

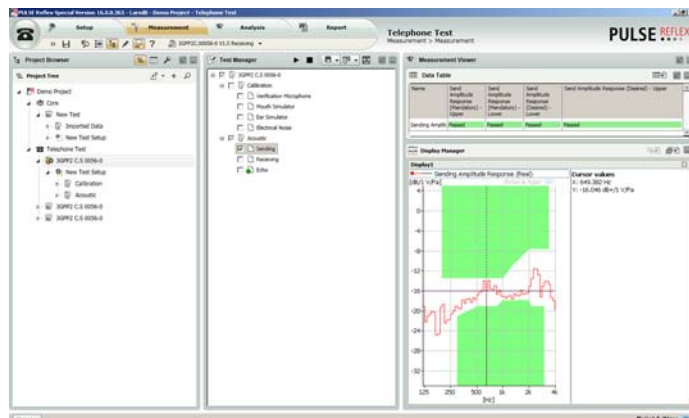
## PULSE Reflex Telephone Test Test Suite for 3GPP TS.26.132 Types 8772-X02 and 8772-X04

### Uses

- Voice testing of mobile phones according to 3GPP TS.26.132
- Measurement of the full transmit and receive signal path using a proper network simulator
- Research and development of mobile phones with focus on voice testing using advanced test signals and real speech
- Quality assurance and sample testing of mobile phones
- Inspection and validation of mobile phones

### Features

- Pre-programmed test suites according to 3GPP TS.26.132 version 6.1 and version 11.3 supporting narrow-band and wideband testing of handsets or hands-free
- Minimum interaction required when running complete test suites, or individual test cases
- Supports the use of Type 1, Type 3.2 and Type 3.3 (HATS) ear simulators for testing of handsets
- Supports binaural as well as monaural testing of hands-free using Type 3.3 (HATS) ear simulators
- Supports testing of hands-free using free-field microphones



### Introduction

Types 8772-X02\* and 8772-X04\* provide a standardized approach to voice testing of mobile phones according to 3GPP TS.26.132 version 6.0 as well as version 11.3. Type 8772-X02 is for testing the handset and Type 8772-X04 is for testing hands-free.

By using real speech, the codec can be included in the measurement path. This means that the antenna is used as the access point. Accordingly, the full transmit and receive signal paths are measured, giving realistic measurements of phone performance.

Types 8772-X02 and 8772-X04 utilize PULSE Reflex™ Telephone Test Software Type 8770 and Voice Testing System for Telephones Type 6712 for testing mobile phones according to 3GPP TS.26.132.

For information on software licenses please see the ordering information. For information on hardware configurations please see the Product Data for PULSE Reflex Telephone Test Software Type 8770 (BP 2428).

### Testing of Handsets in Hands-free Mode

Testing of hands-free covers the following handset use scenarios:

- Handheld hands-free (HHHF)
- Desktop hands-free (DTHF)
- Vehicle mounted hands-free (VMHF)

### Test Cases Supported

Table 1 (see over) shows which test cases are supported by Types 8772-X02 and 8772-X04 with respect to the 3GPP TS.26.132 (version 6.1, September 2004 and version 11.3, July 2013) standard. The numbers in the table refer to the sections in the standard. 'N/M' (Non-mandatory) means that although the test case is not required by the standard, it is still supported in the software. A dash (-) means that the test case is not required by the standard nor is it supported in the software.

\* X = license model either N for node-locked or F for floating

**Table 1** Test cases supported and references

Test Case Title	3GPP TS.26.132 v. 6.1		3GPP TS.26.132 v. 11.3			
	Handset		Handset		Hands-free	
	Narrow-band	Wideband	Narrow-band	Wideband	Narrow-band	Wideband
Sending Frequency Response	7.4.1	8.4.1	7.4.1	8.4.1	7.4.3/7.4.5	8.4.3/8.4.5
Send Loudness Rating (SLR)	7.2.2.1	8.2.2.1	7.2.2.1	8.2.2.1	7.2.3.1/7.2.4.1	8.2.3.1/8.2.4.1
Sending Delay	N/M	N/M	7.10.1	8.10.1	N/M	N/M
Sending Distortion	7.8.1	8.8.1	7.8.1	8.8.1	7.8.1	8.8.1
Sending Noise	7.3.1	8.3.1	7.3.1	8.3.1	–	–
Sending Noise, Spectral Peaks	7.3.1	8.3.1	7.3.1	8.3.1	–	–
Sending Activation	N/M	N/M	N/M	N/M	–	–
Sending Attenuation Range	N/M	N/M	N/M	N/M	–	–
Sending Attenuation Range, Double Talk	N/M	N/M	N/M	N/M	–	–
Receiving Frequency Response	7.4.2	8.4.2	7.4.2	8.4.2	7.4.4/7.4.6	8.4.4/8.4.6
Receive Loudness Rating (RLR)	7.2.2.2	8.2.2.2	7.2.2.2	8.2.2.2	7.2.3.2/7.2.4.2	8.2.3.2/8.2.4.2
Receiving Delay	N/M	N/M	7.10.2	8.10.2	N/M	N/M
Receiving Distortion	7.8.2	8.8.2	7.8.2	8.8.2	7.8.2	8.8.2
Receiving Noise	7.3.2	8.3.2	7.3.2	8.3.2	–	–
Receiving Noise, Spectral Peaks	7.3.2	8.3.2	7.3.2	8.3.2	–	–
Receiving Activation	N/M	N/M	N/M	N/M	–	–
Receiving Attenuation Range	N/M	N/M	N/M	N/M	–	–
Receiving Attenuation Range, Double Talk	N/M	N/M	N/M	N/M	–	–
Sidetone Frequency Response	7.5.1	8.5.1	7.5.1.2	8.5.1.2	–	–
STMR	7.5.1	8.5.1	7.5.1.2	8.5.1.2	–	–
Sidetone Delay	N/M	N/M	7.5.4	8.5.4	–	–
TCLw	7.7.3	8.7.3	7.7.3	8.7.3	7.7.2	8.7.2
Stability Loss	7.6	8.6	7.6	8.6	–	–
Echo Delay	–	–	7.10.3	8.10.3	–	–
Echo Loopback Delay	–	–	7.10.3	8.10.3	–	–
Echo Control Characteristics	–	–	7.11*	8.11*	–	–
Acoustic Shock	N/M	N/M	N/M	N/M	–	–
Ambient Noise Rejection, ANR	7.9†	8.9†	–	–	–	–
X-MOS	–	–	7.12†	8.12†	–	–

\* For PULSE IDA<sup>®</sup> hardware configurations, duration of the excitation is shorter than that required by the standard.

† Additional hardware is required, please see the Product Data for Voice Quality Evaluation System (BP 2391) for further information.

## Ordering Information

**Type 8772-X02\*\*** PULSE Reflex Telephone Test for 3GPP TS.26.132 Handset

**Type 8772-X04\*\*** PULSE Reflex Telephone Test for 3GPP TS.26.132 Hands-free

### PULSE REFLEX TELEPHONE TEST

Type 8770-X\* PULSE Reflex Telephone Test

Type 8770-A-XS\* PULSE Reflex Telephone Test Pack (Optional)

### OPTIONAL SOFTWARE PACKAGES FOR PULSE REFLEX TELEPHONE TEST

Type 8771-X01\*\* PULSE Reflex Telephone Test, ITU-T P.862 PESQ

Type 8771-X02\*\* PULSE Reflex Telephone Test, ITU-T P.863 POLQA

\* X = license model, either N for node-locked or F for floating.

† Type 8770-X\* is required for this software package.

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### REQUIRED STANDARD SYSTEM CONFIGURATIONS

In order to conduct testing on telephones, the hardware included in the following systems must be available<sup>‡</sup>:

- System for Testing using Test Head, Type 6712-A-S01
  - System for Testing using HATS, Type 6712-A-S02
- An appropriate network simulator must also be available

### SOFTWARE MAINTENANCE AND SUPPORT AGREEMENTS

Software Maintenance and Support Agreements for PULSE Reflex Telephone Test are available. Order numbers are as follows:

- M1-8770-X\*
- M1-8771-X01\*: ITU-T P.862 PESQ
- M1-8771-X02\*: ITU-T P.863 POLQA
- M1-8772-X02\*: 3GPP TS.26.132, Handset
- M1-8772-X04\*: 3GPP TS.26.132, Hands-free

‡ For details, see the Product Data for Type 6712 (BP 1683).

