# Technical Specification Group Services and System Aspects **TSGS#17(02)0435** Meeting #17, Biarritz, France, 9-12 September 2002

Source: TSG-SA WG4

Title: CRs to TS 26.131 and TS 26.132 - Corrections (R99,

Release 4 and Release 5)

**Document for:** Approval

Agenda Item: 7.4.3

The following CRs, agreed at the TSG-SA WG4 meeting #22, are presented to TSG SA #17 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.131	010	1	R99	Removal of wideband telephony from terminal acoustic requirements	F	3.3.0	S4	TSG-SA WG4#22	S4-020472
26.131	011	1	Rel-4	Removal of wideband telephony from terminal acoustic requirements	А	4.1.0	S4	TSG-SA WG4#22	S4-020473
26.131	012		R99	Correction on the ANR requirement for hands-free Ues	F	3.3.0	S4	TSG-SA WG4#22	S4-020386
26.131	013	1	Rel-4	Correction on the ANR requirement for hands-free Ues	А	4.1.0	S4	TSG-SA WG4#22	S4-020425
26.131	014		Rel-5	Correction on the ANR requirement for hands-free Ues	А	5.1.0	S4	TSG-SA WG4#22	S4-020426
26.132	012	1	R99	Removal of wideband telephony from terminal acoustic tests	F	3.4.0	S4	TSG-SA WG4#22	S4-020474
26.132	013	1	Rel-4	Removal of wideband telephony from terminal acoustic tests	А	4.2.0	S4	TSG-SA WG4#22	S4-020475
26.132	014		R99	Correction on ANR test for hands-free Ues	F	3.4.0	S4	TSG-SA WG4#22	S4-020388
26.132	015	1	Rel-4	Correction on ANR test for hands-free Ues	Α	4.2.0	S4	TSG-SA WG4#22	S4-020427
26.132	016		Rel-5	Correction on ANR test for hands-free Ues	Α	5.2.0	S4	TSG-SA WG4#22	S4-020428

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For <b>HELP</b> on using this form, see bottom of this page or look at the pop-up text over the <b>#</b> symbols.													
Proposed change affects: UICC apps# ME X Radio Access Network Core Network													
Title:	ж Re	moval	of wide	eband tele	phon	y from	termi	nal a	COL	ustic charac	cteris	tics R99	
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Summary of cha	ange: ≭	All re	eferenc	es to Wid	eban	d AMR	are r	emo	ved	I from the s	pecifi	cation.	
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### How to create CRs using this form:

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Clauses affected:

Other comments:

Other specs

affected:

Comprehensive information and tips about how to create CRs can be found at <a href="http://www.3gpp.org/specs/CR.htm">http://www.3gpp.org/specs/CR.htm</a>. Below is a brief summary:

Other core specifications

Test specifications

**O&M Specifications** 

**光** Introduction; 1; 3.1; 5.3.1

1) Fill out the above form. The symbols above marked \( \mathbb{K} \) contain pop-up help information about the field that they are closest to.

TS 26.132

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

- downloaded from the 3GPP server under  $\underline{\text{ftp://ftp.3gpp.org/specs/}}$  For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

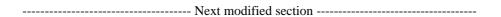
# Introduction

The present document specifies minimum performance requirements for the acoustic characteristics of 3G terminals when used to provide narrow-band or wideband-telephony.

The objective for narrow-band services is to reach a quality as close as possible to ITU-T standards for PSTN circuits. However, due to technical and economic factors, there cannot be full compliance with the general characteristics of international telephone connections and circuits recommended by the ITU-T.

The performance requirements are specified the main body of the text; the test methods and considerations are described in TS 26.132.

The present document is applicable to any terminal capable of supporting narrow-band or wideband telephony, either as a stand-alone service or as the telephony component of a multimedia service. The present document specifies minimum performance requirements for the acoustic characteristics of 3G terminals when used to provide narrow-band-or wideband telephony.



# 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document the term *narrow-band* shall refer to signals sampled at 8kHz.; *wideband* shall refer to signals sampled at 16kHz.

For the purposes of the present document, the following terms: dB, dBr, dBm0, dBm0p and dBA, shall be interpreted as defined in ITU-T Recommendation B.12; the term dBPa shall be interpreted as the sound pressure level relative to 1 Pascal expressed in dB (0dBPa is equivalent to 94dB SPL).

N	Next modified section
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### 5.3.1 Sending

The maximum noise level produced by the apparatus at the output of the SS under silent conditions in the sending direction shall not exceed -64 dBm0p.

- NOTE 1: This level includes the eventual noise contribution of an acoustic echo canceller under the condition that no signal is received.
- NOTE 2: This figure applies to the wideband noise signal. It is recommended that the level of single frequency disturbances should be 10 dB lower (ITU-T Recommendation P.11).

Compliance shall be checked by the relevant test described in TS 26.132.

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Title:	₩ Re	moval	of wide	band tele	phony fr	om te	rmina	al ac	oustic chara	cterist	ics (Rel-4	1)	
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### How to create CRs using this form:

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

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The performance requirements are specified the main body of the text; the test methods and considerations are described in TS 26.132.

# 1 Scope

The present document is applicable to any terminal capable of supporting narrow-band <del>or wideband</del>-telephony, either as a stand-alone service or as the telephony component of a multimedia service. The present document specifies minimum performance requirements for the acoustic characteristics of 3G terminals when used to provide narrow-band <del>or wideband telephony.</del>

----- Next modified section -----

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----- Next modified section -----

# 5.3 Idle channel noise (handset and headset UE)

# 5.3.1 Sending

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- NOTE 1: This level includes the eventual noise contribution of an acoustic echo canceller under the condition that no signal is received.
- NOTE 2: This figure applies to the wideband noise signal. It is recommended that the level of single frequency disturbances should be 10 dB lower (ITU-T Recommendation P.11).

Compliance shall be checked by the relevant test described in TS 26.132.

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Proposed change affects: UICC apps# ME X Radio Access Network Core Network													
Title:	光 Correction	n on the ANR re	quirement for	hands-free	e UEs (R99)								
Source:	₩ TSG SA	WG4											
Work item code:	ж <mark>TEI</mark>				Date: ♯ 1	2/Sept/2002							
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Reason for chang						or hands-free UE, free operations.							
Summary of char	nge:♯ <mark>Re</mark> p	lace "For Furthe	r Study" by "N	<mark>o requiren</mark>	nent in hands-fre	ee operations".							
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Clauses affected:	* ¥ <u>5.9</u>												
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Other comments:	* # <b>*</b>												

#### How to create CRs using this form:

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3)	With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# 5.9 Ambient Noise Rejection

Handset and Headset UE:

The nature of mobile telephony is such that the UE will typically be operated in high ambient acoustic noise. Due to the adverse interaction of noise signals with speech codecs operating at lower rates, for example 8kbit/s or less, a minimum noise rejection specification is required.

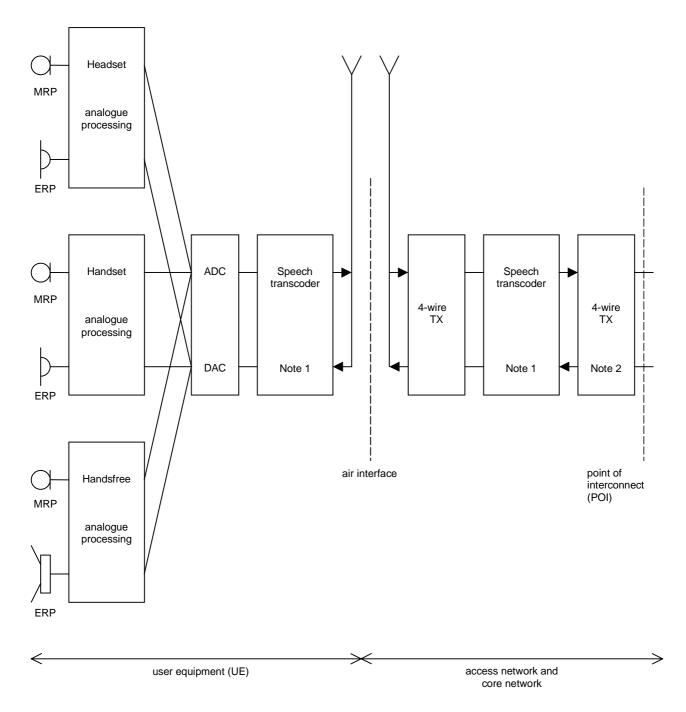
The UE ambient noise rejection ANR, calculated as a Single Figure DELSM (SFDELSM) shall be greater than or equal to the nominal value of 0dB. Due to the uncertainty inherent in the measurement method for ANR, a 3dB tolerance is allowed on the nominal value.

For good performance, it is recommended that a figure of +3 dB should be achieved.

Compliance shall be checked by the relevant test described in 3GPP TS 26.132.

Hands-free UE (all categories):

For further study. No requirement in hands-free operations.



NOTE 1: Includes DTX functionality.

NOTE 2: Connection to PSTN should include electrical echo control (EEC).

Figure 1: 3G Interfaces for specification and testing of terminal narrow-band acoustic characteristics

rampere, Finiand, 22 – 20 July 2002													
CHANGE REQUEST													
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Propose	d change affe	cts: U	ICC a	apps#	ME X	Rac	lio A	ccess Network	Core Ne	etwork			

Correction on the ANR requirement for hands-free UEs (Rel-4) Title: TSG SA WG4 Source: Date: 第 12/Sept/2002 Category: Release: # Rel-4 Use <u>one</u> of the following categories: Use <u>one</u> of the following releases: F (correction) (GSM Phase 2) 2 A (corresponds to a correction in an earlier release) R96 (Release 1996) B (addition of feature), R97 (Release 1997) **C** (functional modification of feature) (Release 1998) R98 **D** (editorial modification) R99 (Release 1999) Detailed explanations of the above categories can Rel-4 (Release 4) Rel-5 be found in 3GPP TR 21.900. (Release 5) Rel-6 (Release 6)

Reason for change: #	Since there aren't any output of study on ANR requirement for hands-free UE, the correction is to specify no requirement for ANR in hands-free operations.
Summary of change: #	Replace "For Further Study" by "No requirement in hands-free operations".
Consequences if # not approved:	The standards remains as if a requirement will be defined in subsequent versions of Rel-4. Design of terminal acoustic requires stability of requirements for Rel-4.

Clauses affected:	ж	5	.9			
		Υ	N			
Other specs	$\mathfrak{R}$		X	Other core specifications	$\mathfrak{R}$	
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			X	O&M Specifications		
Other comments:	$\mathfrak{R}$					

#### How to create CRs using this form:

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3)	With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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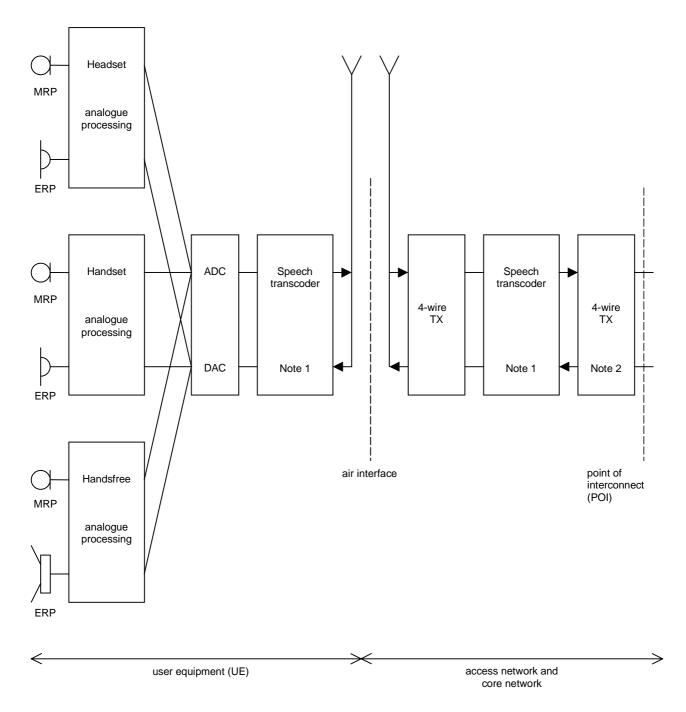
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For good performance, it is recommended that a figure of +3 dB should be achieved.

Compliance shall be checked by the relevant test described in 3GPP TS 26.132.

Hands-free UE (all categories):

No requirement in hands-free operations. For further study.



NOTE 1: Includes DTX functionality.

NOTE 2: Connection to PSTN should include electrical echo control (EEC).

Figure 1: 3G Interfaces for specification and testing of terminal narrow-band acoustic characteristics

Tampere, Finiand, 22 – 26 July 2002														
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Proposed change affects: UICC apps# ME X Radio Access Network Core Network														
Title:	€ Co	rrectio	n on th	e ANR red	quirer	ment for	hand	ls-fre	e UEs	(Rel-5	5)			
Source:	€ TS	G-SA	WG4											
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Category:  # A  Use one of the following categories:  F (correction)  A (corresponds to a correction in an earlier release)  B (addition of feature),  C (functional modification of feature)  R98  D (editorial modification)  R99  Detailed explanations of the above categories can  Release: #  Use one of the side of the								f the for (GSI) (Rela (Rela (Rela (Rela (Rela	Rel-5 he following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5)					
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Other comments:

- 1) Fill out the above form. The symbols above marked \$\mathbb{X}\$ contain pop-up help information about the field that they are closest to.
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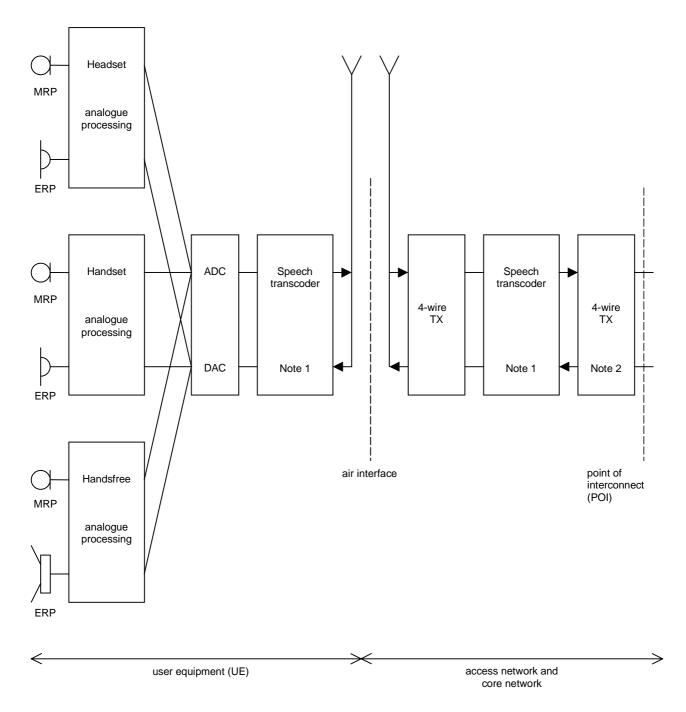
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Compliance shall be checked by the relevant test described in 3GPP TS 26.132.

Hands-free UE (all categories):

No requirement in hands-free operations. For further study.



NOTE 1: Includes DTX functionality.

NOTE 2: Connection to PSTN should include electrical echo control (EEC).

Figure 1: 3G Interfaces for specification and testing of terminal narrow-band acoustic characteristics

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For <b>HELP</b>	on using this form, see bottom of this page or look at the	pop-up text over the ₩ symbols.
Proposed cha	ange affects: UICC apps# ME X Radio Ac	cess Network Core Network
	<b>9</b>	
Title:	器 Removal of wideband telephony from terminal aco	oustic tests (R99)
Source:	₩ TSG-SA WG4	
Work item co	de: # Correct	Date:    12/Sept/2002
Category:		Release: # R99
	Use <u>one</u> of the following categories: <b>F</b> (correction)	Use <u>one</u> of the following releases: 2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	
	<b>B</b> (addition of feature),	R97 (Release 1997)
	C (functional modification of feature)	R98 (Release 1998)
	<b>D</b> (editorial modification)	R99 (Release 1999)
	Detailed explanations of the above categories can	Rel-4 (Release 4)
	be found in 3GPP <u>TR 21.900</u> .	Rel-5 (Release 5) Rel-6 (Release 6)
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Reason for cl	hange: # SA Plenary tasked SA4, since March 2001 (P	Palm Springs), to clean-up ALL
	specs about "AMR Wideband ". This task has	
	regards TS 26.131 and TS 26.132 (R99).	, ,
	All of control of the LAMP control of	Leave de la consegue
Summary of o	change:   All references to wideband AMR are removed	rrom the specification
Consequence	es if # 3 consequences:	
not approved	<ul> <li>SA task of "AMR wideband" clean up is in</li> </ul>	ncomplete.
	<ul> <li>Inconsistent set of R99 specifications.</li> </ul>	
	- Terminals are impacted by useless tests.	
Clauses affect	ted: # Introduction; 1; 3.1; 4.2; 8	
Ciauses affec	eted: # Introduction; 1; 3.1; 4.2; 8	
	YN	
Other specs	# X Other core specifications # TS 26	6.131
affected:	X Test specifications	
	X O&M Specifications	
Other comme	ents: X	

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# Introduction

The present document specifies test methods to allow the minimum performance requirements for the acoustic characteristics of 3G terminals when used to provide narrow-band or wideband telephony to be assessed.

The objective for narrow-band services is to reach a quality as close as possible to ITU-T standards for PSTN circuits. However, due to technical and economic factors, there cannot be full compliance with the general characteristics of international telephone connections and circuits recommended by the ITU-T.

The performance requirements are specified in TS26.131; the test methods and considerations are specified in the main body of the text.

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------ Next modified section ------

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For the purposes of the present document, the following terms: dB, dBr, dBm0, dBm0p and dBA, shall be interpreted as defined in ITU-T Recommendation B.12; the term dBPa shall be interpreted as the sound pressure level relative to 1 pascal expressed in dB (0 dBPa is equivalent to 94 dB SPL).

----- Next modified section -----

# 4.2 <u>VoidWideband telephony</u>

The interfaces used to define terminal acoustic characteristics for wideband telephony are for further study. The test methods needed to assess the minimum performance requirements for wideband telephony are for further study.

----- Next modified section -----

# 8 Wideband telephony transmission performance

# 8.1 Applicability

The performance requirements in this sub-clause shall apply when UE is used to provide wideband telephony, either as a stand alone service, or as part of a multimedia service.

Performance requirements for the acoustic characteristics of 3G terminals supporting wideband telephony are for further study.

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	d change		JICC appsЖ <mark></mark>		•		k Core Ne	twork
Title:	ж	Removal	of wideband tele	phony from te	rminal aco	oustic tests (F	Rel-4)	
Source:	ж	TSG-SA \	WG4					
Work ite	m code: ₩	Correct				Date: ₩	12/Sept/2002	
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Reason	for change	spec	lenary tasked SA s about "AMR W rds TS 26.131 ar	ideband ". Th	is task has			
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### How to create CRs using this form:

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Other comments:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

- downloaded from the 3GPP server under  $\underline{\text{ftp://ftp.3gpp.org/specs/}}$  For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# Introduction

The present document specifies test methods to allow the minimum performance requirements for the acoustic characteristics of 3G terminals when used to provide narrow-band or wideband telephony to be assessed.

The objective for narrow-band services is to reach a quality as close as possible to ITU-T standards for PSTN circuits. However, due to technical and economic factors, there cannot be full compliance with the general characteristics of international telephone connections and circuits recommended by the ITU-T.

The performance requirements are specified in TS26.131; the test methods and considerations are specified in the main body of the text.

The present document is applicable to any terminal capable of supporting narrow-band or wideband-telephony, either as a stand-alone service or as the telephony component of a multimedia service. The present document specifies test methods to allow the minimum performance requirements for the acoustic characteristics of 3G terminals when used to provide narrow-band or wideband-telephony to be assessed.

------ Next modified section -----

# 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document the term *narrow-band* refers to signals sampled at 8 kHz.; *wideband* refers to signals sampled at 16 kHz.

For the purposes of the present document, the following terms: dB, dBr, dBm0, dBm0p and dBA, shall be interpreted as defined in ITU-T Recommendation B.12; the term dBPa shall be interpreted as the sound pressure level relative to 1 pascal expressed in dB (0 dBPa is equivalent to 94 dB SPL).

------ Next modified section -----

# 4.2 <u>VoidWideband telephony</u>

The interfaces used to define terminal acoustic characteristics for wideband telephony are for further study. The test methods needed to assess the minimum performance requirements for wideband telephony are for further study.

----- Next modified section -----

# 8 Wideband telephony transmission performance

# 8.1 Applicability

The performance requirements in this sub-clause shall apply when UE is used to provide wideband telephony, either as a stand alone service, or as part of a multimedia service.

Performance requirements for the acoustic characteristics of 3G terminals supporting wideband telephony are for further study.

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ж	26.132 CR 14 #	erev - # Current version: 3.4.0
For <u><b>HELP</b></u> on t	using this form, see bottom of this pa	page or look at the pop-up text over the % symbols.
Proposed change	affects: UICC apps器	ME X Radio Access Network Core Network
Title: भ	Correction on ANR test for hands	s-free UEs (R99)
Source: #	TSG-SA WG4	
Work item code: ₩	TEI	<b>Date:</b> # 12/Sept/2002
Category:	F Use one of the following categories: F (correction) A (corresponds to a correction in B (addition of feature), C (functional modification of feat D (editorial modification) Detailed explanations of the above cat be found in 3GPP TR 21.900.	R97 (Release 1997) ture) R98 (Release 1998) R99 (Release 1999)
Reason for change	Since there aren't any requiremethod must not be specifie	rement for ANR in hands-free operations, the test ed.
Summary of chang	ge:   Replace "For Further Study"	" by "No test method for hands-free operations".
Consequences if not approved:		f a requirement and test method will be defined in Design of terminal acoustic requires stability of
Clauses affected:	<b>%</b> 7.9	
Other specs affected:	Y N  X Other core specification Test specifications O&M Specifications	ons # 26.131
Other comments:	$\mathbf{x}$	

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3)	With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in from the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant the change request.	nt of nt to

# 7.9 Ambient Noise Rejection

#### Handset and Headset UE:

Note: This section applies to terminals providing narrow- and wide-band telephony. However, the procedure for measuring ambient noise rejection is defined only over narrow-band frequency range. Thus the test method for ambient noise rejection is the same for either narrow- or wide-band telephony.

- a) A 1/2 inch pressure microphone is calibrated using a known sound source and mounted at the MRP, without the LRGP or HATS present. A frequency analyser is calibrated to enable the sound pressure levels at the microphone to be determined in 1/3<sup>rd</sup> Octave bands.
- b) Flood the room in which the measurement is to be made with a band limited (100 Hz to 8 kHz) pink noise to within  $\pm 3$  dB. The level at MRP shall be adjusted to 70 dB(A) (-24 dBPa(A)). The tolerance on this level is +/-1 dB. The resulting sound spectrum is  $P_{rn}$  dBPa, measured in  $1/3^{rd}$  Octave bands.

To ensure that the sound field is diffuse enough, the following apply:

The diffuse sound field is calibrated in the absence of any local obstacles. The averaged field shall be uniform to within  $\pm$  3 dB within a radius of 0,15 m of the MRP, when measured in one-third octave bands from 100 Hz to 3,15 kHz.

- NOTE 1: The pressure intensity index, as defined in ISO 9614, may prove to be a suitable method for assessing the diffuse field.
- NOTE 2: Where more than one loudspeaker is used to produce the desired sound field, the loudspeakers must be fed with non-coherent electrical signals to eliminate standing waves and other interference effects.
- c) Position the HATS or LRGP test head in the correct relative position to the MRP and mount the MS under test, according to clause 5.1.1. Recalibrate the  $1/3^{rd}$  Octave frequency analyser using a known voltage source to facilitate the analysis of the voltage  $V_{rn}$ , where  $V_{rn}$  is the voltage at the audio output of the SS due to the noise spectrum input.
- d) Set up a speech path between the MS and the System Simulator (SS).
- e) Determine, as a function of frequency, using the frequency analyser, in  $1/3^{rd}$  Octave bands (index j), the electrical output  $V_{jrn}$ , (expressed as dB rel . 1V) at the audio output of the SS for the applied acoustic pressure  $P_{jrn}$  (expressed as dB rel 1Pa) at the MRP. Since, the MS sending sensitivity is not defined above 3,4 kHz the measurement shall be cut off at 3,4 kHz. For the bands below 315 Hz, the noise level shall be referenced to the speech level at 315 Hz to yield the DELSM.

The room noise sensitivity is expressed as:-  $Sm_{jrn} = V_{jrn} (dBV) - P_{jrn} (dBPa)$ .

The MS ambient noise send sensitivity has now been determined.

f) The MS speech send sensitivity is now required. The required sensitivity is defined as the electrical output from the MS, measured at the audio output of the SS, as a function of the free field sound pressure at the MRP of the artificial mouth.

The measurement is made using an artificial speech source at the MRP of the artificial mouth. The 1/2 inch pressure microphone is calibrated using a known sound source. The frequency analyser is calibrated to measure in  $1/3^{rd}$  Octave bands. The artificial mouth output shall be in accordance with the ITU-T P.50 male artificial voice. Whilst maintaining the ITU-T P.50 "male" spectrum, adjust the total signal level to -4,7 dBPa. The resulting sound spectrum is  $P_0$  dBPa, measured in  $1/3^{rd}$  Octave bands. The  $1/3^{rd}$  Octave frequency analyser should be re-calibrated, using a known voltage source, to facilitate the analysis of the voltage  $V_j$ . Where  $V_j$  is the voltage in each  $1/3^{rd}$  octave band at the audio output of the SS due to the speech spectrum input. Set up a speech path between the MS and the SS. Determine the function of frequency, using the frequency analyser, and in  $1/3^{rd}$  Octave bands, the electrical output,  $V_j$ , (expressed as dB rel. 1V), at the audio output of the SS for the applied acoustic pressure,  $P_{j0}$ , (expressed as dB rel. 1Pa/V), at the MRP.

The speech sending sensitivity is expressed as:

$$Sm_{is}(dB) = V_i(dBV) - P_{io}(dBPa) dBrel. 1V/Pa..$$

g) The difference of the room noise sensitivity and the speech sending sensitivity DELSM ( $\Delta_{jSM}$ ) in each  $1/3^{rd}$  Octave band for the MS is determined as:

 $Sm_{jm}$  -  $Sm_{js}$  (dB) (for j=1 to 2,  $Sm_{js}=Sm_{3s}$ ).h) The Ambient noise rejection ANR is calculated as the single figure value according to the following formula, the ANR shall be  $\geq$  0dB.

$$ANR = -\frac{4}{5} \sum_{i=1}^{13} \Delta_{jSM} \cdot 10^{-0.0175W_{jsi}}$$

j = The index of third octave bands centered at frequencies from 200 Hz to 3 150 Hz inclusive.

Wjsi = The sending weighting factors from ITU-T Recommendation P.79 [16], table 1 for the jth 1/3rd Octave band centre frequency.

### Hands-free UE (all categories):

No test method for hands-free operations. For further study

CHANGE REQUEST							CR-Form-v7					
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#### How to create CRs using this form:

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Clauses affected:

Other comments:

Other specs affected:

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Comprehensive information and tips about how to create CRs can be found at <a href="http://www.3gpp.org/specs/CR.htm">http://www.3gpp.org/specs/CR.htm</a>. Below is a brief summary:

Other core specifications

Test specifications

**O&M Specifications** 

1) Fill out the above form. The symbols above marked \$\mathbb{X}\$ contain pop-up help information about the field that they are closest to.

26.131

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3)	With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# 7.9 Ambient Noise Rejection

#### Handset and Headset UE:

Note: This section applies to terminals providing narrow- and wide-band telephony. However, the procedure for measuring ambient noise rejection is defined only over narrow-band frequency range. Thus the test method for ambient noise rejection is the same for either narrow- or wide-band telephony.

- a) A 1/2 inch pressure microphone is calibrated using a known sound source and mounted at the MRP, without the LRGP or HATS present. A frequency analyser is calibrated to enable the sound pressure levels at the microphone to be determined in 1/3<sup>rd</sup> Octave bands.
- b) Flood the room in which the measurement is to be made with a band limited (100 Hz to 8 kHz) pink noise to within  $\pm 3$  dB. The level at MRP shall be adjusted to 70 dB(A) (-24 dBPa(A)). The tolerance on this level is +/-1 dB. The resulting sound spectrum is  $P_{rn}$  dBPa, measured in  $1/3^{rd}$  Octave bands.

To ensure that the sound field is diffuse enough, the following apply:

The diffuse sound field is calibrated in the absence of any local obstacles. The averaged field shall be uniform to within  $\pm$  3 dB within a radius of 0,15 m of the MRP, when measured in one-third octave bands from 100 Hz to 3,15 kHz.

- NOTE 1: The pressure intensity index, as defined in ISO 9614, may prove to be a suitable method for assessing the diffuse field.
- NOTE 2: Where more than one loudspeaker is used to produce the desired sound field, the loudspeakers must be fed with non-coherent electrical signals to eliminate standing waves and other interference effects.
- c) Position the HATS or LRGP test head in the correct relative position to the MRP and mount the MS under test, according to clause 5.1.1. Recalibrate the  $1/3^{rd}$  Octave frequency analyser using a known voltage source to facilitate the analysis of the voltage  $V_{rn}$ , where  $V_{rn}$  is the voltage at the audio output of the SS due to the noise spectrum input.
- d) Set up a speech path between the MS and the System Simulator (SS).
- e) Determine, as a function of frequency, using the frequency analyser, in  $1/3^{rd}$  Octave bands (index j), the electrical output  $V_{jrn}$ , (expressed as dB rel . 1V) at the audio output of the SS for the applied acoustic pressure  $P_{jrn}$  (expressed as dB rel 1Pa) at the MRP. Since, the MS sending sensitivity is not defined above 3,4 kHz the measurement shall be cut off at 3,4 kHz. For the bands below 315 Hz, the noise level shall be referenced to the speech level at 315 Hz to yield the DELSM.

The room noise sensitivity is expressed as:-  $Sm_{jrn} = V_{jrn} (dBV) - P_{jrn} (dBPa)$ .

The MS ambient noise send sensitivity has now been determined.

f) The MS speech send sensitivity is now required. The required sensitivity is defined as the electrical output from the MS, measured at the audio output of the SS, as a function of the free field sound pressure at the MRP of the artificial mouth.

The measurement is made using an artificial speech source at the MRP of the artificial mouth. The 1/2 inch pressure microphone is calibrated using a known sound source. The frequency analyser is calibrated to measure in  $1/3^{rd}$  Octave bands. The artificial mouth output shall be in accordance with the ITU-T P.50 male artificial voice. Whilst maintaining the ITU-T P.50 "male" spectrum, adjust the total signal level to -4,7 dBPa. The resulting sound spectrum is  $P_0$  dBPa, measured in  $1/3^{rd}$  Octave bands. The  $1/3^{rd}$  Octave frequency analyser should be re-calibrated, using a known voltage source, to facilitate the analysis of the voltage  $V_j$ . Where  $V_j$  is the voltage in each  $1/3^{rd}$  octave band at the audio output of the SS due to the speech spectrum input. Set up a speech path between the MS and the SS. Determine the function of frequency, using the frequency analyser, and in  $1/3^{rd}$  Octave bands, the electrical output,  $V_j$ , (expressed as dB rel. 1V), at the audio output of the SS for the applied acoustic pressure,  $P_{i0}$ , (expressed as dB rel. 1Pa/V), at the MRP.

The speech sending sensitivity is expressed as:

$$Sm_{is}(dB) = V_i(dBV) - P_{io}(dBPa) dBrel. 1V/Pa..$$

g) The difference of the room noise sensitivity and the speech sending sensitivity DELSM ( $\Delta_{jSM}$ ) in each  $1/3^{rd}$  Octave band for the MS is determined as:

 $Sm_{jm}$  -  $Sm_{js}$  (dB) (for j=1 to 2,  $Sm_{js}=Sm_{3s}$ ).h) The Ambient noise rejection ANR is calculated as the single figure value according to the following formula, the ANR shall be  $\geq$  0dB.

$$ANR = -\frac{4}{5} \sum_{i=1}^{13} \Delta_{jSM} \cdot 10^{-0.0175W_{jsi}}$$

j = The index of third octave bands centered at frequencies from 200 Hz to 3 150 Hz inclusive.

Wjsi = The sending weighting factors from ITU-T Recommendation P.79 [16], table 1 for the jth 1/3rd Octave band centre frequency.

### Hands-free UE (all categories):

No test method for hands-free operations. For further study

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For <b>HELP</b> on	using this fo	rm, see bottom o	of this page or l	ook at the p	pop-up text ove	r the ₩ symbols.
Proposed change	affects:	UICC apps <b></b>	ME X	Radio Acc	ess Network	Core Network
Title:	€ Correction	n on ANR test fo	r hands-free U	Es (Rel-5)		
Source:	€ TSG-SA	WG4				
Work item code:	€ TEI				Date:	/Sept/2002
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3)	With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# 7.9 Ambient Noise Rejection

#### Handset and Headset UE:

Note: This section applies to terminals providing narrow- and wide-band telephony. However, the procedure for measuring ambient noise rejection is defined only over narrow-band frequency range. Thus the test method for ambient noise rejection is the same for either narrow- or wide-band telephony.

- a) A 1/2 inch pressure microphone is calibrated using a known sound source and mounted at the MRP, without the LRGP or HATS present. A frequency analyser is calibrated to enable the sound pressure levels at the microphone to be determined in 1/3<sup>rd</sup> Octave bands.
- b) Flood the room in which the measurement is to be made with a band limited (100 Hz to 8 kHz) pink noise to within  $\pm 3$  dB. The level at MRP shall be adjusted to 70 dB(A) (-24 dBPa(A)). The tolerance on this level is +/-1 dB. The resulting sound spectrum is  $P_{rn}$  dBPa, measured in  $1/3^{rd}$  Octave bands.

To ensure that the sound field is diffuse enough, the following apply:

The diffuse sound field is calibrated in the absence of any local obstacles. The averaged field shall be uniform to within  $\pm$  3 dB within a radius of 0,15 m of the MRP, when measured in one-third octave bands from 100 Hz to 3,15 kHz.

- NOTE 1: The pressure intensity index, as defined in ISO 9614, may prove to be a suitable method for assessing the diffuse field.
- NOTE 2: Where more than one loudspeaker is used to produce the desired sound field, the loudspeakers must be fed with non-coherent electrical signals to eliminate standing waves and other interference effects.
- c) Position the HATS or LRGP test head in the correct relative position to the MRP and mount the MS under test, according to clause 5.1.1. Recalibrate the  $1/3^{rd}$  Octave frequency analyser using a known voltage source to facilitate the analysis of the voltage  $V_{rn}$ , where  $V_{rn}$  is the voltage at the audio output of the SS due to the noise spectrum input.
- d) Set up a speech path between the MS and the System Simulator (SS).
- e) Determine, as a function of frequency, using the frequency analyser, in  $1/3^{rd}$  Octave bands (index j), the electrical output  $V_{jrn}$ , (expressed as dB rel . 1V) at the audio output of the SS for the applied acoustic pressure  $P_{jrn}$  (expressed as dB rel 1Pa) at the MRP. Since, the MS sending sensitivity is not defined above 3,4 kHz the measurement shall be cut off at 3,4 kHz. For the bands below 315 Hz, the noise level shall be referenced to the speech level at 315 Hz to yield the DELSM.

The room noise sensitivity is expressed as:-  $Sm_{jrn} = V_{jrn} (dBV) - P_{jrn} (dBPa)$ .

The MS ambient noise send sensitivity has now been determined.

f) The MS speech send sensitivity is now required. The required sensitivity is defined as the electrical output from the MS, measured at the audio output of the SS, as a function of the free field sound pressure at the MRP of the artificial mouth.

The test signal to be used for the measurements shall be the artificial voice according to ITU-Recommendation P.50 or a speech like test signal as described in ITU-T Recommendation P.501. The type of test signal used shall be stated in the test report. The 1/2 inch pressure microphone is calibrated using a known sound source. The frequency analyser is calibrated to measure in  $1/3^{rd}$  Octave bands. The spectrum of acoustic signal produced by the artificial mouth is calibrated under free field conditions at the MRP. The test signal level shall be -4.7 dBPa, measured at the MRP. The resulting sound spectrum is  $P_0$  dBPa, measured in  $1/3^{rd}$  Octave bands. The  $1/3^{rd}$  Octave frequency analyser should be re-calibrated, using a known voltage source, to facilitate the analysis of the voltage  $V_j$ . Where  $V_j$  is the voltage in each  $1/3^{rd}$  octave band at the audio output of the SS due to the test signal input. Set up a speech path between the MS and the SS. Determine the function of frequency, using the frequency analyser, and in  $1/3^{rd}$  Octave bands, the electrical output,  $V_j$ , (expressed as dB rel. 1V), at the audio output of the SS for the applied acoustic pressure,  $P_{j0}$ , (expressed as dB rel. 1Pa/V), at the MRP.

The speech sending sensitivity is expressed as:

$$Sm_{js}(dB) = V_j(dBV) - P_{jo}(dBPa) dBrel. 1V/Pa.$$

g) The difference of the room noise sensitivity and the speech sending sensitivity DELSM ( $\Delta_{jSM}$ ) in each  $1/3^{rd}$  Octave band for the MS is determined as:

$$Sm_{jrn} \text{ - } Sm_{js} \text{ (dB)} \quad \text{( for } j=1 \text{ to 2, } Sm_{js} = Sm_{3s} \text{)}.$$

h) The Ambient noise rejection ANR is calculated as the single figure value according to the following formula, the ANR shall be  $\geq 0 dB$ .

$$ANR = -\frac{4}{5} \sum_{i=1}^{13} \Delta_{jSM} \cdot 10^{-0.0175W_{jsi}}$$

j = The index of third octave bands centered at frequencies from 200 Hz to 3 150 Hz inclusive.

Wjsi = The sending weighting factors from ITU-T Recommendation P.79 [16], table 1 for the jth 1/3rd Octave band centre frequency.

#### Hands-free UE (all categories):

No test method for hands-free operations. For further study