ISITEP
D4.4.4 – PROTOTYPE TEST REPORT

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REVISION TABLE

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V1.1	09/01/2017	All	All	Final release

Publishable extended abstract

This deliverable constitutes the test report of the TETRA ISI over IP – TETRAPOL gateway prototype developed in ISITEP European FP7 project.

CONTENTS

1. INTRODUCTION

1.1 Introduction

ISITEP aims at achieving the interoperability between legacy PMR networks based on TETRA and TETRAPOL technologies. In order to avoid deeply modifying already deployed networks, ISITEP's partners' strategy consists in the implementation of gateways connected to legacy networks.

IN WP43, a hardware and software solution for ISITEP will be developed to allow interoperability between TETRA and TETRAPOL networks whereas in WP44 a hardware and software solution for ISITEP will be developed to allow interoperability between TETRAPOL and TETRAPOL networks.

WP45 focuses on the development of a deployable TETRA - TETRAPOL gateway with specific constraints and use cases related to unplanned events requiring a hastily formed network and remote control (through satellite IP links for example).

The present document is related to WP44.

1.2. Document scope

This deliverable (D44.4) corresponds to task T4.4.4. and aims at reporting the tests achieved on the TETRAPOL - TETRAPOL Gateway developed in WP44.

1.3. Purpose

This document provides tests report applicable to the TETRAPOL-TETRAPOL Gateway system.

The Gateway is used to interconnect two TETRAPOL Regional Networks. It uses CC-API interface for signaling and analog or S0 digital audio signal for voice.

The system includes a hardware platform and distributed applications:

- Line Connected Terminals (HW and SW)
- CC-API
- Voice Switching Matrix (HW and SW)
- CN (HW and SW)

1.4. Document Overview

The document describes the test procedure and test report form for the GATEWAY.

The document takes the GATEWAY requirements specified in document D44.1 and deduced from operational requirements expressed by end users in WP2.

1.5. Acronyms

Acronym	*Definition*
AG	Access Gate
AI	Air Interface
CN	Control Node (TETRAPOL network)
CAN	Code Nature of Address Or Digital Access Board (Allowing of the management of 4 accesses)
CC-API	Control Centre API for TETRAPOL
CMU	Central Management Unit of the GATEWAY
CTL	GATEWAY Controller board
DCS	Dispatch Control Server
DPU	Data Processing Unit : module inside the CMU to manage the GATEWAY
DXT	Digital eXchange TETRA
E1	E1 (a PCM interface G.703 of 30 channels A law G.711)
EMOCH	Emergency Multi site Open Channel
ETH	ETHernet
EUT	Equipment Under Test
GIU	Graphical Interface Unit
G(T)W	GateWay
HW	HardWare
IP	Internet Protocol
LAG	Line Access Gate
LABS	Line Access Base Station
LATC	Line Access Terminal Controller
LCT	Line Connected Terminal
Li	LIst bit (=0 if last element in address list)
MD	Mediation Device in charge of Network Management
MMI	Man Machine Interface
MOCH	Multi-site Open Channel
MSW	Main Switch (TETRAPOL network)
NA	Non Applicable
NPI	Numbering Plan Identifier
OA&M	Operation Administration and Maintenance
OMC	Operation & Maintenance Computer
PBM	Platform Business Manager
PCM	Pulse Coded Modulation
RN	Regional Network
RSW	Radio Switch (TETRAPOL network)
SSW	Secondary Switch (TETRAPOL network)
SW	SoftWare
ST	System Terminal

TKG	TalK Group
TDM	Time Division Multiplexing
TMP	Technical Management Position
TPA	Talking Party Address
TPOL	TETRAPOL
TPS	Terminal Programming Station
TRS	Technical Requirements Specification

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2. TEST ENVIRONMENT

2.1. General presentation

The gateway is attached to two TETRAPOL networks.

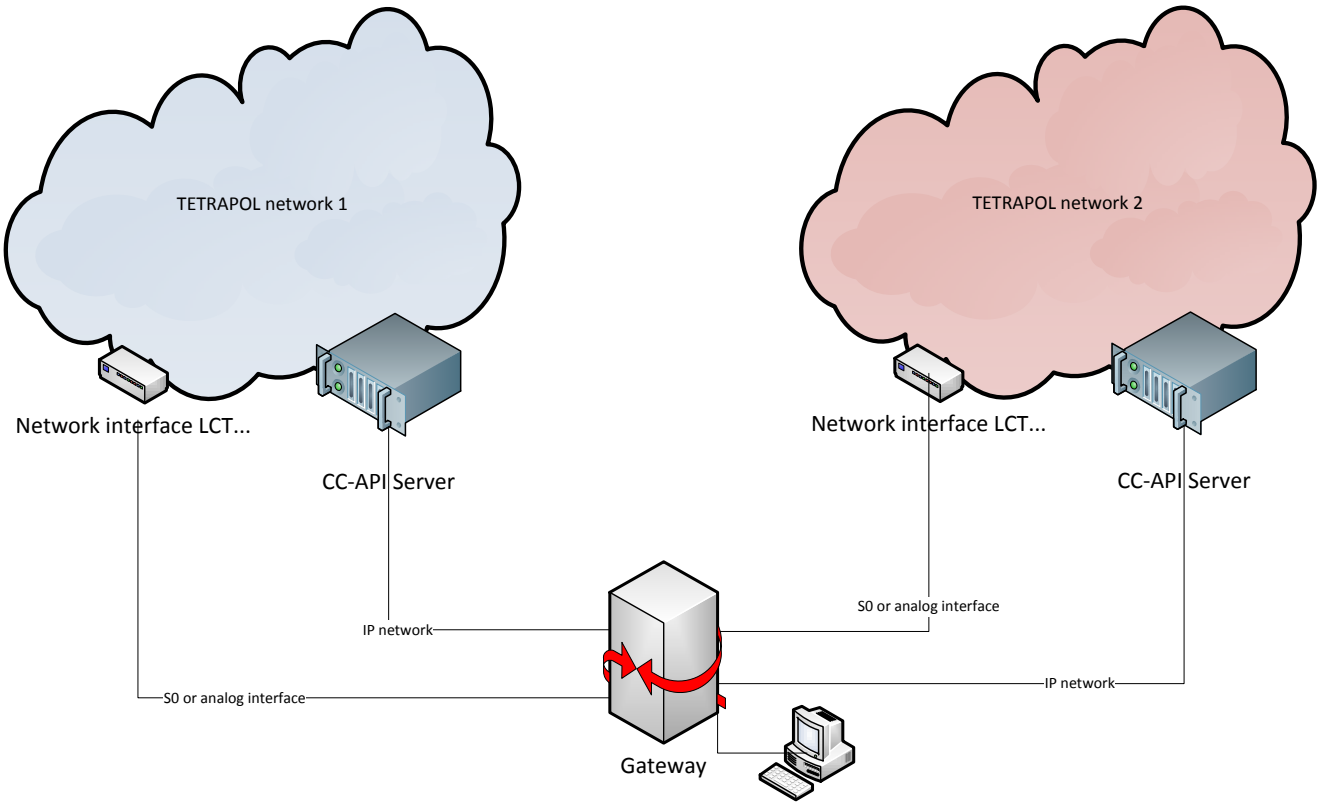

Figure 1 : TETRAPOL TETRAPOL Test platform

Mobile TETRAPOL terminals are used for end-to-end test communications.

The GATEWAY uses Control Room Interfaces: it is connected to the CC-API server for the signaling related to call control. It is connected to AGs for voice and real-time signaling like PTT. There are TETRAPOL - TETRAPOL Gateway Analog and S0 AGs.

The tests are classified into two categories:

- Prototyping (P): Verification of operational features while the equipment under test is powered on. These tests include direct observation of the equipment or results in the HMI.
- Functions (F): Verification of functional features that can be accessed directly or indirectly via a specific test context like some engaged communications.

2.2. Test configuration

The remote IP HMI is used to configure the gateway:

Hereunder is a suggested configuration for the TETRAPOL TETRAPOL gateway for the procedure.

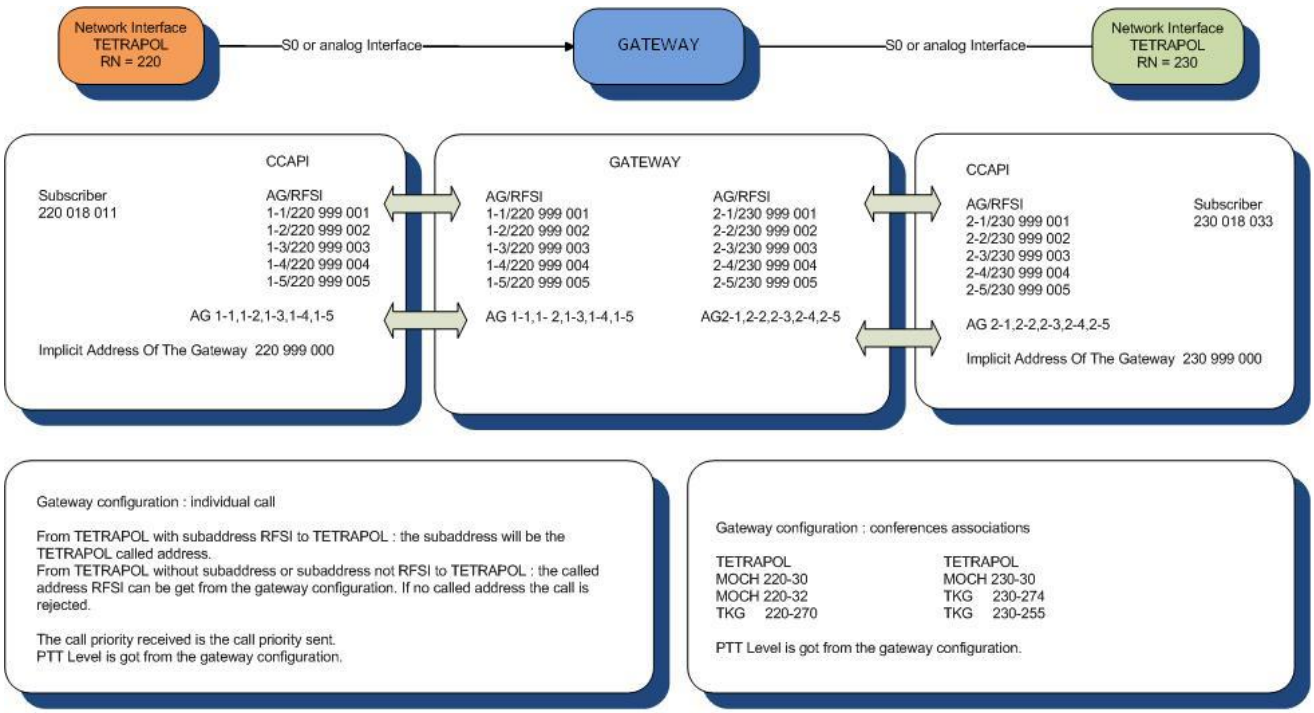

Figure 2 : TETRAPOL TETRAPOL gateway configuration

3. TEST PROCEDURE AND REPORT FORM

3.1. Interface Requirements

CC-API server

Platform: **TETRAPOL - TETRAPOL GATEWAY**	Scenario: 0100	Test Location: ADS premises
Tested Functions: GATEWAY manages TETRAPOL CC-API server	Requirements: SYS_GTW_FUNC_040, SYS_GTW_FUNC_200, SYS_GW_LCT_010, SYS_GW_LCT_110, SYS_GW_LCT_150, SYS_GW_CCAPI_030, SYS_GW_CCAPI_120, SYS_GW_CCAPI_130, SYS_GW_CCAPI_240	
Test Configuration: Factory Initial State: Operational GATEWAY attached CC-API & LCT	TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
Check that CC-API and DCS communicate	No DCS(CC-API) alarm	OK

AG links

Platform: **TETRAPOL - TETRAPOL GATEWAY**	Scenario: 0110	Test Location: ADS premises
Tested Functions: GATEWAY manages the link interfaces for voice: TETRAPOL analog AGs, S0 AGs	Requirement: SYS_GW_IRS_010, SYS_GW_IRS_020, SYS_GW_IRS_030	
Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT	TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
In HMI, select the 'Settings' menu. Enter the 'Boards' submenu. Verify that each card slot can home an analog or S0 AG	OK	OK

3.2. GATEWAY Configuration

Remote Configuration

Platform: **TETRAPOL - TETRAPOL GATEWAY**	Scenario: 0200	Test Location: ADS premises
Tested Functions: GATEWAY can be remotely configured and monitored and maintained via IP Test Configuration: Factory Initial State: Operational GATEWAY attached CC-API & LCT	Requirements: SYS_GW_FUNC_010, SYS_GW_FUNC_020, SYS_GW_SEC_010, SYS_GW_SEC_030, SYS_GW_USE_010, SYS_GW_USE_020, SYS_GW_USE_030, SYS_GW_USE_040 TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
Use a PC with HMI client installed on it		
Configured the PC with LAN IP address 192.168.4.50		
Run HMI	A connection window opens	OK
Enter IP address of CMU1: 192.168.4.1 or CMU2: 192.168.4.2 for control management		
Click on 'Connect'	An authentication window opens	OK
Enter password 'XXXXXX'	The GIU main window opens	OK
Check that the Settings and 'Monitoring' and 'Maintenance' menus are available	Menus are available	OK

Associations of Group Communications

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0210	Test Location: ADS premises
Tested Functions: GATEWAY allows user to define an association between the two TETRAPOL networks: RB1 and RB2 Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT	Requirements: SYS_GW_FUNC_010, SYS_GW_FUNC_210, SYS_GW_FUNC_290, SYS_GW_PERF_020 TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
Using HMI on a PC, open 'Exploitation' menu		
Enter 'Conferences / TKG' sub-menu	The 'List of Associations' window opens	OK
Check that an association can be edited, altered, deleted	The list is updated accordingly. No GATEWAY restart is required	OK
On editing an association, check parameters are provided to define TETRAPOL - TETRAPOL Gateway TETRAPOL networks	OK	OK

Enabling Crisis Relay

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0220	Test Location: ADS premises
Tested Functions: GATEWAY provides configuration parameter to enable/disable EMOCH communications relay between networks TETRAPOL1 and TETRAPOL2 Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT	Requirements: SYS_GW_FUNC_170, SYS_GW_FUNC_180, SYS_GW_FUNC_190, SYS_GW_FUNC_280, SYS_GW_FUNC_285, SYS_GW_FUNC_310 TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
Using HMI on a PC, open 'Settings' menu		
Enter 'General Settings' sub-menu	The corresponding window opens	OK
Check that EMOCH communications may be enabled or disabled	OK	OK

PTT Priority of an AG

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0230	Test Location: ADS premises
Tested Functions: GATEWAY provides configuration menu for PTT priority levels Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT	Requirements: SYS_GW_PERF_130, SYS_GW_LCT_100 TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
Using GIU on a PC, open 'Parameters' menu		
Enter 'General Parameters' sub-menu	The corresponding window opens	OK
Check that a parameter is available for each type of TETRAPOL communication: private comm. and group comm. Check that the levels range from 1 to 15	OK	OK

AG Specialization

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0240	Test Location: ADS premises
Tested Functions: GATEWAY provides configuration menu for dedicating AGs to group communications or private communications	Requirements: SYS_GW_FUNC_200, SYS_GW_FUNC_285	
Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT	TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
Using GIU on a PC, open 'Parameters' menu		
Enter 'Access' sub-menu	The 'System Access' window opens	OK
Select an AG access		
Click on the 'Configure' button	The corresponding AG access window opens	OK
Check it is possible to specialize the AG access for a group communication or a private call. Check also it is possible to unspecialized it	OK	OK

3.3. Managing Group Communications

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0300	Test Location: ADS premises
Tested Functions: Audio signal quality is not impaired when processed by GATEWAY	Requirements: SYS_GW_FUNC_010, SYS_GW_FUNC_020, SYS_GW_FUNC_030, SYS_GW_FUNC_060, SYS_GW_FUNC_070, SYS_GW_FUNC_210, SYS_GW_FUNC_230, SYS_GW_FUNC_285, SYS_GW_FUNC_300, SYS_GW_LCT_120,	
Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT Several static group communications are configured: (RB1 - RB2)	TEST REPORT	
Checking method: F		
ACTIONS	EXPECTED RESULTS	RESULTS
Send message to GATEWAY to open the RB1 side of a static association	AG(RB1) selected	OK
Send message to GATEWAY to open the RB2 side of the same association	AG(RB2) selected	OK
As soon as the association is shown as established in the 'List of associations', use a terminal configured for		

RB1 to talk on the group		
Verify that speech is received on a terminal configured for RB2	OK	OK
Repeat previous steps for a static TKG group communication	OK	OK

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0310	Test Location: ADS premises
Tested Functions: GATEWAY supports simultaneous activation on dynamic association	Requirements: SYS_GW_FUNC_300, SYS_GW_PERF_010	
Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT Only one dynamic association configured Only two analog AGs available for dynamic associations (RB1 - RB2)	TEST REPORT	
Checking method: F		
ACTIONS	EXPECTED RESULTS	RESULTS
Transmitting with a terminal configured on RB1, verify that voice is received by a terminal on RB2	Voice received	OK
On AG(RB2), open RD signal and connect RD signals of AG(RB1) and AG(RB2) together		
Transmit with terminal on AG (RB1). Simultaneous activation occurs	Voice is not received	OK
So long as networks are activated, verify in the 'association list' that the AGs are used in two different associations	OK	OK
Restore initial wiring		
Transmitting with a terminal configured on RB1, verify that voice is received by a terminal on RB2	Voice received	OK

3.4. Managing Private Communications

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0400	Test Location: ADS premises
Tested Functions: Private call with and without sub-addressing RB1 - RB2	Requirements: SYS_GW_FUNC_090, SYS_GW_FUNC_140, SYS_GW_FUNC_150, SYS_GW_FUNC_160, SYS_GW_FUNC_280, SYS_GW_CCAPI_030	
Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT	TEST REPORT	
Checking method: F		
ACTIONS	EXPECTED RESULTS	RESULTS
Using a TETRAPOL terminal, call an AG(RB1) reserved for private comm. and fill-in sub-address with called number in RB2		
Answer with corresponding terminal on RB2		
Verify audio in TETRAPOL - TETRAPOL Gateway ways	OK	OK
Hang-on called terminal		
Verify caller terminal receives busy tone	OK	OK
Verify AG(RB2) is released	OK	OK
Hang-on caller terminal		
Verify AG(RB1) is released	OK	OK
Call again		
Answer with terminal on RB2		
Verify audio in TETRAPOL - TETRAPOL Gateway ways	OK	OK
Hang-on caller terminal		
Verify called terminal receives busy tone	OK	OK
Verify AG(RB1) is released	OK	OK
Hang-on called terminal		
Verify AG(RB2) is released	OK	OK
Using a TETRAPOL terminal, call an AG(RB1) reserved for private comm. with sub-address empty		
Answer with terminal with default destination number as configured in GATEWAY		
Verify audio in TETRAPOL - TETRAPOL Gateway ways	OK	OK

Hang-on called terminal		
Verify caller terminal receives busy tone	OK	OK
Verify AG(RB2) is released	OK	OK
Hang-on caller terminal		
Verify AG(RB1) is released	OK	OK
Call again		
Answer with terminal with default destination number configured in GATEWAY		
Hang-on caller terminal		
Verify called terminal receives busy tone	OK	OK
Verify AG(RB1) is released	OK	OK
Hang-on called terminal		
Verify AG(RB2) is released	OK	OK

3.5. Managing Resources

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0500	Test Location: ADS premises
Tested Functions: Using free AGs. GATEWAY overloading policy	Requirements: SYS_GW_FUNC_200, SYS_GW_FUNC_220, SYS_GW_FUNC_230, SYS_GW_FUNC_280, SYS_GW_FUNC_285	
Test Configuration: Factory Initial State: Operational GATEWAY attached to TCS & DXT & CC-API & LCT	TEST REPORT	
Checking method: F		
ACTIONS	EXPECTED RESULTS	RESULTS
Some AGs are reserved to static associations Verify all the static group communications are open	OK	OK
Verify there are still one unreserved AG(RB1) and one unreserved AG(RB2). Verify TETRAPOL - TETRAPOL Gateway are free	OK	OK
Activate a dynamic group communication by transmitting with terminal on AG(RB1). Keep transmitting. Verify that the previous AG(RB1) and AG(RB2) are used	Communication is shown in 'Association list' window	OK
Verify that voice is received on a terminal configured for RB2	OK	OK
Try to activate a new dynamic group communication again. Verify that call establishment is delayed as no AG is free	OK	OK
Release previously open dynamic group communication		
Check that within 1min, AG(R1) and AG(R2) get used and the new communication is established	OK	OK

3.6. Performance

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0600	Test Location: ADS premises
Tested Functions: Audio signal quality is not impaired when processed by GATEWAY	Requirements: SYS_GW_FUNC_050, SYS_GW_PERF_010, SYS_GW_PERF_020, SYS_GW_PERF_030	
Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT At least one group communication is established between RB1 and RB2	TEST REPORT	
Checking method: F		
ACTIONS	EXPECTED RESULTS	RESULTS
Activate PTT on one access related to RB1 and input a speech signal into that access at the same time		
Check quality output by GATEWAY on associated RB2 access	No signal loss No audible distortion No significant level change	OK

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0610	Test Location: ADS premises
Tested Functions: AG switching time Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT	Requirements: SYS_GW_FUNC_050, SYS_GW_PERF_010, SYS_GW_PERF_020, SYS_GW_PERF_030 TEST REPORT	
Checking method: F		
Tested by:	Date:	Duration:
ACTIONS	EXPECTED RESULTS	RESULTS
Send message to GATEWAY to activate the RB1 side of a dynamic association		
Send message to GATEWAY to activate the RB2 side of the same association		
In the DCS trace, check that the AG of RB1 was selected within 200ms	Time delay < 200ms	OK
In the DCS trace, check that the AG of RB2 was selected within 200ms	Time delay < 200ms	OK
Increase number of established associations Keep some AGs as free		
Send message to GATEWAY to activate the RB1 side of a dynamic association		
Send message to GATEWAY to activate the RB2 side of the same association		
In the DCS trace, check that the AG of RB1 was selected within 200ms	Time delay < 200ms	OK
In the DCS trace, check that the AG of RB2 was selected within 200ms	Time delay < 200ms	OK
Decrease number of established associations		

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0620	Test Location: ADS premises
Tested Functions: PTT transfer delay Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT At least one group communication is established between TETRAPOL1 and TETRAPOL2	Requirements: SYS_GW_FUNC_050, SYS_GW_PERF_010, SYS_GW_PERF_020, SYS_GW_PERF_030 TEST REPORT	
Checking method: F		
ACTIONS	EXPECTED RESULTS	RESULTS
Consider an established association between RB1 and RB2 Send RD on analog AG(RB1) or RD-on message on S0 AG(RB1)		
In the DCS trace, check that the PTT is send to AG(RB2) within 100ms	Propagation time < 100ms	OK
Increase number of established associations Generate a well-defined large number of PTT activity		
In the DCS trace, count the number of PTT messages transferred through associations	Number of transferred PTT messages equals number of PTT messages injected	OK

3.7. Reliability

Platform: **TETRAPOL - TETRAPOL GATEWAY**	Scenario: 0700	Test Location: ADS premises
Tested Functions: Automatic service recovery after a fault	Requirements: SYS_GW_PERF_060, SYS_GW_PERF_070, SYS_GW_PERF_080, SYS_GW_PERF_090, SYS_GW_PERF_100, SYS_GW_PERF_110, SYS_GW_PERF_120, SYS_GW_PERF_130	
Test Configuration: Factory Initial State: Operational GATEWAY attached CC-API & LCT	TEST REPORT	
Checking method: F		
ACTIONS	EXPECTED RESULTS	RESULTS
Power off the GATEWAY		
Power on the GATEWAY	System init time < 5min.	OK
Power supply board have lights on	OK	OK
CTL and CAN lights are blinking	OK	OK
Using GIU on a PC, verify checksums of firmware and software with respect to the reference profile	Checksums OK	OK
Verify DCS is connected to CC-API	Connected	OK
Verify GATEWAY is operational (no operator action required)	No alarm in the system	OK
Cut the link to an AG involved in a static association		
Verify GATEWAY shows the AG as faulty. Verify GATEWAY automatically selected a new free AG for the association and shows it in the association list	OK	OK

Platform: **TETRAPOL - TETRAPOL GATEWAY**	Scenario: 0710	Test Location: ADS premises
Tested Functions: GATEWAY redundancy	Requirements: SYS_GW_PERF_060, SYS_GW_PERF_070, SYS_GW_PERF_080, SYS_GW_PERF_090, SYS_GW_PERF_100, SYS_GW_PERF_110, SYS_GW_PERF_120, SYS_GW_PERF_130	
Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT At least one group communication is established CTL1 is the master CTL board CMU1 is Leading as shown in SVIP	TEST REPORT	
Checking method: F		
ACTIONS	EXPECTED RESULTS	RESULTS
Power supply modules		
Switch off power supply board 1		
In GIU, check the PS1 alarm is active	OK	OK
Verify the group comm. remains operational	OK	OK
Switch-on PS1 board then switch-off PS2 board		
In GIU, check the PS2 alarm is active	OK	OK
Verify the group comm. remains operational	OK	OK
Switch-on PS2 board		
Control boards (CTL)		
Unplug CTL1/IP link #1		
In GIU, check CTL1 alarm is active	OK	OK
In GIU, check CTL2 changes to Master	OK	OK
In SVIP, check link 1-01 is shown faulty	OK	OK
Plug CTL1/IP link #1 again		
Verify no alarm is shown any longer	OK	OK
Unplug CTL2/IP link #1 (CTL2 is Master)		
In GIU, check CTL2 alarm is active	OK	OK
In GIU, check CTL1 changes to Master	OK	OK
In SVIP, check link 2-01 is shown faulty	OK	OK
Plug CTL2/IP link #1 again		
Verify no alarm is shown any longer	OK	OK
Unplug CTL1/IP link #2		
In SVIP, check link 1-02 is shown faulty	OK	OK

Plug CTL1/IP link #2 again		
Verify no alarm is shown any longer	OK	OK
Unplug CTL2/IP link #2		
In SVIP, check link 2-02 is shown faulty	OK	OK
Plug CTL2/IP link #2 again		
Verify no alarm is shown any longer	OK	OK
Central Management Units (CMU)		
Shut-down CMU1 (Leading)		
Check CMU2 changes from Following to Leading state	OK	OK
Check SVIP on CMU2 shows the four IP links faulty with CMU1	OK	OK
Restart CMU1		
Verify no alarm is shown any longer	OK	OK
Shut-down CMU2 (Leading)		
Check CMU1 changes from Following to Leading state	OK	OK
Check SVIP on CMU1 shows the four IP links faulty with CMU2	OK	OK
Restart CMU2		
Verify no alarm is shown any longer	OK	OK
Ethernet switches		
Power-off switch 1		
Check CMU2 changes to Leading	OK	OK
Check SVIP (on CMU1 and CMU2) shows an alarm for all links going through switch 1	OK	OK
Power-on switch 1		
Verify no alarm is shown any longer	OK	OK
Power-off switch 2		
Check CMU1 changes to Leading	OK	OK
Check SVIP (on CMU1 and CMU2) shows an alarm for all links going through switch 2	OK	OK
Power-on switch 2		
Verify no alarm is shown any longer	OK	
Manual failover of CMUs		
Click on 'CMU Failover' in SVIP on CMU2 (Following)		
In SVIP, check CMU2 changes to Leading within 2min.	OK	OK

Click on 'CMU Failover' in SVIP on CMU1 (Following)		
In SVIP, check CMU1 changes to Leading within 2min.	OK	OK
Check no service outage occurred during CMU failover	N/A	N/A

3.8. Maintenance

Platform: **TETRAPOL - TETRAPOL GATEWAY**	Scenario: 0800	Test Location: ADS premises
Tested Functions: SNMP support	Requirements: SYS_GW_USE_040, SYS_GW_HW_130, SYS_GW_CCAPI_510	
Test Configuration: Factory Initial State: Operational GATEWAY attached to (TCS & DXT &) CC-API & LCT	TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
Install the GATEWAY'S MIB into the Network Manager PC	MIB format accepted	OK

Platform: **TETRAPOL - TETRAPOL**	Scenario: 0810	Test Location: ADS premises
Tested Functions: SNMP traps generation	Requirements: SYS_GW_USE_040, SYS_GW_HW_130, SYS_GW_CCAPI_510	
Test Configuration: Factory Initial State: Operational GATEWAY attached to CC-API & LCT	TEST REPORT	
Checking method: P		
ACTIONS	EXPECTED RESULTS	RESULTS
Unplug DCS(CC-API) link. Recover after test	A trap is issued	OK
Unplug a digital LCT link. The LCT should not be used for association. Recover after test	A trap is issued	OK
Unplug a digital LCT link used for permanent association. Recover after test	A hardware fault trap is issued A trap for broken association is issued	OK

4. CONCLUSION

This document presented the test suite and report to check the developed gateway meets ISITEP requirements from D44.1. This document only applies to TETRAPOL-TETRAPOL gateway.