Recommendation E.422

OBSERVATIONS ON INTERNATIONAL OUTGOING TELEPHONE CALLS FOR QUALITY OF SERVICE

1 Objectives concerning Table 1/E.422 and Table 2/E.422

1.1 The purpose of service observation in the international service is to assess the quality of service obtained by the calling subscriber. Consequently, it is essential to have factual or objective recording of observations (i.e., successful and unsuccessful calls), and to present them in the form of a table (see Table 1/E.422 for manual or semi—automatic observations and Table 2/E.422 for automatic observations).

2 Manual or semi—automatic observations (Table 1/E.422)

2.1 Table 1/E.422 should be capable of being completed through the use of a wide range of observation facilities, i.e. from the simple to the sophisticated.

TABLE 1/E.422

Observations of international outgoing telephone calls for quality of service

Country of origin ..... Point of access:.....

Outgoing international exchange..... National side .....

Group of circuits..... Link circuits .....

Service automatic [a] Outgoing side .....
semi—automatic [a]

Period: from ..... to ..... Time of observations .....

Category	Number		Percentage	
	Subtotal	Total	Subtotal	Total
1. Calls successfully put through (see note 1).....		...		...
2. Ring tone received but no answer.....		...		...
3. Unsuccessful calls: *Positive* indication of congestion, including subscriber busy, from beyond the outgoing international exchange. Visual signal, tone or recorded announcement		...		...
3.1 Subscriber busy/congestion indicated by visual signal.....	...		...	
3.2 Subscriber busy/congestion indicated by busy/congestion tone	...		...	
3.3 Congestion indicated by a recorded announcement	...		...	

TABLE 1/E.422 *(cont.)*

4. Unsuccessful calls: Other visual signals, tones or recorded announcements, not positively identified as category 3 or 8.....		...		...
4.1 Visual signal received.....	...		...	
4.2 Tone received	...		...	
4.3 Recorded announcement received	...		...	
5. Unsuccessful calls for other technical reasons.....		...		...
5.1 Wrong number obtained.....	...		...	
5.2 Abandoned due to very poor speech transmission	...		...	
5.3 No tone, no answer after waiting ... seconds.....	...		...	
5.4 Reception of answer signal when the called party does not reply	...		...	
5.5 Other failures of a technical kind	...		...	
6. Unsuccessful calls due to incorrect handling by the calling party		...		...
6.1 Wrong number dialled	...		...	
6.2 Incomplete number	...		...	
6.3 Call prematurely abandoned before receipt of signal, tone or announcement (within less than ... seconds).....	...		...	
6.4 Call prematurely abandoned after receipt of ring tone (within less than 30 seconds)	...		...	
6.5 Other failures due to incorrect handling	...		...	
7. *Total calls monitored* (categories 1—6)		...		100
8. Unsuccessful calls: *Positive* indication of failure from outgoing international exchange				
8.1 Congestion on outgoing international circuits		...		
8.2 All other indications	...			
9. Successful calls with defects. These calls are included in category 1		...		
9.1 Non—reception of answer signal on chargeable calls.....	...			
9.2 Call with impaired intelligibility but not abandoned.....	...			
9.3 Other calls with defects but not abandoned	...			

a) Delete whatever is inapplicable

Note 1 — A successful call is one that reaches the wanted number and allows conversation to proceed. All successful calls are entered in category 1. However, a successful call may or may not have noticeable defects. Successful calls with noticeable defects should also be entered in category 9.
Note 2 — With the exception noted above for categories 1 and 9, the results of one call observation should be entered under one category only, namely the most appropriate one from 1 to 6.
Note 3 — Administrations should periodically exchange necessary information to interpret the observation data recorded under categories 4.1, 4.2 and 4.3.

2.2 Specialized training of observers should be kept to a minimum.

2.3 The table should be self—explanatory so that reference to detailed how—to—complete instructions is unnecessary.

2.4 The major categories should be selected such that:

— they identify the major factors adversely affecting the quality of service;

— they are suitable for the centralized processing of observation results.

2.5 To permit the orderly collection of data for human factors studies to identify sources of difficulty in customer use of the international (automatic) telephone service, Recommendation E.427 contains an additional table to Table 1/E.422.

3 Comments concerning the use of Table 1/E.422

3.1 Table 1/E.422 summarizes observations made on outgoing automatic and/or semi—automatic traffic, on a country of origin to a country of destination basis. A separate form should be used for each country of destination, and if required, for each group of circuits to which traffic to a country of destination has access at the outgoing international exchange (or exchanges). It is not necessary to make observations on both automatic and semi—automatic services. An Administration may select the service to be observed, provided that the service is the majority of the traffic to the country of destination.

3.2 For an explanation of the point of access, see Recommendation E.421, § 4.1.

3.3 The result of each call observed should be entered only under the most appropriate category. In the case of several faults on one call, the most significant cause of failure should be entered.

3.4 In completing Table 1/E.422 reference should be made to the following explanations.

4 How to fill in Table 1/E.422

Category 1 — To ensure objective recording and to avoid producing a biased sample resulting from the exclusion of calls which require subjective assessment, the successful call is defined as a call that reaches the wanted number and allows conversation to proceed. All non—abandoned calls are entered into category 1 and of these calls those which are subjectively adjudged to be defective are also entered into category 9. Thus it is required of the observer to make *two* entries for successful calls with noticeable defects.

Enter in category 1 then, calls successfully put through. This includes answered calls for which a clearback signal is received after some words have been spoken, without knowing for what reason the call is abandoned. If it is observed that the caller has dialled a wrong number, the call will be entered under 6.1. Category 1 will also include calls put through correctly to operator positions, information services, or to machines replying in place of the subscriber or to their equivalents.

Category 2 — Enter in this category calls on which ring tone was heard but the subscriber did not answer before the attempt was abandoned, the caller having waited at least 30 seconds after commencement of ring tone before clearing forward. (See category 6.4 if the call was abandoned *less* than 30 seconds after ring tone commenced.)

Category 3 — Enter in this category all unsuccessful calls in which a *positive* indication of subscriber busy or congestion beyond the outgoing international exchange had been encountered, either by visual signal, tone or recorded announcement. Congestion encountered on common control equipment should be entered in this category as well (e.g. no "proceed—to—send" signal). Where a positive indication of these conditions has *not* been received, enter in category 4.

Categories 3.1, 3.2 and 3.3 are entered for the specific indication received.

When more than one indication is received, e.g. visual signal and audible tone, only one entry should be made. In this case, the preferred order of entry should be tone, announcement, visual signal.

Category 4 — Enter in this category all other indications on unsuccessful calls whether by visual signal, tone or recorded announcement that cannot be positively identified and entered in category 3 or 8.

Categories 4.1, 4.2 and 4.3 are entered for the specific indication received.

When more than one indication is received, e.g. visual signal and audible tone, only one entry should be made. In this case, the preferred order of entry should be tone, announcement, visual signal.

Category 5 — Enter in this category those calls which fail for technical reasons not included in categories 3, 4 and 8. Category 5 subdivides as follows:

Category 5.1 — Calls on which the wrong number was obtained, although the caller dialled correctly.

Category 5.2 — Calls abandoned by the caller because of very poor speech transmission, although the answer signal was received. (See category 9.2 if speech transmission is poor but the call is not abandoned.) In some countries observers may be required to cease listening immediately after conversation is established, thus reducing the number of calls that would be reported in this category.

Category 5.3 — Calls on which the dialling information was correctly and completely sent, but the caller received no signal, tone or announcement before abandoning the call, having waited for at least the specified period before clearing forward.

The value of this time period left open under this category should be filled in by the Administrations of the originating country according to its experience in this matter. The prescribed value may differ depending on the international destination. It is, however, recommended to limit the number of such different quoted periods to a maximum of three values (e.g. 10, 20 or 30 seconds or any other value considered pertinent by the Administrations concerned).

Category 5.4 — Calls on which an answer signal was received, although the called subscriber did not answer.

Category 5.5 — Call failures due to technical reasons which are unable to be entered in categories 5.1 to 5.4. These should be very few, if any, and this category is provided in case they do arise. All possible information about these failures should be supplied as an attachment to the summary of the table. This category includes calls abandoned due to reception of a clear—back signal while connecting with the extension number (PBX).

Category 6 — Enter in this category all unsuccessful calls which have failed due to incorrect handling by the caller (subscriber or operator). Category 6 subdivides as follows:

Category 6.1 — Calls on which it was determined that the number which should have been dialled was different from the number actually dialled.

Category 6.2 — Calls on which it was determined that the number dialled had insufficient digits to be successful.

Category 6.3 — Calls on which the digital information was correctly and completely sent, but the caller abandoned the call without receiving any signal, tone or announcement, and without waiting for at least the specified period.

The value of the time period left open under this category should be filled in by the Administrations of the originating country according to its experience in this matter. The prescribed value may differ depending on the international destination. It is, however, recommended to limit the number of such different quoted periods to a maximum of three values (e.g. 10, 20 or 30 seconds or any other value considered pertinent by the Administration concerned).

The value quoted under category 6 must be the same as that quoted under category 5.

Category 6.4 — Calls prematurely abandoned after receipt of the ringing tone on which the caller disconnected less than 30 seconds after the ringing tone commenced. (See category 2 if the call was abandoned after *more* than 30 seconds had elapsed from the time of commencement of ringing tone.)

Category 6.5 — Calls which failed due to incorrect handling by the caller which cannot be classifed under categories 6.1 to 6.4. All possible information about these failures should be supplied as an attachment to the summary of the table. As in categories 5.5, these should be very few, if any.

Category 7 — Enter in category 7 the number of calls monitored (categories 1—6).

Category 8 — Category 8 will be useful for those Administrations which observe on the national side of the outgoing international exchange. (See Recommendation E.421, § 4.1.) Positive indications of failure, congestion or other, are to be entered here. They are not to be included with categories 1—6, which give the data for calls monitored for category 7.

Thus, when category 8 is viewed with categories 3 and 4 a more complete picture is provided of quality of service received by the caller.

Category 9 — Entries in category 9 are for successful calls (entered in category 1) which encountered defects, but which were not abandoned. They are thus automatically included in the total of category 7.

Category 9.1 — Enter here chargeable calls for which no answer signal was received. If abandonment should be detected on such calls, enter in category 5.5.

Category 9.2 — Enter here calls on which poor speech transmission was observed, but the call was not abandoned. (See category 5.2 if the call was abandoned.) All possible information about these calls should be supplied as an attachment to the summary of the table. Note that in some countries observers may be required to cease listening immediately after conversation was established, thus reducing the number of calls that would be reported under this category.

Category 9.3 — Enter here calls encountering switching, signalling or transmission defects, but which were not abandoned and which cannot be classified under categories 9.1 or 9.2.

5 Automatic observations (Table 2/E.422)

Considering the limitation of abilities of automatic observation equipment (for example, automatic observation equipment cannot understand announcements) and the variety of signals used in signalling systems, the table recommended for CCITT Signalling System No. 5 is given below.

TABLE 2/E.422

Automatic observations of international outgoing telephone calls for quality of service

Country of origin ..... Point of access:.....

Outgoing international exchange..... National side .....

Group of circuits..... Link circuits .....

Service automatic [a)] Outgoing side .....
semi—automatic [a)]

Period: from ..... to ..... Time of observations .....

Category	Number		Percentage	
	Subtotal	Total	Subtotal	Total
1. Calls successfully put through		...		...
2. Ring tone received but no answer		...		...
3. Unsuccessful calls: *Positive* indication of congestion, including subscriber busy, from beyond the outgoing international exchange. Visual signal, or tone.....		...		...
3.1 Subscriber busy/congestion indicated by visual signal	...		...	
3.2 Subscriber busy/congestion indicated by busy/congestion tone	...		...	
4. Unsuccessful calls: Other visual signals, tones or recorded announcements, not positively identified as category 3 or 8		...		...
4.1 Tone received.....	...		...	
4.2 Recorded announcement received.....	...		...	
5. Unsuccessful calls for other technical reasons		...		...
5.1 No tone, no answer signals after waiting ... seconds	...		...	
5.2 Reception of answer signal when the called party does not reply	...		...	
5.3 Other failures of a technical kind.....	...		...	
6. Unsuccessful calls due to incorrect handling by the calling party.		...		...
6.1 Call prematurely abandoned before receipt of signal, tone or announcement (within less than ... seconds)	...		...	
6.2 Call prematurely abandoned after receipt of ring tone (within less than 30 seconds).....	...		...	
6.3 Other failures due to incorrect handling.....	...		...	
7. *Total calls monitored* (categories 1—6).....		...		100
8. Unsuccessful calls: *Positive* indication of failure from outgoing international exchange.....				
8.1 Congestion on outgoing international circuits.....		...		
8.2 All other indications.....	...			
9. Successful calls with defects. These calls are included in category 1		...		
9.1 Non—reception of answer signal on chargeable calls	...			
9.3 Other calls with defects	...			

[a)] Delete whatever is inapplicable.

6 Comments concerning the use of Table 2/E.422

6.1 Table 2/E.422 summarizes observations made on outgoing automatic and semi—automatic traffic, on a country of origin to a country of destination basis. A separate form should be used for each country of destination, and if required, for each group of circuits to which traffic to the country of destination has access at the outgoing international exchange (or exchanges).

6.2 For an explanation of the point of access, see Recommendation E.421, § 4.1.

6.3 The result of each call observed should be entered only under the most appropriate category. In the case of several faults on one call, the most significant cause of failure should be entered.

6.4 As the function of sound analysis by automatic observation equipment is not concerned with the signalling system used and since some signalling systems e.g. Signalling System No. 6 have more information exchanged in the signalling system than those of sound signals, it is expected that the proposed table will be applied to all signalling systems for the present.

6.5 In completing Table 2/E.422 reference should be made to the following explanations.

7 How to fill in Table 2/E.422

Category 1 — The successful call is defined as a call that allows conversation to begin between subscribers, or allows to begin sending facsimile or data. This includes calls put through to operator positions, information services, or to machines replying in place of the subscriber or to their equivalents. In other words, the successful call is such that the automatic observation equipment detected voice on both sending and receiving lines, or that it detected sending tone of facsimiles or data, or that it detected voice on the receiving line after receipt of answer signal.

Category 2 — This category includes those calls for which the automatic observation equipment detected ringing tone, but there was no answer signal and the clear—forward signal was sent 30 seconds after the detection of ringing tone.

Category 3 — Enter in category 3 all unsuccessful calls for which a positive indication of subscriber busy or congestion beyond the outgoing international exchange has been encountered, either by visual signal (busy—flash signal) or by tone (also includes no “proceed—to—send” signal).

Category 4 — Enter in category 4 unsuccessful calls for which the automatic observation equipment detected a tone, but could not classify it, or the equipment detected announcement (that is, it detected voice on receiving line without answer signal).

Category 5 — Enter in category 5 those calls which failed for technical reasons not included in categories 3, 4 and 8. Category 5 subdivides as follows:

Category 5.1 — Calls on which the dialling information was completely sent, but the automatic observation equipment received no signal, tone or announcement and it received a clear—forward signal after a specified period. The value of this time period left open under this category should be filled in by the Administrations of the originating country according to its experience in this matter. The prescribed value may differ depending on the international destination. It is, however, recommended to limit the number of such different quoted periods to a maximum of three values (e.g. 10, 20 or 30 seconds or any other value considered pertinent by the Administrations concerned).

Category 5.2 — Calls on which an answer signal was received, although the called subscriber did not answer. In other words, calls for which the automatic observation equipment received an answer signal, although it detected no voice on receiving line.

Category 5.3 — Failed calls due to technical reasons which are unable to be entered in categories 5.1 and 5.2. For example, a call for which there was a busy—flash signal after receiving ringing tone.

Category 6 — Enter in category 6 all unsuccessful calls which have failed due to incorrect handling by the caller (subscriber or operator). Category 6 subdivides as follows:

Category 6.1 — Calls on which the dialling information was completely sent, but the automatic observation equipment received no signal, tone or announcement and it received a clear—forward signal within a specified period. (For this period, see category 5.1 above.)

Category 6.2 — Calls prematurely abandoned after receipt of the ringing tone on which a clear—forward signal was received less than 30 seconds after the ringing tone was detected.

Category 6.3 — Calls which failed due to incorrect handling by the caller which cannot be classified under categories 6.1 and 6.2. For example, a call for which the automatic observation equipment received an answer signal after receiving ringing tone, and then the ringing tone stopped, but the equipment could not detect any voice either on the sending line or the receiving line.

Category 7 — Enter in category 7 the number of calls monitored (categories 1—6).

Category 8 — Category 8 will be useful for those Administrations which observe on the national side of the outgoing international exchange. Positive indications of failure, congestion or other, are to be entered here.

Category 9 — Entries in category 9 are for successful calls (entered in category 1) which encountered defects. Category 9 subdivides as follows:

Category 9.1 — Calls on which no answer signal was received, but the conversation was begun.

Category 9.2 — Calls which encountered switching or signalling defects, but on which the conversation was begun.