" Copper-steel (30%)	
Open Wire and:	
19-Gauge Cable	AB43.542.11
22-Gauge Cable	AB43.542.12
24-Gauge Cable	AB43.542.13
.104" Copper-steel (40%)	
Open Wire and:	
19-Gauge Cable	AB43.543.11
22-Gauge Cable	AB43.543.12
24-Gauge Cable	AB43.543.13
.083" Steel Open Wire and	
19-Gauge Cable	AB43.541.11
22-Gauge Cable	AB43.541.12
24-Gauge Cable	AB43.541.13
.109" Steel Open Wire and:	
19-Gauge Cable	AB43.540.11
22-Gauge Cable	AB43.540.12
24-Gauge Cable	AB43.540.13
General Split-Gauge Resistances —	
Cable Only	AB43.517
Toll Grade Battery Supply	
48 Volts	
19-, 22-, 24-, and 26-Gauge	
High Capacitance Cable Pairs	AB43.538.2
.104" Copper-steel (30%)	
Open Wire and:	
19-Gauge Cable	AB43.542.21
22-Gauge Cable	AB43.542.22
24-Gauge Cable	AB43.542.23
.104" Copper-steel (40%)	
Open Wire and:	
19-Gauge Cable	AB43.543.21
22-Gauge Cable	AB43.543.22
24-Gauge Cable	AB43.543.23
.083" Steel Open Wire and:	
19-Gauge Cable	AB43.541.21
22-Gauge Cable	AB43.541.22
24-Gauge Cable	AB43.541.23
.109" Steel Open Wire and:	
19-Gauge Cable	AB43.540.21
22-Gauge Cable	AB43.540.22
24-Gauge Cable	AB43.540.23
Coaxial Cable	
Description — (see "CABLE —	
Toll and Toll Entrance")	
Frequency Allocations	304-605-101
Frequency — Attenuation —	
Characteristics — W.E.Co.	
CA1878 Cable	304-172-100
Coaxial Cable Video Transmission	
and Distribution Systems	AB26.404
Series	AB26.405
Series	
Corrosion — (see "CORROSION")	
Corrosion Resistant Coverings	877-305-100
Deviation	
Chart for Obtaining The	
Reference Deviation of a	
Loading System	304-409-100
Typical Improvement in Structural	
Return Loss Obtainable With	
Deviation Test Splicing	304-409-101
Exchange Cable	
Crosstalk Considerations —	
(see "CROSSTALK")	
General Electrical	
Characteristics	304-015-100
Loaded Cable	
Input Impedance Determinations	304-022-100
Input Impedance With Short-	
Circuit and Open-Circuit	
Termination	
22-Gauge H44	304-153-100
22-Gauge H88	304-153-101
Secondary Transmission Constants	
19-Gauge — DNB Cable	
B-88 Loading	304-140-100
D-88 Loading	304-140-101
H-44 Loading	304-140-102
H-88 Loading	304-140-103
H-135 Loading	
19-Gauge — CNB and ENB Cable	
B-88 Loading	304-141-100
B-135 Loading	304-141-101
D-88 Loading	304-141-102
H-44 Loading	304-141-103
H-88 Loading	304-141-104

Cable (Cont'd)

22-Gauge — ASA, BSA, and CSA Cable	
B-88 Loading	304-142-100
D-88 Loading	304-142-102
H-44 Loading	304-142-103
H-88 Loading	304-142-104
24-Gauge — ASM and CSM Cable	
B-88 Loading	304-143-100
H-44 Loading	304-143-101
H-88 Loading	304-143-102
24-Gauge — DSM Cable	
B-88 Loading	304-144-100
D-88 Loading	304-144-101
H-44 Loading	304-144-102
H88 Loading	304-144-103
26-Gauge — AST Cable	
H-88 Loading	304-145-100
26-Gauge — BST Cable	
H-88 Loading	304-146-100
Nonloaded Cable	
Input Impedance Determinations	
Any Termination	
19-Gauge ANB and DNB Cable	304-016-100
19-Gauge CNB and ENB Cable	304-017-100
22-Gauge ASA, BSA, and CSA Cable	304-018-100
24-Gauge ASM and CSM Cable	304-019-100
24-Gauge DSM Cable	304-020-100
26-Gauge BST Cable	304-021-100
Arbitrary Lengths and Terminations	304-022-100
Short-Circuit and Open Circuit Termination	
19-Gauge CNB	304-150-100
22-Gauge CSA	304-151-100
24-Gauge DSM	304-152-100
Primary Transmission Constants	
16-Gauge TH Cable	304-130-100
19-Gauge ANB and DNB Cable	304-131-100
19-Gauge CNB and ENB Cable	304-132-100
22-Gauge ASA, BSA, and CSA Cable	304-133-100
24-Gauge ASM and CSM Cable	304-134-100
24-Gauge DSM Cable	304-135-100
26-Gauge AST Cable	304-136-100
26-Gauge BST Cable	304-137-100
Secondary Transmission Constants	
16-Gauge TH Cable	304-130-101
19-Gauge ANB and DNB Cable	304-131-101
19-Gauge CNB and ENB Cable	304-132-101

22-Gauge ASA, BSA, and CSA Cable	304-133-101
24-Gauge ASM and CSM Cable	304-134-101
24-Gauge DSM Cable	304-135-101
26-Gauge AST Cable	304-136-101
26-Gauge BST Cable	304-137-101
Hyperbolic Functions of Propagation Constants	
19-Gauge ANB, DNB	304-131-102
19-Gauge CNB, ENG	304-132-102
22-Gauge ASA, BSA, CSA	304-133-102
24-Gauge ASM, CSM	304-134-102
24-Gauge DSM	304-135-102
26-Gauge AST	304-136-102
26-Gauge BST	304-137-102
Impedance — (see "CABLE — Characteristics")	
Loading — (see "LOADING")	
Losses — (see "LOSSES — Cable")	
Outside Plant Cable — Attenuation Losses and Transmission Constants at 1000 Cycles	304-160-100
Protection — (see "PROTECTION")	
Quadded Cable	
Capacity Unbalance Theory	AB94.176
Characteristics and Description — (see "CABLE — Toll and Toll Entrance")	
Resistance of Cable — (see "CABLE — Characteristics")	
Rural Wire, B — (see "RURAL WIRE")	
Sheath	
Bonding to Multigrounded Power Neutrals — Effects	AB63.251
Corrosion — (see "CORROSION")	
Split-Gauge Cable	
Design and Computation — Local Battery Loops	AB43.551
Resistances General — (see "CABLE — Characteristics")	
Related to Losses — (see "LOSSES")	
Toll and Toll Entrance	
Building-Out Practices and Loading Spacing Limits	AB23.195
Capacitance Deviation Test Splicing and Reel Allocation — Voice Frequency	AB23.191
Checking Lists	AB11.123

Cable (Cont'd)

Completion Tests	AB23.190
Crosstalk — (see "CROSSTALK")	
Loading Spacing Limits	AB23.195
Losses — (see "LOSSES")	
Nonwire Armored	
Number Splicing for Improved	
Crosstalk Performance	AB61.110
Transmission Characteristics of	
Nonloaded Toll Cable	
Facilities	304-120-100
Transmission Variations in Long	
Toll Cable Circuits	AB23.170
Wire Armored	
Voice-Frequency Toll Circuits	AB23.125
2-Wire Circuits	
16-Gauge H-44-25 Cable	AB23.178
16-Gauge B and H-88-50 and	
19-Gauge and H-88-50 Cable	AB23.180
4-Wire Circuits	
With 44A1 Repeaters and Associated	
Apparatus	AB23.188
With Modified 2-Wire Repeaters ..	AB23.189
Transmission Constants at 1000	
Cycles for Outside Plant Cable	
and Paired Facilities	304-160-100

Capacitance Deviation Test

Splicing and Reel Allocation —	
 2-Wire Voice-Frequency Toll Cable .	AB23.191

Capacitors

Building-Out Capacitors	
General Usage Considerations	AB23.331
Electrolytic — Bridging	
Insulating Joints in	
Cable Sheath	877-211-100
Electrolytic — Dry Type —	
(per KS-6847) — Used for	
Connecting Aerial and Underground	
Cable, or Grounding Aerial	
Cable Sheaths	AB63.251
Power Factor Correction	
Capacitors	
Data	AB64.674
Inductive Aspects	AB64.673
Used in Urban Power	
Distribution Systems	AB64.030-5

Capacity Bridge, 2A	AB45.176
----------------------------------	-----------------

Capacity Unbalance Theory and

 Measuring Sets	AB94.176
-------------------------------	-----------------

Carrier Systems

Channel Banks, EB-2 — Use	AB25.180
Checking List	AB11.125
Coordination	
Data	AB25.210.02
General	AB25.210.00
Joint Operation of H and K1	
Systems on K1 Lines	AB25.157
Joint Operation of N1 and K	
Systems in K Cables	AB25.220
Joint Operation of N and M	
Systems	AB25.221
O and N Systems	AB25.226
Staggering Advantages	304-510-100
Summary of Intersystem	
Coordination Considerations ..	AB25.210.01
Crosstalk — (see "CROSSTALK —	
Carrier Systems")	
Demodulation in Carrier Systems ..	AB93.130
Engineering Considerations	
C System	AB25.130
H System — Application to K1	
Lines	AB25.157
J System	AB25.140.1
K1 System	AB25.150
K2 System	AB25.151
M1 System	AB25.171
M1A System	AB25.172
N1 System	AB25.190
N and ON Systems	AB25.190.05
O System	AB25.200
P1 System	
Carrier Line Design	
Loss Sheets	AB25.252.1-.9
Carrier Line Design Loss	
Sheets — Description	AB25.252.0
Engineering Principles	AB25.251.0
General Description	AB25.250.0
Initial Channel Lineup	AB25.251.1
Regulated Repeater Systems ..	AB25.255.0-.2
P1T System, Trunk Carrier	
System, General Description ...	970-110-100
40A, 40B, 40C1 Telegraph Systems .	AB83.045
40C2 Telegraph System	AB83.046
43A1 Carrier Telegraph System ...	AB83.046
Series	
AB83.047	
Series	
Envelope Delay Distortion	
A5 Channel Banks	AB27.032
C5 Systems	AB27.028
H1 and Packaged H Systems	AB27.025.07
K1 and K2 Systems	AB27.031

SECTION AB10.001

Carrier Systems (Cont'd)

LMX-1 Group Connector AB27.033
LMX-2 Group Connector AB27.034
Frequency Allocations
Telegraph Systems
Western Electric Company
Manufacture 304.605.102
Telephone Systems
Western Electric Company
Manufacture 304.605-100
Insulators
Types, Availability and Use AB23.075.1
Types CS and CW and
Associated Pins and Thimbles ... AB25.075
Joint Operation of Carrier
Systems — Engineering
Considerations
H and K1 Systems on K1 Lines ... AB25.157
N1 and K Systems in K Cables AB25.220
N and M Systems AB25.221
Staggering Advantages 304-510-100
Line Circuit Measurements AB25.335
Loading — (see “LOADING
SYSTEMS — Carrier”)
Losses — (see “LOSSES —
Carrier Systems”)
Modulation and Demodulation AB93.130
Noise
J Systems AB25.140.3
K Systems
Control of Noise from
“Non-K” Circuits AB25.155
Static Noise Magnitudes and
Factors for Use in Shielding
Studies AB25.156
M1, M1A, and M1B Systems AB25.175
N and ON Systems AB25.191
and AB25.191.2
N and ON Systems, Measurement
of Noise on Central Office
Cabling AB25.191.1
N1 and ON1 Systems, Impulse
Noise — (see “DATA
CIRCUITS — “SAGE”)
Suppression Devices AB25.140.2,
AB25.155
& AB25.191

Open Wire
Engineering Considerations —
(see “CARRIER SYSTEMS —
Engineering Considerations”)

Noise and Crosstalk Consider-
ations — (see “CROSSTALK —
Carrier Systems” or “CARRIER
SYSTEMS — Noise”)
Static Noise — (see “DATA
CIRCUITS — SAGE”)
Use of Drainage Arrangements
for Lightning Protection 876-415-100
Use of HC Drop Wire and 24A
Autotransformer for Temporary
Repair AB25.110
Power Line Transmission —
Coordination Agreements with the
Rural Electrification
Administration AB25.176
Program — (see “PROGRAM
CIRCUITS”)
Protection Consideration of
N1 Systems AB25.193
Telegraph — (see “TELEGRAPH”)

**Cathodic Protection Against
Corrosion** — (see “CORROSION —
Remedial Measures”)

Central Offices

Balancing Network Data — (see
“BALANCING NETWORK
DATA AND BUILDING-OUT
FACILITIES”)
Losses — (see “LOSSES”)
Noise — (see “NOISE”)
Protection 876-200-100
Unbalance — From Noise Stand-
point — (see “NOISE”)
Centrex Service — Engineering
Considerations AB22.315.00

Channel Banks, EB-2 — Use AB25.180

Channels for Miscellaneous Purposes

Channels for Government-Owned
KO-6 Equipment AB27.345
Channels for Polling Television
Receivers AB27.500
Checking List AB11.127
Circuits for Remote Operations and
Control of Airline and C.A.A.
Radio Equipment AB27.335

**Click Control in Program Trans-
mission Circuits** AB26.035

Coaxial Cable

- Characteristics and Data —
(See "CABLE")
- Frequency Allocations 304-605-101

Code Calling Systems — Induction to Radio Circuits AB65.630**Coefficients of Crosstalk Open**

- Wire AB62.040.3

Coefficients of Noise Induction AB63.176**Coefficients of Transmission —**

- Telegraph Systems AB82.026

Coils

- Choke — (see "COILS — Induction")
- General Types
- Losses — (see "LOSSES" —
Equipment")
- Induction Coils
- Air-Core Type — Data AB64.674
- Operators' Telephone Circuit
- Coils AB22.171.2
- Used for Reducing Central Office
and Line Unbalances AB63.250
- 46-B Type — Used in Measuring
Voice-Frequency Noise AB65.300
- Loading Coils — (see "LOADING —
Units, Coils, and Cases")
- Petersen Type — Inductive Aspects of
Grounding AB64.678
- Repeating Coils
- Equivalent T-Networks 304-230-100
- Losses — (see "LOSSES —
Equipment")
- Phantom
- Characteristics AB23.327
- Selection for Voice-Frequency Toll
Circuits AB23.326
- 94E, 94F Battery Supply Types —
Characteristics AB22.275
- 108A and 108B Type Coils —
Characteristics AB22.276
- 120 C, D, E, F, G, H, J, K, L,
120 CS, DS, ES, FS, GS, HS, JS,
KS, and LS Types AB22.277

Common Battery Loop Design

- Correction Factors for Common
Battery Losses to Derive Local
Battery Losses AB43.555
- Lengths — Resistance-Loss Curves
(see "LOSSES")
- Loop Loss Factors —
(see "LOSSES")
- Resistance and Loss Allowances
for Drop Wire and Bridged Taps,
etc. (see "LOSSES")
- Resistance Design of Subscriber
Loops AB22.075.1
& AB22.075.2
- Split-Gauge Resistance Curves
General AB43.517
- Related to Circuit Losses —
(see "LOSSES")
- Subscriber Loop Loading Gains ... AB43.519
- Transmission Data — Use AB43.510

Community Dial Offices

- Induction to Radio Circuits AB65.631
- Losses — (see "LOSSES")
- Transmission Considerations AB22.227

Compandor, 1A — Application to Message Circuits AB23.029**Completion Tests — Toll Cable** AB23.190**Components of Crosstalk** — (see
"CROSSTALK — Components")**Composite Sets**

- Losses — (see "LOSSES —
Equipment")
- T-Network Equivalents 304-232-100

Composite Signaling AB23.370.5**Condensers** — (see "CAPACITORS")**Conference Bridge, PBX**

- Command Conference Circuit AB22.332
- Connecting Circuits for Use with
Transistorized Conference AB22.329.5
- Conference Bridge Circuits
- Four-Wire Gain Type with
V Repeaters AB22.329.3

SECTION AB10.001

Conference Bridge, PBX (Cont'd)

- General AB22.329.0
- Two-Wire Gain Type With
E-Type Repeater AB22.329.2
- Two-Wire Gain Type with
Transistor Amplifiers AB22.329.4
- Two-Wire Non-Gain Type AB22.329.1

Conference Bridge — Toll

- Three-Branch Nonrepeated ... AB23.052.2
- Six-Outlet Repeated AB23.052.1

Conference Service and Service

Observing Loudspeaker

- Equipment** AB22.334

- Loud Speaker Arrangements
for Conference Service AB22.334.1

Consoles, Remote Control Type —

(see "MOBILE TELEPHONE SYSTEMS — PRIVATE LINES")

Constants, Transmission — For Cable

or Rural Wire — (see "CABLE" or "RURAL WIRE")

Contact Noise — (see "NOISE — Internal")

Control System, Anti-Aircraft — For

Defended Cities and Strategic

- Areas** AB22.370

Corrosion

- Bonding of Cable Sheaths to Multi-grounded Power Neutrals —
Effects on Corrosion AB63.251
- Checking List AB11.167
- Control of Corrosion — General
Principles 877-101-100
- Cooperation with Other Companies
in Handling Problems 877-100-100
- Equipment Used
Electrolysis Switches — Self
Actuated
KS-14385 Switch 877-210-100
- Electrolytic Capacitors — Bridg-
ing Insulating Joints in Cable
Sheath 877-211-100

- Electrolytic Capacitors — Dry
Type (per KS-6847) Used for
Connecting Aerial and Under-
ground Cable or Grounding
Aerial Cable Sheaths 877-211-100
AB63.251

- Measuring Instruments and
Miscellaneous Equipment 877-205-100

- Nonstray Current Areas
Nonstray Corrosion — General .. 877-103-100

- Testing Methods and General
Procedures 877-205-100

- Remedial Measures
Cathodic Protection
Design

- By Estimation 877-301-102
- By Experimental Reduction

- Data 877-301-101
- Theory and General Consid-
erations 877-301-101

- Corrosion Resistant Coverings for
Cables and Splices 877-305-100

- Drainage Wires
Design 877-300-100

- Measuring Methods 877-300-101
- Galvanic Anodes 877-306-100

- Stray Current Areas
General Engineering Consid-
erations 877-104-100

- Voltage and Current Distribu-
tion 877-104-101

- Surveys
Duct Surveys 877-201-100

- Routine Surveys 877-200-100
- Testing Methods

- Centralized Testing 877-206-100
- Duct Surveys 877-201-100

- Nonstray Current Areas 877-205-100
- Routine Surveys 877-200-100

- Underground Lead Cable Sheath
Corrosion

- Cost Studies, Comparative —**
For Telephone Plant AB91.025

- Coupling, Crosstalk —** (see "CROSS-TALK — Coupling Data")

Coupling Factors For Ground Return Circuits, Low Frequency

- General Considerations and Methods
of Calculation AB63.177

Coupling Factors For Ground**Return Circuits, Low Frequency (Cont'd)**

Coupling Units for Use with the
3-Type Noise Measuring Set to
Measure Telephone Influence Fac-
tors of Power System Currents
and Voltages AB63.477.1

**Crossbar Offices — Loop Loss Factors
and Length — Resistance-Loss
Curves — (see "LOSSES")**

**Crossbar Toll, No. 4 System —
Transmission Aspects AB23.030**

**Cross-Induction Performance of
Transposition Systems — (see
"TRANSPOSITION SYSTEMS")**

Crosstalk

Alternate Arm Lines — Reduction
of Type C Side-to-Side
Crosstalk AB62.085

Balancing
Selection of Pairs in Entrance
Cables for J Operation AB25.333

Cable Crosstalk
Factors Affecting Toll Cable
Crosstalk AB61.020.2
General Engineering Procedure .. AB61.020.1

Measuring Couplings, Calculation
of Various Statistical Values AB61.021

Carrier Systems
J Systems AB.140.2

M1, M1A, and M1B Systems —
General Considerations AB25.175

N1 Systems — General
Considerations AB25.192

Reduction of Crosstalk Due to
Reflections — Cables and Car-
rier Apparatus — X2.7
Loading AB25.378

Staggering Advantages 304-510-100

Testing AB25.330

Checking List AB11.161

Coefficients of Crosstalk —
Open Wire AB62.040.3

Components, Real and Imaginary —

Open Wire — (Far-End Type
Unbalance Times Frequency)

Data for Relative Types

A/A to H/H 304-500-100
a/a to h/h 304-500-101
A/B to A/P 304-500-102
B/C to B/P 304-500-103
C/D to C/P 304-500-104
D/E to D/P 304-500-105
E/F to E/P 304-500-106
F/G to F/P 304-500-107
G/H to G/P 304-500-108
H/I to H/P 304-500-109
I/J to I/P and J/K to J/P 304-500-110
K/L to K/P and L/M to L/P 304-500-111
M/N to M/P, N/O to N/P
and O/P 304-500-112

Coupling Data

Cable
Analysis
Relation Between Coupling in
DBX and Crosstalk Units
(CU) 304-501-100

Relation Between Coupling in
DBX and (CU)² in
Thousands 304-501-101

Relation Between Coupling in
DBX, Number of Occurrences
and (CU)² in Thousands 304-501-102

Carrier Frequencies
140 Kc — Near and Far End
Toll Entrance Cable 304-505-100

165 Kc — Far End
Exchange Cables 304-506-100

Toll Cables — 19-Gauge 304-504-100
Voice Frequencies — Near End

Exchange Cable — Staggered
Twist Construction 304-503-100

Short Pair Twist Quadded Cable
Spliced as a Single Group 304-502-100

Components, Real and Imaginary —

Open Wire — (Far-End Type
Unbalance Times Frequency)
(Cont'd)

Open Wire
Coefficients of Crosstalk AB62.040.3

Far-End "U" Factors Expressed as
Summations of Near-End "T"
Factors AB62.040.11

Frequencies Up to 30 Kc

Application of Coupling Theory to
Transposition Design AB62.032

Computation Factors — Tables .. AB62.031
Theory AB62.030

Crosstalk (Cont'd)

Frequencies Up to 156 Kc
 Application of Coupling Theory to
 Transposition Design AB62.042
 Computation Factors
 Derivation AB62.040.2
 Tables AB62.041
 Theory AB62.040.10
 Near-End "T" Factor Summa-
 tions — Used In Evaluating
 Far-End "U" Factors AB62.040.11
 Staggering Advantages — Coordination
 of Carrier Systems 304-510-100
 Exchange Area Circuits
 Considerations When Using Non-
 staggered Twist Cable AB61.212
 Coupling Data — (see "CROSS-
 TALK — Coupling Data")
 Crosstalk Index
 Application AB61.210
 Calculations AB61.211
 General Considerations AB22.029
 Improvement — Use of Number
 Splicing AB61.110
 Index
 Application to Exchange
 Circuits AB61.210
 Application to Toll Circuits AB61.010
 Calculations AB61.211
 Irregularity Crosstalk
 Due to Transposition Pole Spacing
 Deviations AB62.260
 General Engineering Considera-
 tion Concerning Irregularities in
 Open Wire AB62.250
 Wire Spacing Deviations AB62.270
 Number Splicing Used for
 Improved Crosstalk
 Performance AB61.110
 0-1 Transposition Systems —
 Estimation of Crosstalk AB62.093.1
 Side-to-Side Crosstalk, Type C —
 Reduction in Alternate Arm
 Lines AB62.085
 Studio-Transmitter Circuits,
 15 Kc AB26.026.2
 Testing — Amplifier and Weighting
 Networks Used AB63.377
 Theory and Fundamentals AB94.175
 Toll Circuits
 Between Toll Circuits — General
 Engineering Considerations AB61.010

Cable Crosstalk
 Entrance and Intermediate Cable ... AB23.128
 Factors Affecting Crosstalk AB61.020.2
 Number Splicing for Improved
 Crosstalk Performance AB61.010
 Coupling Data — (see "CROSSTALK —
 Coupling Data")
 Crosstalk Index AB61.010

Current Ratios Related to

Decibels 304-006-100

D**Data Circuits**

AAOC Interim Data Circuits ... AB27.402.00
 Channels for Government-Owned
 K0-6 Equipment AB27.345
 Delay Characteristics — (see
 "DISTORTION")
 Direct Access Circuits Requiring
 T2A Treatment AB27.420
 Delay Equalization AB27.401.1
 Envelope Delay
 H1 and Packaged H Carrier AB27.025.07
 N1 Carrier Facilities AB27.025.05
 ON-1 Carrier Facilities AB27.025.06
 SAGE
 Absolute Delay Equalization for
 Time-Division Data Links AB27.401.20
 A1 Digital Data Systems —
 General Engineering
 Considerations AB27.401.01
 Impulse Noise AB27.400.5
 Noise Objective AB27.401.02
 Static Noise AB27.400.6
 20 KC Circuits for AN/GPA
 37 and SAGE AB27.405.01

Wide Band Data

40.8 Kilobit Per Second Data
 System Engineering
 Considerations AB28.100
 Series
 WLR-3 Wideband Loop Repeater
 Nonregulated Group Band Data
 Systems — Engineering
 Considerations AB28.105.03
 Wideband Transmission Systems —
 Conditioning AB28.175
 Series

Data Line Switching Network

Transmission Engineering
 Considerations AB83.060

Dataphone Service

- Engineering Considerations AB27.425.00
- Impulse Noise Considerations . . AB27.425.01

Decibels (DB)

- Combination of Two Quantities . . 304-007-100
- Related to Power Ratio 304-005-100
- Related to Voltage or
Current Ratio 304-006-100

Delay Distortion, Envelope —
(see "DISTORTION")

Demodulation in Carrier Systems . . . AB93.130

Dial Contact Noise — (see
"NOISE — Internal")

Dialing, Notes on Distance 010-510-100

Dial Offices

- Induction to Radio Circuits —
(see "INDUCTION — Radio
Frequency — From Telephone
Circuits")
- Loop Loss Factors or Length —
Resistance-Loss Curves —
(see "LOSSES")

Distortion

- Envelope Delay
- Data Circuits AB27.401.1
- Delay Characteristics of:
Telephone Facilities, General
Information AB27.025
- B88 Loaded Cable Facilities AB27.025.04
- H1 and Packaged H Carrier AB27.025.07
- H44 Loaded Cable Facilities AB27.025.02
- H88 Loaded Cable Facilities AB27.025.01
- H172 Loaded Cable Facilities AB27.025.03
- C5 Carrier Terminals AB27.028
- K1 and K2 Carrier Systems AB27.031
- N1 Carrier Facilities AB27.025.05
- N2 Carrier Facilities AB27.025.08
- N3 Carrier Facilities AB27.025.10
- ON-1 Carrier Facilities AB27.025.06
- T1 Carrier Facilities AB27.025.09
- A5 Channel Banks AB27.032
- LMX-1 Group Connector AB27.033
- LMX-2 Group Connector AB27.034
- 120-Type Repeating Coils AB27.025.20

- Miscellaneous Repeating Coil
Arrangements AB27.025.24
- V3 Repeater and 1/2 4AF
Repeater AB27.025.25
- Telegraph Systems
Characteristic Distortion —
Theory and Reduction by
Equalization AB95.105.1
- General AB95.105
- Teletypewriter AB95.106 &
Transmission Impairment
Distortion Data (DTI) —
Terminating Traffic
F1A-AST Sets, H-88 Switching
Trunks 304-602-100

**Distribution Methods — Application to
Transmission Engineering** AB91.027

Distribution Wire, B Rural — (see
"RURAL WIRE")

Drainage Circuits

- For Corrosion
Design 877-300-100
- Measuring Methods 877-300-101
- For Electric Induction AB63.232
- For Lightning Effects on Open
Wire Carrier Circuits AB66.026
- For Noise Due to Circuit
Unbalance AB63.250

Drop Wire

- HC Type
Used with 24A Autotransformer
for Temporary Repair of Open
Wire Carrier Line Facilities AB25.110
- Loss Allowance in Common
Battery Loop Design AB43.518
- Losses

Duct Surveys for Corrosion 877-201-100

E

Earth Resistivity Measurements

- DC Method AB63.580
- Use of Ground Megger AB66.340.1

Echo Analysis — Television Systems . AB96.100
App. 3

Echo Return Loss — (see
"RETURN LOSSES")

SECTION AB10.001

Echo Suppressors — Application AB23.026

**Edison Electric Institute —
Coordination Activities** AB63.061

Educational Training Material

Checking List AB11.190

Effective Transmission Equivalent Data

Checking List AB11.143
Losses — (see “LOSSES”)

Electric Induction — (see “INDUC-
TION — Low Frequency”)

Electrolysis — (see “CORROSION”)

**Electromagnetic Shielding of Circuits
at Fundamental Frequencies** AB63.178

Envelope Delay — (see “DISTORTION”)

Equalizers

Low-Frequency Type (J68617D)
Used in Open Wire Program
System AB26.127
Mop-Up Type Used in A2 Video
System — Design AB26.401

Equipment

Theory and Operating Principles
of the J94027 Par Meter
Equipment AB22.850

**Equivalent T Networks for
Equipment** — (see “NETWORKS”)

Equivalent Transmission Data

Checking List — AB11.143
Losses — (see “LOSSES”)

Exchange Area

Balancing Network Data AB24.078
Cable — (see “CABLE —
Exchange”)
Checking List AB11.122
Crosstalk
Coupling Data — (see “CROSS-
TALK” — Coupling Data”)
Crosstalk Index
Application AB61.210

Calculations AB61.211
General Considerations AB22.029
Facilities — Electrical Char-
acteristics 304-015-100
Noise
Estimation Methods
Joint Use Exposures AB63.128
Roadway Separation Exposures AB63.129
Measurement
Exploring Wire Methods AB63.130
Supplemental Noise Measurements AB63.379
Use of Adapted Visual Indicators AB65.226
Surveys
Methods of Making Surveys AB63.380
Presentation and Review of
Results AB63.081
Special Service Lines —
(see “SPECIAL SERVICES”)
Transmission
Checking List AB11.122
Standards AB22.025
Trunks
Loading — (see “LOADING”)
Losses — (see “LOSSES”)
Plant Design Considerations AB22.125

Executone School-To-Home System AB22.350

**Exploring Coil Method of Meas-
uring Voice-Frequency
Noise Fields** AB65.300

**Exploring Wire Methods of
Noise Studies** AB63.130

F

Fault Currents and Voltages

Power Systems
Calculation and Coordination 876-103-100
Characteristics of Faults to
Ground AB64.327
Estimation of Magnitudes AB64.330

Faults in Telephone Line Circuits

General Information AB92.077
Impedance Irregularities
Correction AB22.401.4
General Considerations AB22.401.1
Location AB22.401.3

**Facsimile Transmission — Channels
For — Engineering Considerations** AB27.320

Filters

- Junction Type — Used in Open
Wire Toll Circuits AB23.075.4
- Suppression Filter (61 Type) —
Used for Suppression of Dialing
Induction to Radio Receivers AB65.628

Frequency Allocations

- Carrier Systems
 - Telegraph
 - Western Electric Company
Manufacture 304-605-102
 - Telephone
 - Western Electric Company
Manufacture 304-605-100
- Coaxial Cable 304-605-101
- Microwave Radio Systems 304-605-101

Frequency Selective Devices

- Harmonic Reduction in Power Systems
 - AC Systems AB64.676
 - DC Systems AB64.675
- Nonresonant Frequency Devices
 - General Design Principles AB64.477-2
 - Practical Design Considerations . AB64.477-1

Frequency Weightings for Circuit

- Noise AB63.350 &
AB63.377

G

- Galvanic Anodes for Corrosion** 877-306-100

General Electric Remote Dispatching and Control Units — (see "MOBILE TELEPHONE SYSTEMS")**Generators, Grounded-Neutral Type**

- Inductive Effects When Connected
Directly to Supply Lines AB64.125

Ground Megger

- For Earth Resistivity
Measurements 876-701-100
- For Ground Measurements 876-700-100

Ground Return Circuits

- Effects of Induction AB63.230
- Low-Frequency Coupling Factors . AB63.177

Grounds — Characteristics and

- Measurements** 876-700-100

H**Harmonic Voltages and Currents Over Power Circuits — Propagation**
(see "POWER SYSTEMS")

- Horizontal Synchronizing Interval —
Television Circuits** AB96.100
App. 5

Hybrid Type Repeaters —
(see "REPEATERS")**I**

- Impedance and Impedance Unbalance
Curves — Analysis** AB92.077

- Impedance Bridge, 2A —
Description and Use** AB45.177

Impedance Irregularities — (see
"FAULTS IN TELEPHONE
LINE CIRCUITS")**Impedances, Power Systems** —
(see "POWER SYSTEMS —
Impedances")**Index, Crosstalk** — (see
"CROSSTALK")**Induction**

- Bonding of Aerial Cable Sheaths
to Power Neutrals — Effects AB63.251
- Checking List AB11.163
- Coils
 - Air-Core Type — Data AB64.674
 - Used for Reducing Central Office
and Line Unbalances AB63.250
- 46-B Type — Used in Measuring
Voice-Frequency Noise AB65.300
- Generators — (Grounded-Neutral
Type) — Inductive Effects when
Connected Directly to Supply
Lines AB64.125
- Location (Relative) of Power and
Telephone Circuits — General
Engineering Procedure AB63.076
- Low-Frequency Induction
Coupling Factors — General
Considerations and Computation
Methods AB63.177

Induction (Cont'd)

Electric Induction — Drainage Considerations	AB63.232
Electromagnetic Shielding of Communication Circuits	AB63.178
General Considerations	AB63.077
Ground Return Signaling Circuits — Effects of Induction	AB63.230
Measurements	
Earth Resistivity — DC Method ..	AB63.580
Testing Methods	AB63.576
Railway Systems, Electrified	AB63.275
Short-Circuiting Relay Protectors.	AB63.228
Subscriber Sets with Cold Cathode Tubes — Inductive Aspects	AB63.238
Toll Plant — Induction from Power Circuits	AB63.077
Voltage Distribution and Voltage Differences	AB63.225
Noise Frequency Induction	
Coefficients of Induction	AB63.176
Exchange Circuits — Estimation of Noise	
Joint Use Exposures	AB63.128
Roadway Separation Exposures ..	AB63.129
Exploring Wire Methods of Noise Study	AB63.130
Frequency Weightings for Message Circuit Noise	AB63.350 & AB63.377
Investigation Methods	AB63.080
Leased Facilities Used for Signal and Control Circuits	AB63.600
Measurements of Noise — (see “NOISE — Measurements”)	
Rectifier Installations	
AC Side	AB63.110
DC Side	AB63.111
Rural Power and Telephone Systems	AB63.085 & AB64.400
Street Lighting Systems, Series ...	AB64.475
Subscriber Sets	
Nontube Sets — Susceptiveness ..	AB63.240
Receiver Noise Related to Noise-to-Ground and Noise-Metallic	AB63.239
Tube Sets — Inductive Aspects ...	AB63.238
Surveys of Noise — Exchange Area Methods	AB63.380
Presentation and Review of Results	AB63.081

Toll Circuits	
Cable — Noise Due to Secondary Induction in Voice-Frequency Circuits	AB63.127
Open Wire — Noise Estimation Methods	AB63.125
Power Organizations, Cooperative Handling of Problems	AB63.062
Radio Frequency Induction	
From Telephone Circuits	
From Central Office Sources	AB65.625
From Code Calling Systems	AB65.630
From Community Dial Offices	AB65.631
From PBX Systems	AB65.629
From Telegraph Equipment	AB65.627
Suppression of Dialing Interference Use of 61-Type Filter	AB65.628
To Telephone Circuits	
From Radio Transmitters	AB63.325
Radio-to-Telephone Induction	AB63.325
Railroad Organizations, Cooperative Handling of Problems	AB63.063
Rural Power and Telephone Systems — Coordination	AB63.085 & AB64.400

Inductive Coordination —
(see “INDUCTION”)**Inductor, 1542A-Type — For Suppression of Radio Frequency Induction to Telephone Plant** AB63.325**Information Service** AB22.173**Input Impedance Determinations for Nonloaded Cable with any Termination —** (see “CABLE”)**Insertion Losses —** (see “LOSSES”)**Insulators — Types CS and CW and Associated Pins and Thimbles — For Carrier Circuits** AB25.075**Intercepting Service**

Transmission Features	
Central Office Arrangements	AB22.172.2
Operators With Voice Controlled Positional Gain Units	AB22.172.3
Overall Considerations	AB22.172.1
With Announcing Machines	AB22.172.4

Intercommunicating Service

Executone School-To-Home System AB22.350

Interlocal Trunks — Design AB22.126**Insertion Losses —**

(see "LOSSES — Insertion")

J

Junction Losses — (see "LOSSES")

K

L

Lead Covered Cable — (see "CABLE")**Leased Facilities**

Noise Influence Considerations AB63.600

Protection Considerations 876-600-100
& 876-601-100**Length-Resistance — Loss Curves —**

(see "LOSSES")

Level Compensator, 71A1 — For**Telephotograph Circuits** AB27.110**Lighting Systems (Street) — Inductive****Coordination Aspects** AB64.475**Lightning Protection for Cable —**

(see "PROTECTION")

Line Circuits

Balancing Network Data

Exchange Line Data AB24.078

General Data AB24.075

Carrier Frequency Line

Measurements AB25.335

Fault Location and Analysis —

(see "FAULTS IN TELEPHONE
LINE CIRCUITS")**Loading Data**

Checking List AB11.145

Loading Gains, Subscriber Loop ... AB43.519

Spacing Limits and Building-Out

Practices AB23.195

Systems

Carrier

BH-15-15 System — Improved

Equipment — (No. 714 Coil

and A-14, B-14, C-14, and C-9

Units) AB45.034

BH-15-16 System — 0 to 10-Kc

Transmission AB45.026

C4.1 and C4.8 Systems

Modified for Entrance and

Intermediate Cables — Non-

phantomed Open Wire Pairs —

0 to 31-Kc Transmission AB45.030

Transmission Characteristics AB45.028

CE Loading Systems AB45.036

CF4.1-6.3 and CF4.8-7.1 Systems . AB45.032

"J" Type Loading Systems AB45.039

X2.7 System

With 702 Coil-Reduction of Carrier

Circuit Crosstalk Due to

Reflections AB25.378

With 712 and 715 Coils and 83-B

Case AB45.038

Y-9 System

General — 0 to 10-Kc

Transmission AB45.02

With 712 and 715 Coils and 83-B

Case AB45.038

Designation of Loading Systems . AB45.025

Program Circuits, Short — 15-Kc

Transmission AB26.131

Spacing Limits and Building-Out

Practices AB23.195

Testing Apparatus and Methods

Capacity Bridge, 2A AB45.176

Impedance Bridge, 2A AB45.177

J-Type Compensated Loading —

Tests and Adjustments AB45.178

Toll Entrance and Intermediate

Cable Loading —

Voice Frequency AB45.027

Units, Coils, and Cases

Carrier Circuits

General AB45.084

Nos. 701 and 703 Coils in C4.1

and C4.8 Loading Systems AB45.078

Nos. 704 and 705 Coils in B15-16

and Y-9 Loading Systems AB45.026

Nos. 711 and 713 Coils

In CE Loading Systems AB45.036

In CF4.1-6.3 and CF4.8-7.1

Systems AB45.032

SECTION AB10.001

Loading Data (Cont'd)

Nos. 712 and 715 Coils and 83-B Case in X2.7 and Y-9 Loading Systems AB45.038

No. 714 Coil for BH-15-15 Loading Systems AB45.034

Nos. 730, 731, and 732 Coils for Type J Carrier Loading Systems. AB45.039

Types and Potting of Loading Coils and Other Loading Material AB45.078

Exchange Area Circuits

Nos. 632, 638, 639, 643, 644, 645, and 651 Coils — Electrical Characteristics AB45.085

Program Circuits

Nos. 620, 621, 630, 633, 634, 635, and 636 Coils AB45.031

Toll and Toll Entrance Cable Circuits

MF Loading Units — Cases and Stub Cables

General Considerations AB45.093.1

Stub Cables

For 109A, 209A, 259A, and 261A Cases AB45.093.2

For 109B, 209B, 259B, and 261B Cases AB45.093.3

For 110A, 210A, 260A, and 262A Cases AB45.093.4

For 110B, 210B, 260B, and 262B Cases AB45.093.5

For 110C, 210C, 260C, and 262C Cases AB45.093.6

For 110D, 210D, 260D, and 262D Cases AB45.093.7

For 110E, 210E, 260E, and 262E Cases AB45.093.8

MF, MFA, and SM Loading Units — Description AB45.091

Nonphantom Loading Coils

Cases and Stub Cables AB45.094

General AB45.092

P-B or M Type Loading Unit —

Voice-Frequency Circuits AB45.079

Splice Loading Arrangements AB45.095

Unit and Case Data — General .. AB45.082

Voice-Frequency Circuits —

Local or Toll-Stub Cable for Loading Coil Cases — General Information AB45.075

Loading Faults — (see “FAULTS IN TELEPHONE LINE CIRCUITS”)

Local Battery Loop Design

Computation of Split-Gauge Loops. AB43.551

Correction Factors for Common Battery Loop Losses to Derive Local Battery Losses AB43.555

Design Data — Usage AB43.550

Loop Loss Curves — (see “LOSSES”)

Resistance Design of Subscriber Loops AB22.075.1 & AB22.075.2

Local Program Circuits

Control of Noise Distortion and Crosstalk AB26.025.2

Loop Design

Common Battery — (see “COMMON BATTERY LOOP DESIGN”)

Local Battery — (see “LOCAL BATTERY LOOP DESIGN”)

TWX, WADS and Dataphone Loops — General Transmission Considerations AB22.077.1

Loop Loss Factors and Curves — (see “LOSSES”)

Loop, Subscriber

Plant Design AB22.075.1

Resistance Design Applied to Subscriber Loop Plant AB22.075.2

Rural Lines AB22.082

Losses

Cable

1000 Cycles

Entrance and Intermediate Cable 304-163-100

Exchange Type Cable Used in

Toll Circuits 304-162-100

Nonloaded Facilities 304-164-100

Outside Plant Cable and Paired Conductor Facilities 304-160-100

Toll Facilities with Common Loading Systems 304-161-100

Toll Facilities with Obsolete or Unusual Loading 304-161-101

Losses (Cont'd)

Carrier Frequencies		4-Wire Coils and Associated	
Entrance Cables	304-165-100	Equipment	304-204-101
K Carrier Cables	304-116-100	General	304-204-100
Effective Losses		Hybrid Repeating Coils	
Central Offices		In 2-Wire Cable Circuits	304-204-102
Extended Subscriber Loop Area		In No. 4 Toll Switching System	304-204-104
Offices	AB43.278	V-1 Type Coils — Open Wire . . .	304-204-103
Local or Common Battery Offices .	AB43.275	Line Equipment — Open Wire . .	304-206-100
PBX Cord and Tie Trunks	AB43.277	Miscellaneous Equipment and	
Manual Areas (No. 11) with		Arrangements	304-208-100
Combined Toll and Local		Signaling Equipment	304-207-100
Operation	AB43.278	Telephoto Circuit Equipment . . .	304-210-100
Community Dial Areas		Terminating Sets, 4-Wire	304-205-100
No. 32A32	AB43.282	Carrier Frequencies	
No. 32A44	AB43.283	Miscellaneous Line Equipment . .	304-220-100
No. 35E97	AB43.281	Facility Losses	
No. 36A1	AB43.284	Adjusted to Allow for Temperature	
No. 36A3	AB43.285	Variations of Aerial Cable for	
No. 350A	AB43.290	Referring Return Losses in Com-	
No. 355A	AB43.280	puting Line Section Return	
No. 360A	AB43.291	Losses	304-408-104
Nos. 375A, 375B, 385B, and 386B .	AB43.292	For Referring Return Losses in	
No. CX-10	AB43.286	Computing Line Section Return	
Nos. CX-30, CX-60, and CX-100 . .	AB43.287	Losses	304-048-103
No. CX-200	AB43.288	Factors, Via Net Loss	
No. CX-1000	AB43.289	Derivation	AB23.025-6
Exchange Area Trunks		List of Factors (Antisidetone	
General	AB43.175	Sets)	304-601-100
Junction Losses		Insertion Losses	
Intermediate Junction	AB43.176	1000 Cycles	
Terminal Junction	AB43.125.1	Insertion of Short Lengths of	
Junction Losses		Nonloaded Quadded Cable	304-085-100
Intermediate		Carrier Frequencies	
Exchange Area Trunks in Cable		Cable, Nonloaded, — 13-, 16-,	
Facilities	AB43.176	and 19-Gauge	304-301-100
Terminal		Length — Resistance-Loss	
Exchange Area Trunk Design . .	AB43.125.1	Curves of Cable — Common	
Special Service Applications . . .	AB43.125.2	Battery Loops — F1A-AST,	
PBX Cord or Tie Trunks	AB43.277	635-706A-AST Subset, 600-Ohm	
Subscriber Loops		Reference Trunk	
Transmission Data for Use with		Allowances for Drop Wire,	
Improved Subscriber		Bridged Taps, etc.	AB43.518
Instruments	AB43.080	Exchange	
Terminal Junction Losses		24 Volts	
Exchange Area Trunk Design . . .	AB43.125.1	Manual and Panel	AB43.514
Special Service Applications	AB43.125.2	48 Volts	
Equipment Losses		Step-by-Step and Crossbar	AB43.515
1000 Cycles		Methods of Using Data	AB43.510
Carrier Equipment,		Subsets Other Than F1A-AST —	
Miscellaneous	304-209-100	Correction Factors	AB43.520
Composite Sets	304-203-100	Toll	
Coils, Repeating		48 Volts	
		Manual and Dial	AB43.516

SECTION AB10.001

Losses (Cont'd)

Length — Resistance-Loss Curves and Split-Gauge Resistance Curves of Cable — Common Battery Loops — 500 Series Set Allowances for Drop Wire, Bridged Taps, etc. AB43.518

Exchange Grade Battery Supply
24 Volts
19-, 22-, 24-, and 26-Gauge High Capacitance Cable Pairs AB43.538.3

48 Volts
19-, 22-, 24-, and 26-Gauge High Capacitance Cable Pairs AB43.538.1

.104" Copper-Steel (30%) Open Wire and:
19-Gauge Cable AB43.542.11
22-Gauge Cable AB43.542.12
24-Gauge Cable AB43.542.13

.104" Copper Steel (40%)
Open Wire and:
19-Gauge Cable AB43.543.11
22-Gauge Cable AB43.543.12
24-Gauge Cable AB43.543.13

.083" Steel Open Wire and:
19-Gauge Cable AB43.541.11
22-Gauge Cable AB43.541.12
24-Gauge Cable AB43.541.13

.109" Steel Open Wire and:
19-Gauge Cable AB43.540.11
22-Gauge Cable AB43.540.12
24-Gauge Cable AB43.540.13

Methods of Using Data AB43.510

Toll Grade Battery Supply
48 Volts
19-, 22-, 24-, and 26-Gauge High Capacitance Cable Pairs AB43.538.2

.104" Copper-Steel (30%)
Open Wire and:
19-Gauge Cable AB43.542.21
22-Gauge Cable AB43.542.22
24-Gauge Cable AB43.542.23

.104" Copper-Steel (40%)
Open Wire and:
19-Gauge Cable AB43.543.21
22-Gauge Cable AB43.543.22
24-Gauge Cable AB43.543.23

.083" Steel Open Wire and:
19-Gauge Cable AB43.541.21
22-Gauge Cable AB43.541.22
24-Gauge Cable AB43.541.23

.109" Steel Open Wire and:
19-Gauge Cable AB43.540.21
22-Gauge Cable AB43.540.22
24-Gauge Cable AB43.540-23

Loop Loss Curves and Factors —
600 Ohm Reference Trunk
Common Battery Loops
Correction Factors Used to Derive Local Battery Losses AB43.555

F1A-AST or 635-706A-AST Set
Exchange
24-Volt — Manual and Panel Offices
Curves AB43.525
Factors AB43.511

48-Volt — Step-by-Step and Crossbar
Curves AB43.526
Factors — (Including B Rural Wire Data) AB43.512

Toll
48-Volt — Manual and Dial Offices
Curves AB43.527
Factors AB43.513

500 Series Set
Exchange
24-Volt — Manual and Panel Offices AB43.531

48-volt — Step-by-Step and Crossbar AB43.532

Toll
48-Volt — Manual and Dial Offices AB43.533

F1A-AST Set Versus 500 Series Set — Volume Gain Versus Conductor Loop Resistance AB43.534

Methods of Using Data AB43.510

Local Battery Loops
Correction Factors Applied to Common Battery Loop Losses to Derive Local Battery Losses AB43.555

Exchange or Toll Grade, Manual or Dial Offices
With Repeating Coil Type
Central Office Circuit and Magneto Offices With Repeating Coil Between Loop and Trunk AB43.560

With Series Condenser —
Bridged Retard Type Central Office Circuit and Magneto Offices Without Repeating Coil Between Loop and Trunk AB43.561

Open Wire Losses	
1000 Cycles	
Dry Weather at 68°	304-101-100
6 Kc to 140 Kc	
Dry Weather	304-102-102
Wet Weather	304-102-100
155 Kc to 410 Kc	
Dry Weather	304-102-103
Wet Weather	304-102-101
Reflection Losses	
1000 Cycles	
Junction of Loaded Cable and	
Open Wire	304-302-100
Junction of Nonloaded Cable and	
Other Facilities	304-303-100
Outside Plant Cable and Paired	
Conductor Facilities	304-160-100
Alignment Chart	304-008-100
Curves	304-008-101
General	304-001-100
Return Losses — (see “RETURN	
LOSSES”)	
Telegraph System, Carrier —	
43A1	AB83.047.1
Toll Circuit Losses —	
General Planning	AB23.025-2
Via Net Loss Factors —	
Toll Switching Derivation	AB23.025-6
List of Factors	304-601-100

Loudspeaker Systems

Equipment Used for Conference	
Service and Service Observing ...	AB22.334
KS-12046 Loudspeaker	024-190-100
Paging System	AB22.335
Carbon Transmitters, Characteristics	
of Transmission Characteristics	
of Loudspeakers	AB22.335.1

M

**Magnetium Anodes — For Prevention
of Cable Sheath Corrosion**

877-306-100

**Manual Offices — Transmission
Losses or Length — Resistance-Loss
Data** — (see “LOSSES”)

Measuring Sets — All Types — (see
“TEST FACILITIES”)

Megger

For Earth Resistivity	
Measurements	876-701-100
For Ground Resistance	
Measurements	AB66.625

Message Telephone Circuits

Circuit Layout Considerations	AB23.010
Singing Computation Procedures ..	AB23.015

Microwave Radio Stations-Protection

Considerations	876-210-100
-----------------------------	-------------

Microwave Radio Systems —

Frequency-Allocations	304-605-101
------------------------------------	-------------

Mobile Telephone Systems, Private Line

Delay Equalization of Channels	
Provided for Multistation Radio	
System	AB27.340.1
Delay Equalization Equipment ..	AB27.340.2

Modulation In Carrier Systems

AB93.130

Motorola Control Consoles — (see
“MOBILE TELEPHONE
SYSTEMS — PRIVATE LINE”)

Multifrequency Pulsing Systems —
(see “SIGNALING SYSTEMS”)

Multistation Private Line Telephone

Circuits — Design	AB23.050
--------------------------------	----------

Music Distribution System, Wired ..

AB26.165

N

Negative Impedance Repeaters —
(see “REPEATERS”)

Networks

Balancing Type — Data	
Exchange Line	AB24.078
General Data	AB24.075
Toll Circuits — 115-Type	
Networks	AB24.074

SECTION AB10.001

Networks (Cont'd)

Equivalent T Networks for Equipment
 Autotransformers
 16A (14A) 304-231-100
 16B (14B) 304-231-101
 24A 304-231-102
 D-85697 304-231-103
 Composite Sets, Terminal 304-232-100
 Repeating Coils (46, 62, 75, 91,
 and 93 Types) 304-230-100
 Repeating Coils (94, 101, and 120
 Types) 304-230-101
 For Negative Impedance
 Repeaters — Series Type —
 (see "REPEATERS")
 Regulating Networks — (For
 Repeaters) 304-600-100

**Neutral Impedance Usage —
 Considerations** AB64.328

Noise

Carrier Systems — (see "CARRIER
 SYSTEMS — Noise")
 Due to Office Equipment Unbalance
 Choke Coils and Drainage Circuits
 Used for Noise Reduction AB63.250
 General Procedure in Noise
 Reduction AB63.246.10
 Local Test Desk Talking Circuits,
 Unbalances, Reduction of Noise AB63.246.82
 Long Lines Circuits AB63.246.81
 Longitudinal Impedance and
 Longitudinal Balance Characteristics
 of Central Office Equipment ... AB63.246.11
 Manual Equipment AB63.246.20
 Measurement of Noise-Longitudinal
 and Noise-to-Ground AB63.249
 Miscellaneous Circuits AB63.246.80
 Panel Offices AB63.246.40
 Step-by-Step Office Balance AB63.246
 Summary of Talking Condition
 Unbalance AB63.246
 1A Key Telephone Systems AB63.246.83
 Frequency Weighting AB63.350
 & AB63.377
 Induced in Various Systems —
 (see "INDUCTION")
 Influence — Leased Facilities
 Used for Signal and Control
 Circuits AB63.600
 Internal

Characteristics
 Local Offices AB65.125
 Toll Office Equipment AB65.175
 Checking List AB11.165
 Contact Noise
 Localization — (In Panel Dial
 Offices) AB65.227
 Measurements AB65.225
 Measurement
 Contact Noise
 Dial Offices, Local AB65.225
 Exchange Plant — Use of
 Adapted Visual Indicators AB65.226
 Panel Dial Offices AB65.227
 Local Office Noise Due to
 Battery Supply Disturbances ... AB65.125
 Toll Office Equipment AB65.175
 Voice-Frequency Noise Fields —
 Exploring Coil Method AB65.300
 Reduction
 Local Office Noise AB65.126
 Toll Equipment AB65.175
 Measurements
 Apparatus
 Amplifier and Weighting
 Networks AB63.377
 Couplers Used With 2-Type
 Noise Measuring Set to Measure
 Power System Influence AB63.477
 Preamplifier (Portable) for
 2-B Noise Measuring Set AB63.527
 Telephone Noise and Power
 Influence Analysis — Use of the
 4A Frequency Analyzer and the
 3-Type Noise Measuring Set AB63.478
 General Factors Involved in
 Measuring and Evaluating
 Message Circuit Noise AB63.375
 Methods
 Exchange Circuits AB63.379
 Exploring Coil Method of
 Measuring Voice-Frequency
 Noise Fields AB65.300
 Exploring Wire Methods AB63.130
 General Factors Involved AB63.375
 Noise — Longitudinal and
 Noise-to-Ground AB63.249
 Recording and Computing Noise
 and Waveshape Data AB63.480
 Surveys of Noise — Exchange
 Area Methods AB63.380
 Presentation and Review of
 Results AB63.081

Noise (Cont'd)

Toll Circuits, Open Wire	AB63.376
Room Noise	
Impairments — F1A-AST Subscriber	
Sets	AB43.301
Measurement	AB22.375
Operating Room Noise	
Computation	AB22.376
General Considerations	AB22.377
Surveys — Exchange Area	
Methods	AB63.380
Presentation and Review of	
Results	AB63.081

Nonquadded Cable — (see "CABLE")**Nonwire Armored Cable** —
(see "CABLE")

Number Splicing — (Cable Splicing, Based on Number Theory, To Improve Crosstalk Performance	AB61.110
---	----------

O

Open Wire Circuits

Attenuation — (see "OPEN WIRE CIRCUITS — Characteristics")	
Carrier Systems — (see "CARRIER SYSTEMS — Open Wire")	
Characteristics	
Impedance, Attenuation, and Phase	
80 Mil — 12" Spacing — Side and Phantom	304-105-105
104 Mil — 6" and 8" Spacing — Side Circuits	304-105-101
104 Mil — 12" Spacing — Side and Phantom	304-105-100
128 Mil — 6" and 8" Spacing — Side Circuits	304-105-101
128 Mil — 12" Spacing — Side and Phantom	304-105-100
165 Mil — 6" and 8" Spacing — Side Circuits	304-105-101
165 Mil — 12" Spacing — Side and Phantom	304-105-100
Copper-Steel (30%)	
104 Mil — 8" and 12" Spacing — Side Circuit	304-105-104
128 Mil — 8" and 12" Spacing — Side Circuit	304-105-104

Copper-Steel (40%)	
104 Mil — 8" Spacing — Side and Phantom	304-105-103
104 Mil — 12" Spacing — Side and Phantom	304-105-102
128 Mil — 8" Spacing — Side and Phantom	304-105-103
128 Mil — 12" Spacing — Side and Phantom	304-105-102
165 Mil — 8" Spacing — Side and Phantom	304-105-103
165 Mil — 12" Spacing — Side and Phantom	304-105-102
Steel	
109 Mil — 12" Spacing — Side and Phantom	304-105-105
134 Mil — 12" Spacing — Side and Phantom	304-105-105
Resistances	AB43.521
Circuits of Unusual Gauges and Material — Transmission and Equipment Information	AB23.076
Crosstalk and Coupling Data — (see "CROSSTALK" — Open Wire")	
Impedance — (see "OPEN WIRE CIRCUITS — Characteristics")	
Losses — (see "LOSSES — Open Wire")	
Noise (see "NOISE")	
Program Circuits — (see "PROGRAM CIRCUITS — Open Wire")	
Resistances of Open Wire	AB43.521
Rural Open Wire Joint Use — Noise Induction	AB63.085
Telegraph Systems — (see "TELEGRAPH — Systems")	
Toll Circuits	
Engineering Considerations	
Autotransformers and Junction Filters	AB23.075.4
Entrance and Intermediate Cables	AB23.075.3
General Aspects	AB23.075.0
Wire Types and Arrangements ..	AB23.075.1
Transmission Characteristics ...	304-100-100
Transposition Systems — (see "TRANSPOSITION SYSTEMS")	

Operators' Telephone Circuits

Induction Coils	AB22.171.2
Telephone Sets	AB22.171.3
Transmission Considerations ...	AB22.171.1

P

Pads and Pad Control Arrangements***In General Toll Switching Plan*** .. AB23.025-4***Pads, S Type — Derivation*** AB23.025-6***Paging System, Loudspeaker*** AB22.335Carbon Transmitters,
Characteristics of AB22.335.2Transmission Characteristics
of Loudspeakers AB22.335.1***Paired Conductor Facilities and
Outside Plant Cable — Attenuation
Losses and Transmission Constant******at 1000 Cycles*** 304-160-100***Panel Offices — Length-Resistance-
Loss Curves or Loop Loss Factors —***

(see "LOSSES")

Paper Insulated Cable —

(see "CABLE")

PBX CircuitsTransmission Design Considerations
and Objectives for PBX
Services AB22.310.00
Command Conference Circuit AB22.332
Induction to Radio Circuit AB65.629
Losses — (see "LOSSES")***Peatophone (KS-14580) —******Automatic Telephone Answering
and Recording*** AB22.360.2***Petersen Coil Grounding of Power
Systems — Inductive Coordination******Aspects*** AB64.678***Phantom Circuits***Repeating Coils
Characteristics AB23.327
Selection for Voice-Frequency
Toll Circuits AB23.326***Phase Parameter — Television******Systems*** AB96.100
App. 2***Pilot Wire Transmission******Regulator Sections — Design******Factors*** AB23.176***Plant Engineering and Design***Comparative Cost Studies AB91.025
Subscriber Loop Plant Design
General AB22.075.1
Resistance Design Applied to
Subscriber Loop Plant AB22.075.2***Pole Spacing for Transposition******Systems*** — (see "TRANSPOSITION
SYSTEMS")***Power Factor Correction Capacitors —***

(see "CAPACITORS")

Power InfluenceTelephone Noise and Power
Influence Analysis — Use of the
4A Frequency Analyzer and the
3-Type Noise Measuring Set AB63.478***Power Ratio Related To******Decibels (DB)*** 304-005-100***Power Systems***Carrier Telephone Service
Transmitted Over Power Lines —
Contractual and Coordination
Considerations Between Telephone
Company and Rural Electrification
Administration AB25.176
Checking List AB11.164
Contacts with Telephone Plant —
Protection Considerations — (see
"PROTECTION")
Cooperative Handling of Electrical
Coordination Problems with
Power Organization AB63.062
Edison Electric Institute —
Coordination Activities AB63.061
Equipment
Petersen Coils — Inductive
Coordination Aspects AB64.678
Rectifiers (see "RECTIFIERS")
Selective Devices
Harmonic Reduction
AC Systems AB64.676
DC Systems AB64.675

Power Systems (Cont'd)

Nonresonant Devices	
General Design Principles	AB64.477-2
Practical Design Considerations	AB64.477-1
Transformers — Westinghouse	
AJR Type — Used as Reactors	
with Power Factor Correction	
Capacitors	AB64.477-3
Harmonic Currents and Voltages —	
Propagation	
Fundamentals	AB64.030-10
General Considerations	AB64.030-1
Impedances	AB64.030-9
Mathematical Relations	AB64.030-10
Rural Distribution Systems	AB64.030-3
Test Program Layouts and	
Remedial Measures	AB64.030-2
Transmission Circuits	AB64.030-4
Urban Distribution Systems With	
Capacitors	AB64.030-5
Voltages and Current Ratios	AB64.030-9
Impedances of AC Supply Systems	
at Harmonic Frequencies	
Balanced Components	AB64.027
Residual Components	AB64.028
Inductive Effects on Telephone	
Circuits — (see "INDUCTION")	
Location Relative to Telephone	
Circuits — General	
Engineering Procedure	AB63.076
Rural Systems — Inductive	
Aspects	AB64.400
Waveshape Data	
Circuits Supplying Rectifiers	
6- and 12-Phase Rectifiers	AB64.726
Multiphase Rectifiers	AB64.727
General Summary	AB64.026

Private Line Data Systems

Voice Bandwidth Circuits —	
Schedule 4, Type 4C Channels .	AB27.350.04

Private Branch Exchange Circuits —

(see "PBX CIRCUITS")

Private Line Telephone Systems

Mobile Systems — (see	
"MOBILE TELEPHONE	
SYSTEMS — PRIVATE LINE")	
Multistation Design	AB23.050

Switched Private Line Plans —	
General Transmission	
Considerations	AB23.053.0
Switched Services Networks	
Using Central Office Switching	
Machines — Transmission and	
Operational Features 4-Wire	
No. 5 Crossbar Offices and	
Associated Equipment	AB23.053.1
Switched Private Line Plans Using	
Central Office Switching	
Machines — Design of Network	
Trunks	AB23.053.2
Switched Services Networks	
Using Central Office Switching	
Machines — Transmission Design	
of 4-Wire Subscriber Lines and	
Station Equipment	AB23.053.3
Switched Services Networks	
Using Central Office Switching	
Machines — Design of Access	
Lines and Local PBX Facilities .	AB23.053.4
Switched Services Networks	
Using Central Office Switching	
Machines — Transmission and	
Operational Features of 4-Wire	
No. 1 ESS and Associated	
Equipment	AB23.053.5

Program Transmission Circuits

Cable Systems	
Loading Systems for Short	
15-Kc Circuits	AB26.131
Use of 16- and 19-Gauge H-44-25	
Side Circuits Equipped with	
44A1 Repeaters	AB26.129
Use of 16-Gauge B-22 Pairs —	
Engineering Considerations	AB26.130
Carrier Program Circuits	
Employing A1 and C1 Carrier	
Program Terminals	AB26.132
With Schedules C and D Program	
Facilities	AB26.134.1
Checking List	AB11.126
Click Control	AB26.035
Facilities	
Schedules C and D Facilities	
General	AB26.134.0
Used in Carrier Systems	AB26.134.1
Schedule E Facilities	AB.135

SECTION AB10.001

Program Transmission Circuits (Cont'd)

Loading
Coils and Cases AB45.031
Systems Used for Short 15-Kc
Circuits AB26.131
Local Program Circuits AB26.025.0
Network — 115 Type AB24.074
Open Wire Systems
Equipped with 14A, 14B, or 14C
Amplifiers — Engineering
Considerations AB26.125
Modified System — 100- to 5000-
Cycle Band — (Including Low-
Frequency Equalizer
Characteristics) AB26.127
Operated Over Long Distance
Circuits AB26.126
Schedules C and D Program
Facilities
Using Carrier Systems AB26.134.1
Using Voice-Frequency
Facilities AB26.134.0
Schedule E Program Facilities ... AB26.135
Studio-Transmitter Circuits
Design of Stereo Channels AB26.025.1
Control of Noise, Distortion and
Crosstalk AB26.025.2

***Propagation of Harmonic Currents
and Voltages in Power Systems —***
(see "POWER SYSTEMS")

Protection

Cable Protection Against Lightning
Aerial Cable
Exchange 876-400-100
Toll 876-403-100
Buried Cable
Toll 876-404-100
Cable with Nonmetallic Outer
Sheath 876-401-100
Carrier Systems
N1 System — Protection
Considerations 876-500-100
Open Wire Systems — Drainage
Arrangements for Lightning
Protection 876-415-100
Central Office Protection 876-200-100
Checking List AB11.166

Drainage Arrangements for
Lightning Protection — Open
Wire Carrier Circuits 876-415-100
876-601-100
Fixed Radio Stations and
Microwave Relay Stations 876-210-100
Leased Facilities (Including
Junction of Connecting
Facilities 876-600-100
Mobile Radio Land Transmitters
and Receivers 876-210-100
Multiple Line Wire, Single-pair
Rural Wire and Buried Wire .. 876-402-100
Power Circuit Contacts
Fault Current Calculations
and Coordination 876-103-100
General Considerations 876-102-100
Power Organizations, Cooperative
Handling of Problems AB63.062
Power Stations Served by
Telephone Plant 876-301-100
Principles of Protection 876-100-100
Station Protection 876-300-100
Video Transmission Circuits,
Local 876-410-100

Protective Cable — (see "CABLE")

Protectors and Protector Mountings

General 876-101-100
Short-Circuiting Relay
Protectors AB63.228

Pulsing, Multifrequency — (see
"SIGNALING SYSTEMS")

R

***Radio Frequency Induction To or
From Telephone Circuits*** — (see
"INDUCTION — Radio Frequency")

Radio, Microwave — Frequency

Allocations 304-65-101

***Radio Stations, Fixed, and
Microwave Relay Stations —***

Protection Considerations 876-210-100

Radio Transmitters — (see "TRANS-
MITTERS")

Railway Systems

- Cooperative Handling of Inductive
Coordination Problems AB63.063
Electrified — Induction to
Telephone Systems AB63.275

Ranges, Signaling — Toll Circuits

- 20 Cycles AB23.360
135 Cycles AB23.365

Rating System, Transmission 970-010-100**Ratings, Transmission — Application**

- To Telephone Plant AB92.078

Recorder Connectors, 50 Type AB22.337**Rectifiers — Inductive Coordination Aspects**

- AC Side AB63.110
DC Side AB63.111
Supplying DC Railway Systems .. AB64.725
Waveshape Effects on Power
Circuits
6- and 12-Phase Types AB64.726
Multiphase Types AB64.727

Reflection Losses — (see “LOSSES”)**Regulating Networks For Repeater**

- Circuits 304-600-100

Regulator Sections, Pilot Wire —

- Design Factors AB23.176

Relay Protectors, Short Circuiting .. AB63.228**Remote Control and Telemetering Systems — Engineering**

- Considerations AB27.325

Repeaters

- Balancing Network Data and
Building-Out Sections — (see
“BALANCING NETWORK
DATA AND BUILDING-OUT
FACILITIES”)
Checking List — Repeater
Practices AB11.124

E Type — (see “REPEATERS —
Negative Impedance Type”)

- Fundamentals of Repeaters AB93.125
Hybrid Type — Used in Exchange
Special Service Lines AB22.328
& AB22.328.1

Negative Impedance Type

- Design of Circuits Using ET
Repeater on Loaded
Facilities AB22.151.3
General Features and Engineering
Considerations AB22.150
Index of Sections AB22.150.0
Return Loss Calculations for
Stability and Singing Margin
Design Methods AB22.150.4
SD-95465-01 — Common Systems
(J98611A) AB22.153
Series Type
Circuit Design — General AB22.151.1
Effect on Echo Return Loss 304-412-100
Effect on Line Return Loss 304-110-100
Impedance Values AB22.154.1
Network Constants AB22.155.1
Network Design and Selection ... AB22.152.1
Regulating Networks for Repeater
Circuits 304-600-100
Telegraph Repeaters
13C-1 Type AB83.035
16A-1 Type AB83.031
17A-1 Type AB83.036
102A-1 Regenerative Repeater AB83.126
106A-1 Regenerative Repeater AB83.127
V-3 Type — Used in Exchange
Special Service Lines
Simplified Arrangements AB22.328.1
Transmission Considerations AB22.328
V4 Type
V4 Telephone Repeaters —
Engineering Message Circuits .. AB24.100.01
V4 Telephone Repeaters —
Engineering General AB24.100.00
V4 Telephone Repeaters —
Engineering — Signaling AB24.100.03
PBX-To-Central-Office Trunks
Using E6 Repeaters and Nonloaded
Cable 830C Network at Co and
No Network at PBX AB24.602

SECTION AB10.001

Repeaters (Cont'd)

2-Wire Repeaters Modified for
4-Wire Cable Systems AB23.189
44A-1 Type
Used in 4-Wire Cable Systems AB23.188
Used in 16- and 19-Gauge H-44-25
Side Circuits in Cable Program
Transmission AB26.129

Repeating Coils

Equivalent T Networks 304-231-500
Graphical Determination of Input
Impedance of Repeating Coil with
any Terminating Impedance
General 304-200-100
94E Coil 304-200-101
94F Coil 304-200-102
120C Coil 304-201-100
120CS Coil 304-201-103
120D Coil 304-201-104
120DS Coil 304-201-104
120E Coil 304-201-102
Losses — (see “LOSSES —
Equipment”)
Phantom
Characteristics AB23.327
Selection for Voice-Frequency
Toll Circuits AB23.326
94E and 94F Battery Supply
Types — Characteristics AB22.275
108A and 108B Type Coils —
Characteristics AB22.276
120C, D, E, F, G, H, J, K, L, 120
CS, DS, ES, FS, GS, HS, JS, KS,
and LS Types AB22.277

Resistance Design — Applied to

Subscriber Loop Plant AB22.075.1
& AB22.075.2

Resistance of Cable, Open Wire,

Etc. — (see “CABLE — Resistance”
or “OPEN WIRE — Resistance”,
etc.)

Return Losses

Central Office Balance — (see
“BALANCING NETWORK DATA
AND BUILDING-OUT
FACILITIES”)

Echo Return Loss
Computed Echo Return Losses
Due to Loading Irregularities .. 304-412-102
Effect of Series Type Negative
Impedance Repeater 304-410-101
Facility Losses
Adjusted to Allow for Temperature
Variations of Aerial Cable for
Referring Return Losses in
Computing Line Return Loss .. 304-408-104
For Referring Return Losses in
Computing Line Section Return
Losses 304-408-103
Intermediate Equipment
Autotransformers
16A, 16B, and D-85697 Types ... 304-420-100
24A Type with Nonloaded Cable. 304-421-101
Filters
28B (30B) Type 304-422-100
36B-34A and 51A-52A Types .. 304-423-100
85C (86A) Type 304-424-100
102A Type 304-425-100
121A Type 304-426-100
Intermediate Line Irregularity
Cable in Open Wire
Loaded 304-415-100
Nonloaded 304-414-100
Capacitance Excess or
Deficiency in Loading Sections. 304-412-101
Change in Open Wire Type 304-416-100
Induction Excess or Deficiency
in Loading Sections 304-412-101
Junction Return Loss
Loading Irregularity 304-412-100
Between Loaded Facilities 304-408-100
Between Loaded and Nonloaded
Facilities 304-408-101
Mixed Gauge Nonloaded
Facilities 304-408-102
Loaded Entrance Cable Versus:
Copper Open Wire Phantom
Circuits 304-405-103
8" Copper Wire Side Circuits .. 304-405-100
12" Copper Open Wire Side
Circuits 304-405-101
18" Copper Open Wire Side
Circuits 304-405-102
Open Wire Versus:
Open Wire 304-406-100
Open Wire (12" Side Circuits)
of Unusual Gauges and
Materials 304-407-100

Return Losses (Cont'd)

Toll Cable Versus:	
Open Wire	304-406-100
Toll Cable	304-406-100
Negative Impedance Repeaters	
Effect of Series Type on Line	
Return Loss	304-410-100
Reference Deviation	
Chart for Obtaining	304-409-100
Typical Improvement in Structural Return Loss Obtainable with Deviation Test Splicing ..	304-409-101
Repeater Section Return Loss	
Toll Cable — Echo	304-400-101
Toll Cable — Singing	
Computation	AB23.015
Data	304-400-100
Structural Return Loss	
Adjustments for Short Lengths of Loaded Facility	304-403-101
Computed in The Echo Range ..	304-412-100
For Stability and Singing Margin Design Purposes	304-403-100
Open Wire	304-402-100
Toll Cable	
Computation	AB23.016
Data	304-401-100
Theory of Return Losses and Singing Points	AB93.126

Ringling During Transmission of Test Patterns — Television

Systems	AB96.100
	App. 4

Room Noise — (see “NOISE”)

Rural Electrification Administration (REA) — Contractual and Coordination Considerations in Connection With Use of Power Line Carrier Telephone Service	AB25.176
--	----------

Rural Lines — Transmission Design .	AB22.082
--	----------

Rural Power and Telephone Systems — Inductive Coordination	AB63.085
	& AB64.400

Rural Wire

Loop Loss Factors — (see “LOSSES”)	
Primary Transmission	
Constants	304-110-100

Protection Considerations	876-402-100
Secondary Transmission	
Constants	304-110-101

S

School-to-Home Intercommunicating System — Executone	AB22.350
---	----------

Selective Devices for Power Systems

Harmonic Reduction	
AC Systems	AB64.676
DC Systems	AB64.675
Nonresonant	
General Design Principles	AB64.477-2
Practical Design Considerations .	AB64.477-1

Service Observing

Loudspeaker Equipment	AB22.334
-----------------------------	----------

Shielding

Bonding of Cable Sheaths to Multigrounded Power Neutrals ..	AB63.251
Electromagnetic Shielding Between Power and Telephone Circuits —	
Low Frequencies	AB63.178

Shock Reduction, Acoustic

In Operators' Telephone Circuits ..	AB63.227
-------------------------------------	----------

Short-Circuiting Relay Protectors ...	AB63.228
--	----------

Signaling Systems

Composite Signaling	859-283-101
Converters, Auxiliary Pulse Links and Signal Lead Extension	
Circuits	859-288-101
DX Signaling	975-230-100
E1B 2600-Cycle Single-Frequency Signaling Unit with E and M	
Leads — Common Systems	975-244-100
E2B 2400- or 2600-Cycle Single-Frequency Signaling Unit with E and M Leads — Common	
Systems	975-246-100
E1C 2600-Cycle Single-Frequency Signaling and 4-Wire Terminating Unit — Originating Office End ..	975-248-100
E1D 2600-Cycle Single-Frequency Signaling and 4-Wire Terminating Unit — Terminating Office End .	987-250-100
General	859-100-100

SECTION AB10.001

Signaling Systems (Cont'd)

Multifrequency Pulsing 859-230-101
20-Cycle Single Frequency
System 859-291-101
135-Cycle Signaling — Ranges and
Elementary Principles 859-292-101
1600/2000-Cycle Single Frequency
System 859-201-101
2400/2600-Cycle Single Frequency
Signaling 859-210-101
SS-1 Selective Signaling System,
General Description 982-325-100
SS-1 Selective Signaling System . 859-751-101
Signaling and Systems, Used in
Message Telephone Service,
Between Offices 975-115-100
Local Subscribers Loop Signals
and Systems 975-110-100

Singing Point — (Also see “RETURN
LOSSES”)

Computation Procedures for Message
Toll Circuits AB23.015
Data
Repeater Section
Toll Cable 304-400-100
Structural
Open Wire 304-402-100
Toll Cable 304-401-100
Theory AB93.126

**Single Frequency Signaling Sys-
tems** — (see “SIGNALING
SYSTEMS”)

S Pads — Derivation AB23.025-6

Special Service Lines

Exchange
Transmission Design Considera-
tions and Objectives for Special
Services Circuits AB22.310.00
Crosstalk Index Calculations AB61.211
Design
Effective Terminal Junction
Losses AB43.125.2
Repeaters, Hybrid Type — Use AB22.328
& AB22.328.1
Station Termination
Arrangements AB23.051.3

Toll
Design Considerations AB23.051.2
General Considerations AB23.051.1

Speech Transmission

Theory AB92.076

Splicing

Capacitance Deviation Test
Splicing AB23.191
Number Splicing, Based on Number
Theory for Improved Crosstalk
Performance AB61.110

Split-Gauge Cable

Design and Computation — Local
Battery Loops AB43.551
Resistance Curves
General — (see “CABLE —
Characteristics”)
Related to Circuit Losses —
(see “LOSSES”)

Stability Test Set, 117 Type —

For Telegraph Circuits AB83.078

Staggering Advantages — Carrier

Frequency Crosstalk 304-510-100

Standards of the American

Standards Associated, Incorporated AB91.011

Static in Carrier Systems — (see

“CARRIER SYSTEMS — Noise”)

Station Apparatus

Special Service Termination
Arrangements AB23.051.3
Subscriber Sets — (see “SUB-
SCRIBER SETS”)
Transmission Considerations AB91.026
Zoning AB22.076

Station Protection 876-300-100

Station Sets, Subscriber — (see

“SUBSCRIBER SETS”)

Statistical Methods Applied to

Transmission Engineering AB91.027

Step-by-Step Offices

- Balance Considerations from
Noise Standpoint AB63.241
Loop Loss Factors or Length-
Resistance-Loss Curves (see
"LOSSES")

**Stray Current Areas — Corrosion
Aspects — (see "CORROSION")****Streaking Impairments of Video**

- Window Signals** AB96.100
Ap. 6

Street Lighting Systems, Series —

- Inductive Coordination Aspects** AB64.475

**Structural Return Losses — (see
"RETURN LOSSES")****Stub Cables for Loading Coil Cases —
(see "LOADING — Units, Coils, and
Cases")****Subscriber Loops**

- Effective Losses — (see "LOSSES")
Loading Gains — Common Battery
Loops AB43.519
Plant Design AB22.075.1
Resistance Design Applied to Sub-
scriber Loop Plant AB22.075.2
Transmission Data with Improved
Subscriber Instruments AB43.080

Subscriber Sets

- Cold Cathode Tube Sets — Inductive
Coordination Aspects AB63.238
F1A-AST Sets
Loop Loss Factors or Length-
Resistance-Loss Curves — (see
"LOSSES")
Room Noise Impairment Data AB43.301
Volume Gain Versus Conductor
Loop Resistance AB43.534
Nontube Sets — Susceptiveness to
Induction AB63.240
Receiver Noise Related to Noise-to-
Ground and Noise-Metallic AB63.239
Relative Volumes of 500 Series Set
and F1A-AST Local Battery Sets. AB43.535

- Transmission Data AB43.080
128C-1 Type for Teletypewriter
Use AB83.039
500 Type
General Description AB22.066.1
Loop Loss Factors or Length-
Resistance-Loss Curves — (see
"LOSSES")
Transmission Performance
A, B, J, and K Series AB22.066.2
C and D Series AB22.066.3
Variations in Performance with
Current Supply AB43.571
Volume Gain Versus Conductor
Loop Resistance AB43.534

Supply Systems Data

- Checking List AB11.164

Switchboards

- Central — Transmission
Considerations AB22.227
Telegraph Loop Switchboard,
No. 63-B-1 AB83.040

**Switches, Electrolysis — (see
"CORROSION — Equipment Used")****Switching Plan — Toll**

- Future Planning AB23.025-3
General Considerations AB23.025-1
Loss Considerations AB23.025-2
Pads and Pad Control
Arrangements AB23.025-4
Via Net Loss Factors and S Pads —
Derivation AB23.025-6

Symbols, Schematic, For Attached —

- Contact Drawings** 005-108-111

**Symmetrical Components Method of
Determining Short Circuit**

- Currents** AB64.329

T**Tandem Trunks — (see "TRUNKS")****Telegraph**

- Checking Lists
General AB11.182
Loops and Stations AB11.184
Systems AB11.183

Telegraph (Cont'd)

Circuit Layouts	AB95.113
Coefficients of Transmission	AB82.026
Distortion	
Characteristic Distortion — Theory and Reduction by Equalization .	AB95.105.1
General	AB95.105
Frequency Allocations	
Carrier Telegraph Systems	
Western Electric Company	
Manufacture	304-605-102
Furnishing of Circuits to Western Union Under Special Contract ..	312-100-000
General Considerations	AB95.101
Induction to Radio Circuits	AB65.627
Loops	
For Connection Between Private Lines and Teletypewriter	
Stations	AB84.025
General Aspects	AB95.111
Length Limits	AB84.026
Noise Influence	AB84.026
Switchboard (No. 63-B-1)	AB84.040
Waveshaping Arrangements	
Application	AB84.026
Theory	AB84.025
Notes on Series of Lectures on Telegraph Systems	AB95.100
Outlying Points	AB95.112
Repeaters	
13-C-1 Type for One-Way Split Loop	AB83.035
16-A-1 Type (Grounded) for Differential Duplex or Two Path Polar Operation	AB83.031
17-A-1 Type	AB83.036
Switchboard, Telegraph Loop (No. 63-B-1)	AB84.040
Systems	
Engineering Considerations	
40A, 40B, 40C1 Systems	AB83.045
40C1 Systems	AB83.046
43A1 System	AB83.047.01-.05
Open Wire Systems	AB83.037
Toll Telegraph Systems	AB95.104
Transmission Losses	
43A1 System	AB83.047.1
Test Sets	
117-Type Stability Test Set	AB83.078
Test Signal Sources	AB95.110
Theory of Operation	AB95.102
Toll Telegraph Systems	AB95.104
Transmission Coefficients	AB82.026

*Telemetry and Remote Control
Systems — Engineering*

<i>Considerations</i>	AB27.325
-----------------------------	----------

Telephone Answering Sets

1A Type	AB22.360.1
Peatophone (KS-14580)	AB22.360.2

Telephone Circuits — General

Cost Studies	AB91.025
Frequency Allocations — Carrier Systems	
Western Electric Company	
Manufacture	304-605-100
Telephone Influence Factors of Power System Currents and Volt- ages — Coupling Units for Use with the 3-Type Noise Measuring Set	AB63.477.1

*Telephone Repeaters — (see
“REPEATERS”)**Telephone Sets — (see “SUB-
SCRIBER SETS”)**Telephotograph Service*

Envelope Delay — (see “DISTORTION”)	
Equipment Losses — (see “LOSSES — Equipment”)	
Facsimile Transmission, Channels for — Engineering	
Considerations	AB27.320
Level Compensator, 71A1	AB27.110
Telephotograph Channels — Schedule 2 with Special Conditioning	AB27.350.05
Telephotograph Channels — Schedule 2	AB27.350.06

Teletypewriter Service

Distortion	AB95.106 & AB95.106.1
Loops — For Connection of Tele- typewriter and Private Lines	
Length Limits	AB84.026
Noise Influence	AB84.026
Switchboard (No. 63-B-1)	AB84.040
Waveshaping Arrangements	
Application	AB84.026
Theory	AB84.025

Teletypewriter Service (Cont'd)

Monitoring	AB95.108
Repeaters, Regenerative Types	
102A-1 Type	AB83.126
106A-1 Type	AB83.127
TWX Service Switching Plan — Transmission Engineering Considerations	AB83.060.2
Wide Area Data Service Switch- ing Plan — Transmission Engineer- ing Consideration — Trunk Equalization	AB83.060.3
Subscriber Set, 128C-1 for Single Line TLX Circuits	AB83.039
Testing Facilities	
Test Distributor, 100A	AB83.081
Test Set, No. 1A	AB83.080
100 Speed Service	AB83.050

Television

A2 System — Design of Mop-Up Equalizers	AB26.401
A2A System	
Design Information	AB26.402.3
Engineering Considerations	AB26.402.1
Line Facilities	AB26.402.2
Channels for Polling Television	
Receivers	AB27.500
Checking List	AB11.126
General	AB26.404.10
Distribution Systems —	
54 to 88 mc	AB26.404.30
Mop-Up Equalization —	
25 to 50 mc	AB26.404.21
Primary Feeder Systems —	
25 to 88 mc	AB26.404.20
Secondary Feeder Systems —	
54 to 88 mc	AB26.404.25
Coaxial Cable Video Transmis- sion Systems — RF Type — General Design Considera- tions	AB26.405.10
Coaxial Cable Television Sys- tems — RF Type 54 to 216 Megacycle Band Design	AB26.405.20
Color Television — Principles and Transmission Factors	AB96.100 App.1
Echo — Analysis of Echo Signals..	AB96.100 App. 3
Echo Rating in Closed Circuit Television Distribution Systems ..	AB96.101

Fundamentals of Transmission ...	AB96.100
Horizontal Synchronizing Interval of 525 Line Monochrome Signals ...	AB96.100 App. 5
Phase Parameter — Derivation ...	AB96.100 App. 2
Picture Transmission — Relationship Between Quality, Bandwidth, and Line of Transmission	318-015-101
Protection Consideration for Local Circuits	876-410-100
Ringling — Vertical Test Pattern Wedges	AB96.100 App. 4
Streaking Impairments of Window Signals	AB96.100 App. 6
Synchronizing Interval, Horizontal — Analysis	AB96.100 App. 5
Vertical Test Pattern Wedges — Ringling	AB96.100 App. 4
Video Tape Signal Analysis	318-015-111
Window Signal Streaking	AB96.100 App. 6

Terminal Junction Losses —

(see "LOSSES")

Terminating Sets, 4-Wire — Losses

(see "LOSSES — Equipment")

Test Facilities — General

Capacity Bridge, No. 2A	AB45.176
Capacity Unbalance Sets	AB94.176
Corrosion — Measuring Instruments and Equipment	877-208-100 & 877-206-100
Ground Megger For Earth Resistivity Measurements	876-701-100
For Ground Measurements	876-700-100
Impedance Bridge, No. 2A	AB45.177
Sending Panel, No. 2A	AB22.805
Stability Test Set, No. 117 — For Telegraph Circuits	AB83.078
Test Distributor for Teletype- writer Circuits	AB83.081
Test Set, No. 1A — For Teletype- writer Circuits	AB83.080
Visual Indicators for Measuring Exchange Plant Noise	AB65.226

SECTION AB10.001

Toll Circuits

Balance Considerations AB23.331
Balancing Networks, 115 Type —
 Use AB24.074
Cable
Characteristics, Descriptions, etc. —
 (see “CABLE”)
Losses — (see “LOSSES”)
Checking Lists
Cable Data AB11.144
Transmission Data Sheets AB11.147
Transmission — General AB11.123
Connecting Trunks — (see
 “TRUNKS”)
Crossbar, No. 4 — Transmission
 Aspects AB23.030
Crosstalk
 Between Toll Circuits AB61.010
Cable Crosstalk
Entrance and Intermediate
 Cables AB23.128
Factors Affecting Crosstalk AB61.020.2
Number Splicing to Improve
 Crosstalk Performance AB61.110
Coupling Data — (See “CROSS-
 TALK — Coupling Data”)
Index AB61.010
Induction — (see “INDUCTION”)
Losses — (see “LOSSES”)
Message Circuits
 Circuit Layout Considerations AB23.010
 Singing Computation Procedures.. AB23.015
 Noise
 Internal AB65.175
 Measurements
 Exploring Wire Methods AB63.130
 Open Wire Noise Measurements ... AB63.376
 Open Wire Circuits
 Noise Estimation Methods AB63.125
 Noise Measurement AB63.376
 Voice-Frequency Circuits — Noise
 Due to Secondary Induction AB63.127
 Office Balance Considerations AB23.331
 Open Wire
 Engineering Considerations
 Autotransformers and Junction
 Filters AB23.075.4
 Entrance and Intermediate
 Cables AB23.075.3
 General Aspects AB23.075.0
 Wire Types and Arrangements .. AB23.075.1

Noise — (see “TOLL CIR-
 CUITS — Noise”)
Transmission Characteristics ... 304-100-100
Phantom Repeating Coils for Voice-
 Frequency Toll Circuits AB23.326
Return Losses — (see “RETURN
 LOSSES”)
Signaling Systems
 Composite Signaling AB23.370.5
 Converters, Auxiliary Pulse Links
 and Signal Lead Extension
 Circuits AB23.370.9
 General AB23.370.1
 Multifrequency Pulsing AB23.370.4
 20-Cycle Signaling Range AB23.360
 135-Cycle Signaling — Ranges and
 Elementary Principles AB23.365
 1600/2000-Cycle Single Frequency
 System AB23.370.3
 2400/2600-Cycle Single Frequency
 Signaling AB23.370.2
 Special Service Lines — (see
 “SPECIAL SERVICES”)
 Surveys of Transmission AB23.028
 Switching Plan — General
 Future Planning AB23.025-3
 General Considerations AB23.025-1
 Loss Considerations AB23.025-2
 Pads and Pad Control
 Arrangements AB23.025-4
 Via Net Loss Factors and S Pads —
 Derivation AB23.025-6
 Telegraph Systems — (see
 “TELEGRAPH”)
 Variations in Transmission Char-
 acteristics of Long Toll Circuits .. AB23.170
 Voice-Frequency Circuits
 Capacitance Deviation Test Splicing
 and Reel Allocation AB23.191
 Noise — (see “TOLL CIRCUITS —
 Noise”)
 Phantom Repeating Coil Selection . AB23.326

Training Material, Transmission

Checking List AB11.190

Transformers

Bell System
Losses — (see “LOSSES —
 Equipment”)
KS-14792, L5 Line Matching
 Transformer 024-191-102

Transformers (Cont'd)

- Repeating Coils — (see "COILS — Repeating")
- Westinghouse, Type AJR
- Used as Reactors With Power Factor Correction Capacitors AB64.477-3

Transmission

- Checking Lists
- Basic Data 304-000-000
- Equivalent Data AB11.143
- Over-all Transmission AB11.121
- Toll 304-000-000
- Coefficients — For Telegraph Systems AB82.026
- Constants for Cable or Rural Wire — (see "CABLE" or "RURAL WIRE")
- Data Sheets for Toll Transmission — General 304-000-000
- Distortion Impairment Data — Terminating Traffic
- F1A-AST Sets — H-88 Switching
- Trunks 304-602-100
- Effective Transmission Data
- Checking List AB11.143
- Used With Improved Subscriber Instruments AB43.080
- Impairment Data — Terminating Traffic
- F1A-AST Sets — H-88 Switching
- Trunks 304-602-100
- Losses — (see "LOSSES")
- Measurement
- Operators' Circuits AB22.171.1
- Ratings, Effective — Applied to Telephone Plant AB92.078
- Regulator Sections, Pilot Wire — Design Factors AB23.176
- Standards — Exchange Area AB22.025
- Statistical Methods Applied to Transmission Engineering AB91.027
- Surveys of Toll Transmission AB23.028
- Theory — Induction AB92.075

Transmission Rating System 970-010-100

- Volume Rating Plan, General Considerations AB21.300
- Volume Rating Plan, Reading
- Volume Indicator AB21.303

Transmitters, Radio

- Induction to Telephone Plant AB63.325
- Mobile Radio Land Transmitters and Receivers — Protection Considerations AB66.130
- Studio-Transmitter Circuits

Transmitter Units

- Output Variations With Current Supply AB43.570
- Paging Systems, Carbon Transmitters, Characteristics of AB22.335.2

Transposition Systems

- Checking List AB11.162
- Construction Considerations, General AB62.226
- Coordinated Layouts — Design
- General Procedures AB62.327
- Transpositions in Power Circuits .. AB62.326
- Transpositions in Toll Circuits AB62.325
- Cross-Induction Performance
- General Information AB62.125
- K-8 System AB62.181
- K-10 System AB62.180
- Crosstalk Coupling — Open Wire
- Coefficients AB62.040.3
- Far-End "U" Factors Expressed As Summations of Near-End "T" Factors AB62.040.11
- Frequencies Up to 30 Kc
- Application of Crosstalk Coupling Theory to Transposition Design .. AB62.032
- Computation Factors — Tables ... AB62.031
- Theory AB62.030
- Frequencies Up to 156 Kc
- Application of Crosstalk Coupling Theory to Transposition Design AB62.042
- Computation Factors
- Derivation AB62.040.2
- Tables AB62.041
- Theory AB62.040.10
- Near-End "T" Factor Summations — Used in Evaluating Far-End "U" Factors AB62.040.11
- Description of Systems
- Alternate Arm Lines
- General Description AB62.082

Transposition Systems (Cont'd)

Reduction of Type C Side-to-Side Crosstalk AB62.085
 C-1 System AB62.088
 D Carrier System AB62.079
 Exchange System — General AB62.426
 Exposed Line System AB62.076
 J-1 System AB62.084
 J-2 System AB62.086
 J-5 System AB62.090
 K-8 System AB62.081
 K-8-2 System AB62.083
 K-10 System AB62.080
 0-1 System
 Crosstalk Estimation AB62.093.1
 General Description AB62.093
 R System, and Design AB62.429
 S Pole Transpositions —
 Application AB62.089
 Standard System AB62.075
 Whole Line Units AB62.077
 Diagram Construction from
 Fundamental Types AB62.224
 General Considerations AB62.025
 Pattern Charts AB62.227
 Pole Location AB62.225
 Toll Circuits — Engineering
 Considerations AB23.075.2

Trunks

Design
 Trunk Design Loss Objectives .. AB21.025.01
 Definitions of Trunk Losses AB21.025.02
 Exchange Area Plant..... AB22.125
 Interlocal Trunks AB22.126
 Toll Connecting Trunks
 2-Wire Toll Switching AB22.128.1
 4-Wire Toll Switching AB22.128.2
 Toll Connecting and Tandem
 Trunks
 Design Notes When Intertoll
 and Intertandem Trunks Are
 Terminated in 2-Wire Switches
 at VNL AB22.128.3

U

Unbalances (Capacity) in Quadded

Cable — Theory AB94.176

Unbalance Sets for Measuring

Capacity Unbalance AB94.176

Urban Wire

B Urban Wire — Primary
 Transmission Constants 304-111-100
 B Urban Wire — Secondary
 Transmission Constants 304-111-102
 Protection Considerations 876-402-100

V

Varistors Used As Acoustic

Shock Reducers AB63.227

Vertical Test Pattern Wedges —

Television Systems AB96.100
 App. 4

**Via Net Loss Factors — Toll
Switching**

Derivation AB23.025-6
 List of Factors (Antisidetone
 Sets) 304-601-100

Video Systems — (see “TELEVISION”)

Visual Indicators — Adapted for

Measuring Evchange Plant Noise .. AB65.226

Voice Controlled Positional Gain

**Units — Transmission Features —
With Intercepting Service**

Operators AB22.172.3

Voice-Frequency Toll Circuits —

(see “TOLL CIRCUITS”)

Voltage Distribution and Voltage

Differences — Low-Frequency

Induction AB63.225

Voltage Ratio Related to

Decibels (DB) 304-006-100

Volume Gains vs. Conductor Loop

Resistance — Comparison of 500

Series Set and F1A-AST Common

Battery Set AB43.534

W

Waveshaping Arrangements and Data

Power Systems	
Circuits Supplying Rectifiers	
6- and 12-Phase Rectifiers	AB64.726
Multiphase Rectifiers	AB64.727
Computing and Recording	
Results of Waveshape	
Measurements	AB63.480
General Summary	AB64.026
Telegraph Loops	
Application	AB84.026
Theory	AB84.025

Weightings, Frequency — For Circuit Noise Measurements

AB63.350
& AB63.377

Western Union Telegraph Company Circuits Furnished by Telephone Companies — Engineering Considerations

312-100-000

Window Signal Streaking —

Video Systems	AB96.100
	App. 6

Wire

Drop Wire — (see “DROP WIRE”)	
Exploring Wire — Used in	
Noise Studies	AB63.130
Open Wire — (see “OPEN WIRE”)	
Rural Wire — (see “RURAL WIRE”)	
Urban Wire — (see “URBAN WIRE”)	

Z

Zero-Sequence Impedances of Power Circuits —

Computation	AB64.331
--------------------------	----------

Zoning of Subscriber Apparatus	AB22.076
--	----------