

# MANUAL TRUNK TRANSMISSION TESTS

## SUMMARIZATION PROCEDURES

### NETWORK TRUNK TRANSMISSION MEASUREMENT PLAN

CONTENTS	PAGE
1. GENERAL . . . . .	1
2. MANUAL MEASUREMENT RECORDING . . . . .	2
3. SUMMARIZATION PROCEDURES FOR NTTMP1 . . . . .	4
4. DATA TRANSMISSION TO CRS . . . . .	5

**Figures**

1. Example of Form EO-004 . . . . .	6
2. Example of Form NTTMP1 . . . . .	7

**Tables**

A. Index Results Summary Definitions . . . . .	8
--	---

**1. GENERAL**

**1.01** This section describes the summarization procedures for manual trunk transmission tests that are to be included in the Network Trunk Transmission Measurement Plan (NTTMP). Procedures are included for summarizing test results for the transmission characteristics of loss, C-message noise, and balance. Gain-slope and C-notch noise test results are optional.

**1.02** Whenever this section is reissued, the reason(s) for reissue will be listed in this paragraph.

**1.03** Transmission tests are required on all trunks specified in AT&T Section 660-450-301. Trunks will have to be tested manually if not tested by an automatic testing system such as the Centralized Automatic Reporting On Trunks (CAROT) generic issue 2 (2CA2), CAROT generic issue 3 (2CA3), the Outgoing Trunk Transmission System (OTTS), or the Automatic Trunk Measuring System (ATMS). The inventory of trunks requiring manual tests is to be maintained at the Switching Control Center (SCC) responsible for the Plant Control Office (PCO) maintenance function.

**1.04** The methods to be used for making manual transmission tests are explained in the various 660 divisions of AT&T Practices pertaining to the type of trunk and switching machine in which the trunk resides.

**1.05** To maintain uniformity throughout the NTTMP, loss and C-message noise readings are taken and processed on a measurement basis. That is, each direction of transmission is treated individually. For example, a trunk measured for C-message noise in both directions is counted as two measurements. Thus, it is possible to have two measurements that exceed the maintenance limit (ML) and receive two Q1s, or have the two measurements exceed the immediate action limit (IAL) and receive two Q2s, or receive one Q1 and one Q2 for a single trunk measured in both directions.

**1.06** Balance, gain-slope, and C-notch noise are handled on a per-trunk basis with results recorded as tests. Tests are based on transmission characteristic measurements of the trunk with worst case single jeo-

**NOTICE**

This document contains proprietary information that cannot be released outside Bell Communications Research (Bellcore) except to a regional Bell company without written permission of Bellcore.

parly. This means the worst condition found in either direction will be the only exception charged to the trunk. An example is a trunk with a Q1 in the near-to-far (N-F) direction and a Q2 in the far-to-near (F-N) direction. The Q2 result is recorded on the report.

**1.07** Balance tests include measurements for echo return loss (ERL), singing return loss (SRL), and singing return loss high (SRLH) and are counted as one balance test.

**1.08** The ML for loss (1.0 dB and 1.5 dB) specified in AT&T Section 660-450-301 is not used as an indexing limit in NTTMP. Instead, a Q1 indexing limit of 1.7 dB is used. Using this limit for loss makes the limit consistent across all testing systems. Test limits to be used for the other transmission characteristics are explained in AT&T Section 660-450-301.

**2. MANUAL MEASUREMENT RECORDING**

**2.01** Manual measurements are recorded on Form EO-044 (see Fig. 1). More than one Form EO-044 may be required for each PCO. The test results are compared to the ML and IAL limits for each characteristic being tested. The following steps are required to complete Form EO-044. The Q1 and Q2 exceptions are recorded in the appropriate column for summarization.

**HEADING INFORMATION**

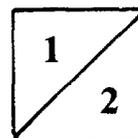
**2.02** The following provides a brief summary of the heading information:

- (a) The Common Language Location Identification (CLLI) code or other originating office identification should be entered here.
- (b) The CLLI code or other terminating office identification or the 1-way trunk group or non-control office for a 2-way trunk group should be entered here.
- (c) Enter the report month and year of the data recorded.
- (d) Enter the 4- or 5-digit Centralized Results System (CRS) chain code for the PCO. This number is used to identify the office for input, report, and retrieval purposes in CRS.

**LOSS, NOISE, AND BALANCE MEASUREMENTS**

**2.03** Each of the columns other than the totals will be completed as follows.

- (a) *Trunk Designation - Column A:* Write in trunk number or other identification.
- (b) *FAX Type - Column B:* Identify facility type (see Table A).
- (c) *Dir - Column C:* This column reflects the direction of the measurement. The column is preprinted for entries of near-to-far (N-f) measurements and far-to-near (F-N) measurements.
- (d) *Sched - Column D:* This is a 2-part column. If a trunk is scheduled for loss testing during the month, a one should be entered in the upper portion of the box indicating one trunk scheduled. The lower portion of the box reflects the number of measurements scheduled for this trunk. If the trunk is scheduled to be measured in both directions, enter a two. A trunk scheduled to be measured in both directions for loss would appear in column D as follows:



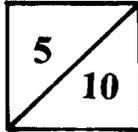
- (e) *C. Trks - Column E:* Enter a checkmark or similar notation to note that a measurement was taken and this is a completed trunk for loss measurement.

- (f) *EML - Column F*: Write in the expected measured loss (EML) for each trunk in this column.
- (g) *AML - Column G*: Enter the actual measured loss (AML) for the corresponding direction of transmission (N-F or F-N) in this column.
- (h) *Dev - Column H*: Record the absolute difference (deviation) between the EML and AML for the corresponding direction of transmission. If both numbers are the same sign, subtract the smaller from the larger. If the numbers are of the opposite sign, add the two numbers to find the deviation. For instance, the deviation between +2 dB and -2 dB is 4.
- (i) *>1.7 dB < 3.7 dB - Column I*: Enter a checkmark or similar notation if the deviation exceeds 1.7 dB, but is less than or equal to the IAL (3.7 dB). This is a Q1 failure.
- (j) *>3.7 dB - Column J*: Record a checkmark or similar notation if the deviation exceeds 3.7 dB, the IAL. This is a Q2 failure.
- (k) *Sched. - Column K*: If a trunk is scheduled for noise testing during the month, a one should be entered in the upper portion of the box. A one or two should be entered in the lower portion of the box depending on whether the trunk is scheduled to be measured in one or both directions for noise.
- (l) *C. Trks - Column L*: Enter a checkmark or similar notation to note that a measurement was completed.
- (m) *ML - Column M*: Enter the noise ML for the trunk in this column.
- (n) *IAL - Column N*: Enter the noise IAL for the trunk in this column.
- (o) *dBrnc - Column O*: Enter the actual noise reading for the corresponding direction of transmission.
- (p) *>ML <IAL - Column P*: Enter a checkmark or similar notation if the noise reading exceeds the ML, but not the IAL. This is a Q1 failure.
- (q) *>IAL - Column Q*: Enter a checkmark or similar notation if the noise reading exceeds the IAL. This is a Q2 failure.
- (r) *ERL ML/IAL - Column R*: If a trunk is scheduled for balance testing, enter the appropriate ML value for ERL in the top portion of the box and the IAL in the lower portion.
- (s) *SRL ML/IAL - Column S*: If the trunk is scheduled for balance testing, enter the appropriate ML value for SRL in the top portion of the box and the IAL in the lower portion.
- (t) *ERL - Column T*: Enter the ERL reading for each trunk in this column.
- (u) *SRL - Column U*: Enter SRL results for each trunk in this column.
- (v) *SRLH - Column V*: Enter the SRLH results for each trunk in this column.
- (w) *Q1 - Column W*: Compare ERL, SRL, and SRLH results to the respective ML and IALs. If one or more of the results in either the N-F or F-N directions exceed the ML and all the test results are less than the IAL, this is a Q1 test. The balance characteristic is reported in terms of tests on the basis of worst case single jeopardy. Enter a checkmark or similar notation to identify this as a Q1 test.
- (x) *Q2 - Column X*: Compare ERL, SRL, and SRLH results to their respective ML and IALs. If one or more of the results exceeds the IAL, the test is considered a Q2 test. Enter a checkmark or similar notation in this column to identify this as a Q2 test.

## TOTALS

**2.04** These data will be used to complete totals for the following columns:

- (a) *Sched. - Column D*: The upper portion of each box in this column represents trunks scheduled. Adding the values in the upper portion of each box will give a summation of the total trunks scheduled. The lower portion of each box in this column represents measurements scheduled. Adding the values in the lower portion of each box will give a summation of the total measurements scheduled. For example, if five trunks are scheduled for loss testing and measurements are made in both directions, the totals box for Column D would appear as follows:



- (b) *C. Trks - Column E*: Add the number of trunks on which testing was completed and enter the result in this box.
- (c) *AML - Column G*: This column reflects the actual measured loss for each trunk and each direction measured. Count the number of entries in this column and enter the sum in the Totals box. This reflects the number of measurements completed.
- (d) *>1.7 dB <3.7 dB - Column I*: Enter the total number of Q1 failures.
- (e) *>3.7 dB - Column J*: Enter the total number of Q2 failures.
- (f) *Sched. - Column K*: The upper portion of each box in this column represents trunks scheduled for noise testing. Adding the values in the upper portion of each box will give a summation of the total trunks scheduled. The lower portion of each box in this column represents measurements scheduled. Adding the values in the lower portion of each box will give a summation of the total measurements scheduled.
- (g) *C. Trks - Column L*: Enter the sum of the completed trunks.
- (h) *dBrnc - Column O*: This column will reflect the actual measured noise level for each trunk and each direction measured. Count the number of entries in this column and enter the sum in the Totals box. This reflects the number of noise measurements completed.
- (i) *>ML <IAL - Column P*: Enter the total number of Q1 failures.
- (j) *>IAL - Column Q*: Enter the total number of Q2 failures.
- (k) *ERL ML/IAL - Column R*: The ERL MLs and IALs should have been entered for each scheduled trunk. Each box should consist of two entries (ML and IAL). Count each box which has two entries and enter the result in the Totals box. This number reflects the number of trunks scheduled

for balance testing. Since each trunk tested is one test, this number also represents the number of scheduled tests.

- (l) *ERL - Column T*: Count the number of entries in this column and enter the result in the Totals box. This total is both completed trunks and completed tests.
- (m) *Q1 - Column W*: Enter the total number of Q1 failures.
- (n) *Q2 - Column X*: Enter the total number of Q2 failures.

### 3. SUMMARIZATION PROCEDURES FOR NTTMP1

3.01 If more than one Form EO-044 has been completed during the month for a PCO, the totals for each sheet must be added before entering the data on the NTTMP Manual Input Form NTTMP1 (Fig. 2) for the PCO. Data from Form EO-044 should be entered on Form NTTMP1 using the following format:

<b>FORM EO-044</b>	<b>NTTMP1</b>
Col. D Upper Portion- Trunks Scheduled	Loss Col. A
Col. D Lower Portion- Measurements Scheduled	Loss Col. B
Col. E Trunks Completed	Loss Col. C
Col. G Completed measurements	Loss Col. D
Col. I Q1 measurements	Loss Col. E
Col. J Q2 measurements	Loss Col. F
Col. K Upper portion- Trunks scheduled	C-message noise Col. A

**FORM EO-044****NTTMP1**

Col. K  
Lower  
portion-  
Measurements  
scheduled

C-message  
noise Col. B

Col. L  
Completed  
Trunks

C-message  
noise Col. C

Col. O  
Completed  
measurements

C-message  
noise Col. D

Col. P  
Q1  
measurements

C-message  
noise Col. E

Col. Q  
Q2  
measurements

C-message  
noise Col. F

Col. R  
Trunks  
scheduled

Balance Col. A

Col. R  
Tests  
scheduled

Balance Col. B

Col. T  
Trunks  
completed

Balance Col. C

Col. T  
Test  
completed

Balance Col. D

Col. W  
Q1 Tests

Balance Col. E

Col. X  
Q2 Tests

Balance Col. F

**3.02** It should be noted that only the completed measurements (Col. D), Q1 measurements (Col. E), and Q2 measurements (Col. F) are necessary to compute a loss index for the PCO. The other data provide information regarding the portion of testing that is completed.

**3.03** Results of C-notch noise and gain-slope testing procedures will be provided in the future for Form EO-044 if necessary.

**3.04** If tests were scheduled but not completed, record "NAV" in the appropriate space on Form NTTMP1. The "NAV" means the data are not available. The data will be considered as unsatisfactory and reported as Band U on the PCO results from the CRS. For characteristics that do not have to be tested, used the notation "E" to indicate an empty field.

#### 4. DATA TRANSMISSION TO CRS

**4.01** The report month interval for NTTMP is defined as the 23rd of the previous month to be 22nd of the current month. It is recommended that summaries developed on Form NTTMP1 for each PCO be input to CRS by the 10th working day after the end of the report month. However, this is under the control of the Bell Operating Company.

**4.02** Form NTTMP1 is the same as the CRS input mask; therefore, the information can be directly input to CRS via a data terminal or teletypewriter.

(Insert Your Company Logo)

# NTTMP Manual Trunk Transmission Record

EO 044  
(1-84)

Page \_\_\_\_\_ Of \_\_\_\_\_

											PCO (A)			Other Office (B)			Date (C)		CRS (D)						
Trunk Designation	FAX Type	Dir	Loss				C-Message Noise							Balance											
			Sched Trks	C. Trks	EML	AML	Dev.	>1.7dB ≤3.7 dB	>3.7dB	Sched Trks	C. Trks	ML	IAL	dBrc	> ML ≤ IAL	> IAL	ERL	SRL	ERL	SRL	SRLH	Q1	Q2		
			Meas.							Meas.							ML IAL	ML IAL							
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X		
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						
		F-N	/																						
		N-F	/																						

NTTMP SUMMARY REPORT

MANUAL INPUT

FORM = NTTMP1

OFFICE =

MONTH =

YEAR =

\*\*\*\*\*  
 \* MEASURED COMPONENTS \*  
 \*\*\*\*\*

---

	A	B	C	D	E	F
	SCHEDULED		COMPLETED		Q1	Q2
CHARACTERISTICS	TRUNKS	MEAS/TST	TRUNKS	MEAS/TST	MEAS/TST	MEAS/TST
1 LOSS						
2 C-Message NOISE						
3 BALANCE						
4 GAIN SLOPE*						
5 C-NOTCH NOISE*						

Notes: Loss and C-message noise are reported as measurements for columns B, D, E, and F.

Balance, gain slope, and C-notch noise are reported as tests for column B, D, E, and F.

For loss, Q1 is the number of measurements that exceed 1.7 dB, but are less than or equal to 3.7 dB; Q2 is the number of measurements that exceed 3.7 dB.

\* Optional Input.

Fig. 2—Example of Form NTTMP1 (3.01)

**TABLE A**  
**INDEX RESULTS SUMMARY DEFINITIONS**

DATA ITEM	DEFINITIONS
TYP	<p>Type of far-end test line:</p> <p>9 - ROTL to 105 or combination 100-type test line</p> <p>8 - ROTL to 102-type test line</p>
NTRKS	<p>Total number of trunks in category according to TYP, FAC, and FREQ</p> <p>Facility type:</p> <p>6 - Combination E repeater, nongain with or without hybrid to 100 or 105 test line</p> <p>5 - Combination E repeater, nongain to 102 test line</p> <p>10 - Combination other repeater and carrier to 105 test line</p> <p>Note: 10 does not allow termination to 102 or 100 type test line</p>
FREQ	<p>Frequency of testing:</p> <p>05 - Daily</p> <p>10 - Weekly</p> <p>20 - Biweekly</p> <p>30 - Monthly</p>