

ATAAB ADVISORY NOTE

TRAC Analogue Type Approval Advisory Board

ATAAB Advisory Note Number: AN 04

Subject: DTMF signalling

APPLICABILITY

This note is applicable for Terminal Equipment intended for connection to Public Switched Telephone Networks, in addition to:

" CTR 21" (When published)

NOTE: Until CTR 21 is available, reference should be made to ETSI document prTBR 21 (Sept 1997) or, when it is available, to TBR 21.

This note contains specific advice concerning the generation of DTMF digits when used to address the PSTN.

In consideration of the following:

- That most European Networks incorporate receivers for DTMF signals that meet CEPT Recommendation T/CS 46-02 as reproduced in ETSI Technical Report ETR 206;
- That DTMF senders should meet the requirements as laid down in CEPT Recommendation T/CS 46-02 (ETSI ETR 206) when an unregulated generator is used or CEPT Recommendation T/STI 46-04 (ETSI ETR 207) when a regulated generator is used, and both standards require that a DTMF sender shall operate correctly in the presence of dial tone;
- That the first digit will normally be transmitted while receiving dial tone and, if the terminal sends unwanted frequencies caused by interference between transmitted digit and dial tone or allows the frequencies of the transmitted digit to be affected by dial tone, then the first digit may not be recognized;
- That networks need to be able to determine the start of each DTMF digit in order to interpret the information correctly;
- Some networks incorporate receivers for DTMF-signals that do not meet CEPT Recommendation T/CS 46-02 and which are likely to reject the last digit if the final digit of the number is not followed by a period where the level of any signal is at least 20 dB below the level of the low frequency group component.

ATAAB advises the following:

That an additional general note be added to Clause 4.8.2 of CTR 21, as follows:

NOTE: The initial digit of the network address will normally be sent with dial tone present. In order for the network to recognize this digit, the signals returned to the network must be sufficiently free of unwanted frequency components. In particular when sending DTMF digits in the presence of dial tone, the frequencies produced should remain within the frequency tolerance (see Clause 4.8.2.1) and the total level of unwanted frequencies in the range 250 Hz to 4300 Hz, excluding the frequency of the dial tone itself, should be at least 20 dB below the level of the low frequency group component (see Clause 4.8.2.3). It should also be noted:

- that the frequency or frequencies provided for dial tone varies from network to network,
- that the dial tone may be a continuous tone or may be cadenced with a network dependent on to off ratio,
- that network dependent special dial tones may be provided in case of invoked supplementary services and
- that dial tone could be present at a level as high as -0,7 dBV (see Clause 4.8.1.2).

According to CEPT Recommendation T/CS 46-02 and for the purposes of Clauses 4.8.2.4 and 4.8.2.5 of CTR 21, a DTMF digit sequence should be comprised of periods of tone-on separated by pauses. For the specification of a pause condition reference should be made to CEPT Recommendation T/CS 46-02 Section 3.3.3.2.

However, to cater for certain networks incorporating DTMF receivers which do not meet CEPT Recommendation T/CS 46-02, it is recommended exceptionally to provide an pause condition following sending of the last DTMF tone-on period.