

TETRA Interoperability Certificate

Trunked Mode Operation

**Hytera Mobilfunk GmbH, ACCESSNET-T IP – SwMI
Hytera, PT350 – Terminal**

**Test Session #182, hosted by Hytera in Shenzhen, China - June 2021
Remotely Witnessed Session**

Latest Certified SwMI SW Release:	PV11.31.03	Latest Certified MS SW Release:	V4.01
Latest Certified SwMI HW Release:	PV11	Latest Certified MS HW Release:	30P80

ISCTI (Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione) certifies, that the Hytera Mobilfunk GmbH ACCESSNET-T IP SwMI and the Hytera PT350 Terminal have been subject to interoperability testing for the "Certified" features listed on the second page of this certificate, in accordance with the TETRA Interoperability Profiles, TIP compliance Test Plan and the related TETRA interoperability requirement tables.

The table lists all the available TETRA interoperability profiles, and summarises the main functionalities of every profile according to the TETRA interoperability requirement tables.

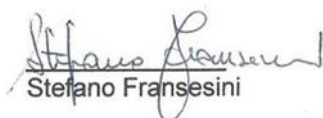
A feature is "Certified" when it has been successfully tested during the last test session with one of the testing method described in the TETRA process document part 1 (TPD001-01).

A breakdown into the feature details is given in the Feature Compliance Overview section of this certificate.

This certificate has been issued following a fully witnessed single test session between Hytera Mobilfunk GmbH and Hytera in June 2021. **Certification Body was not present at the host lab during the session, but witnessed testing remotely.** Detailed test results are listed in the Test Report associated to this Certificate.

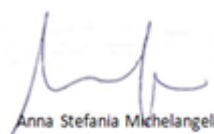
Details and explanation about the procedure used to provide verdicts are in the TIC process TPD001-01.

IOP Test engineer



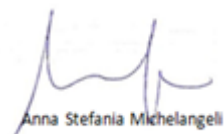
Stefano Franesini

Head of the Procedure



Anna Stefania Michelangeli

Radio Office Manager



Anna Stefania Michelangeli

ISCTI - V.le America 201, 00144 Rome, Italy
Ph: +39 06 5444 2663, Fax: +39 06 5410904
e-mail: tetra_ctc.iscom@mise.gov.it
Web: www.mise.gov.it

**Date of Issue:
5 August 2021
v 1**

Certified features

Tetra Association TTR001-01: Core	
Registration	Certified
Group Management	Certified
Group call	Certified
Individual call	Certified
Status messages	Certified
Pre-emptive Priority Call	Certified
Emergency Call	Certified
Cell Re-selection	Certified
PSTN interconnect	Certified
MS-ISDN Numbering	-
In Call Signalling	Certified
Subscriber Class Procedures	Certified
Common Secondary Control Channels	Certified
BS Fallback Operation	Certified
Energy Economy Mode	-
Transmit Inhibit	Certified
Mixed band operation	-
Tetra Association TTR001-02: SDS	
SDS Type 1, 2 or 3	Certified
SDS-TL	Certified
Store and Forward	-
Multipart SDS	-
Tetra Association TTR001-03: DGNA	
Support for individually addressed DGNA	Certified
Support for group addressed DGNA	-
Tolerance of unsupported DGNA functions	-
Tetra Association TTR001-04: AUTH	
SwMI Initiated (non-mutual) Authentication	Certified
SwMI Initiated Authentication made Mutual by MS	Certified
TEI Query	-

Tetra Association TTR001-09: AL	
Ambience Listening	Certified
Interaction with Transmit Inhibit	-
Tetra Association TTR001-11: AIE	
Security Class 2 Air Interface Encryption	Certified
Security Class 3 Air Interface Encryption	Certified
Security Class 3G Air Interface Encryption	-
Management of CMG and GSKO	-
Key Status demand	-
Change of Security Class for Fallback operation	-
Change of Security Class (other than for Fallback operation)	-
Key Management for Secure Direct Mode Operation	-
Tetra Association TTR001-12: SI	
MS initiated Service Interaction	Certified
SwMI initiated Service Interaction	Certified
Call Waiting	-
Tetra Association TTR001-13: ED	
Enable and temporary disable of an MS	Certified
Permanent disable of an MS	Certified
Tetra Association TTR001-14: TKD	
Delivery of Authentication Data	Certified
Delivery of SCK	Certified
Delivery method	Certified
Tetra Association TTR001-19: LIP	
Location Information Protocol	Certified
Tetra Association TTR001-20: CF	
Call Forwarding Unconditional	Certified
Call Forwarding Conditional	Certified
Call Forwarding Information Displayed	-
Management of Call Forwarding	-

Feature Compliance Overview

The first pages of this certificate provide an indication about the main interoperable TETRA features for each TIP specification (as described in the TIC-RT). The main interoperable TETRA features' results depend on a set of sub-features, the verdicts associated to each sub-feature are directly derived from the analysis of the performed test cases.

The results associated to each feature and sub-feature are shown in the "Feature Compliance Report" table below. The main features are indicated with blue background and the associated sub-features (or second level features) have a white background.

The outcome assigned to a feature as shown on page 2, is derived by the Feature Compliance Report tables.

Outcome	Definition
Certified	All required tests have been performed and passed
Partial	Not all the required tests have been performed but none have failed
–	Feature cannot be certified e.g. it is not supported by at least one product, no tests were performed, or some tests were performed but at least one failed

The outcome is derived from the verdict assigned to a sub feature which is the result of an analysis of the test case results listed in the Test Report. The verdict assigned to each sub-feature is derived from one or several test case results or test steps result, the TETRA Interoperability requirement tables (TIC-RTs) indicate the link between sub-features and test cases for the certified set of equipment capabilities (see Test Report).

Verdict	Definition
Passed	All mandated tests or steps of tests linked to this functionality (as per TIC-RT indication) are compliant with the TIP specification relevant to this feature or sub-feature
Incomplete	Not all mandated tests (as per TIC-RT indication) have been executed
Failed	At least one of mandated test or steps of tests linked to this functionality failed to match the TIP specification relevant to

	this feature or sub-feature
--	-----------------------------

The verdict associated to the feature or sub-feature gives also indication about the method used to test that feature or sub-feature. The allowed testing Methods are listed in the table below, a complete description of the procedures and constraints associated to each of them can be found in the "TPD001-01 TETRA Interoperability Certification Process Description" document.

Testing Method	Description
Complete	All mandated tests associated to the feature or sub-feature have been executed
Spot	Only a selection of the mandatory test cases associated to the feature or sub-feature has been executed during the test session. These tests are a subset of the tests performed on an equivalent software which has been "completely" tested against the same functionality on a different equipment, see manufacturer declaration in the associated Test Report
Regression	Only a selection of the mandatory test cases associated to the feature or sub-feature has been executed during the test session. These tests are a subset of the tests performed on a previous version of the same software which has been "completely" tested in a previous test session against the same functionality, see manufacturer definition in the associated Test Report
Regression on spot	The regression method (see the previous item) has been applied at this session on the verdicts from the referenced (previous) session where the spot testing method (see above) had been applied.
Witnessed	The TIP heading lines in the Feature Compliance Report indicate whether each TIP is partially or fully witnessed by the Certification Body. Additionally, for a partially-witnessed TIP, the number of witnessed test cases that passed is shown for each the feature and sub-feature. There may have been some un-witnessed passed tests and they will

	have been found to be successful based on the log file evaluation
--	-------------------------------------------------------------------

Depending on equipment capabilities declared by the manufacturer, some features or sub features cannot be tested. The following table describes meaning of the used abbreviation:

Indication	Definition
Not Supported	The SwMI and/or MS do not support the minimum features required to verify these items

ISCTI has made every effort to ensure that every result has been correctly evaluated in accordance with the relevant TIPs, Test Plans and TIC-RTs. ISCTI has no liability for the test results, or towards the manufacturers.

The tables on the following page list HW and SW releases of SwMI and Terminal under test and the used TIP specifications, Test Plans and TIC-RTs.

This Certificate and Certificates from previous test sessions are available on the TCCA web site (<https://tandcca.com/interoperability/interoperability-certificates-and-test-reports/>).

The feature results are shown in the tables below.

Information on equipment under test

SwMI Manufacturer	Hytera Mobilfunk GmbH
SwMI Model	ACCESSNET-T IP
SwMI HW Release	PV11
SwMI SW Release	PV11.31.03
MS Manufacturer	Hytera
MS Model	PT350
MS HW Release	30P80
MS SW Release	V4.01

Document references

Core	TTR001-01 v6.4.0 IOP001-01 v3.4.0 TIC-RT001-01 v279
SDS	TTR001-02 v2.1.3 IOP001-02 v2.2.0 TIC-RT001-02 v225
DGNA	TTR001-03 v2.2.0 IOP001-03 v2.3.0 TIC-RT001-03 v235
AUTH	TTR001-04 v3.1.0 IOP001-04 v2.0.0 TIC-RT001-04 v233
AL	TTR001-09 v2.1.0 IOP001-09 v1.2.0 TIC-RT001-09 v132
AIE	TTR001-11 v3.1.0 IOP001-11 v3.2.0 TIC-RT001-11 v337
SI	TTR001-12 v1.1.0 IOP001-12 v1.0.0 TIC-RT001-12 v137
ED	TTR001-13 v2.1.0 IOP001-13 v1.0.0 TIC-RT001-13 v153
TKD	TTR001-14 v1.0.3 IOP001-14 v1.2.0 TIC-RT001-14 v125
LIP	TTR001-19 v1.1.0 IOP001-19 v1.3.0 TIC-RT001-19 v118
CF	TTR001-20 v1.0.1 IOP001-20 v1.0.0 TIC-RT001-20 v117

Feature compliance report

Core - Remotely Fully Witnessed Testing	
Registration	PASSED Complete 9_pass_of_9
Initial registration	PASSED Complete 4_pass_of_4
SwMI initiated location updating	PASSED Complete 2_pass_of_2
LA timer based Periodic location updating	PASSED Complete 2_pass_of_2
De-registration	PASSED Complete 1_pass_of_1
Group Management	PASSED Complete 14_pass_of_14
Single group attachment	PASSED Complete 6_pass_of_6
Multiple group attachment	PASSED Complete 5_pass_of_5
MS initiated group detachment	PASSED Complete 2_pass_of_2
SwMI initiated group detachment	PASSED Complete 1_pass_of_1
SwMI initiated group attachment	PASSED Complete 1_pass_of_1
Group call	PASSED Complete 11_pass_of_11
Normal group call	PASSED Complete 4_pass_of_4
Late entry	PASSED Complete 1_pass_of_1
Priority Group scanning	PASSED Complete 3_pass_of_3
Call setup modifications	PASSED Complete 1_pass_of_1
Resource Queuing based on Call Priority	PASSED Complete 1_pass_of_1
Broadcast Call	PASSED Complete 1_pass_of_1

Limited coverage notification	Not Supported
Individual call	PASSED Complete 12_pass_of_12
Simplex individual call	PASSED Complete 4_pass_of_4
Duplex individual call	PASSED Complete 2_pass_of_2
Call setup modifications	PASSED Complete 4_pass_of_4
Resource Queuing based on Call Priority	PASSED Complete 2_pass_of_2
Indication of imminent call disconnection	Not Supported
Status messages	PASSED Complete 4_pass_of_4
Individual addressed Status transfer	PASSED Complete 1_pass_of_1
Group addressed Status transfer	PASSED Complete 3_pass_of_3
Pre-emptive Priority Call	PASSED Complete 7_pass_of_7
Pre-emption of Resources	PASSED Complete 2_pass_of_2
Pre-emption of Busy Users	PASSED Complete 5_pass_of_5
Emergency Call	PASSED Complete 5_pass_of_5
Pre-emption of Resources	PASSED Complete 3_pass_of_3
Pre-emption of Busy Users	PASSED Complete 1_pass_of_1
Call setup modifications	PASSED Complete 1_pass_of_1
Call disconnection by non-call owner	Not Supported
Cell Re-selection	PASSED Complete 22_pass_of_22
Undeclared	PASSED Complete 1_pass_of_1
Unannounced	PASSED Complete 3_pass_of_3

Announced - with Call Restoration	PASSED Complete 11_pass_of_11
Announced - without Call Restoration	Not Supported
Expedited	Not Supported
Graceful Service Degradation Mode (GSDM)	PASSED Complete 7_pass_of_7
Single-site operation	Not Supported
PSTN interconnect	PASSED Complete 5_pass_of_5
TETRA Originated Call	PASSED Complete 2_pass_of_2
PSTN Originated Call	PASSED Complete 1_pass_of_1
DTMF over-dial	Not Supported
Emergency Telephone Calls	PASSED Complete 2_pass_of_2
MS-ISDN Numbering	
MS ISDN - Voice Call	Not Supported
MS-ISDN Status	Not Supported
In Call Signalling	PASSED Complete 6_pass_of_6
Slow Signalling on Traffic Channel (SACCH)	PASSED Complete 2_pass_of_2
Fast Signalling on Traffic Channel (FACCH)	PASSED Complete 4_pass_of_4
Subscriber Class Procedures	PASSED Complete 10_pass_of_10
Cell Selection based on Subscriber Class	PASSED Complete 4_pass_of_4
Subscriber Class Delivery during Location Update	PASSED Complete 3_pass_of_3
Use of Subscriber Class Preference Levels	PASSED Complete 3_pass_of_3
Common Secondary Control Channels	PASSED Complete 6_pass_of_6
One C-SCCH per cell	PASSED Complete 4_pass_of_4
Two C-SCCH per cell	PASSED Complete 2_pass_of_2

Three C-SCCH per cell	PASSED Complete 2_pass_of_2
BS Fallback Operation	PASSED Complete 13_pass_of_13
Switch to/from BS Fallback Operation	PASSED Complete 2_pass_of_2
Roaming to avoid a cell in BS Fallback Operation	PASSED Complete 2_pass_of_2
Roaming to and from a cell in BS Fallback operation offering some services	Not Supported
Services with BS Fallback Operation	PASSED Complete 8_pass_of_8
Ignore a cell in Fallback Operation	PASSED Complete 1_pass_of_1
User selectable Fallback behaviour	Not Supported
Energy Economy Mode	
Energy Economy Mode Operation	Not Supported
Transmit Inhibit	PASSED Complete 5_pass_of_5
TXI Activation & De-Activation	PASSED Complete 4_pass_of_4
TXI Activation & De-Activation with TxI Status available to the Dispatcher	Not Supported
Receipt of group addressed service during TXI	PASSED Complete 1_pass_of_1
Mixed band operation	
Mixed band operation, inter-cell	Not Supported
Mixed band operation, intra-cell	Not Supported
Mixed band operation, Full	Not Supported
SDS - Remotely Fully Witnessed Testing	
SDS Type 1, 2 or 3	PASSED Complete 3_pass_of_3
SDS Type 1	PASSED Complete 1_pass_of_1
SDS Type 2	PASSED Complete 1_pass_of_1
SDS Type 3	PASSED Complete 1_pass_of_1
SDS-TL	PASSED Complete 9_pass_of_9

Individually Addressed	PASSED Complete 2_pass_of_2
Group Addressed	PASSED Complete 3_pass_of_3
Using MS-ISDN dialling	Not Supported
SDS Reception	PASSED Complete 5_pass_of_5
Using UCS2 coding scheme	PASSED Complete 2_pass_of_2
Using 7-bit coding scheme	Not Supported
Using 8-bit Latin 1 coding scheme	PASSED Complete 2_pass_of_2
Using 8-bit Latin/Cyrillic coding scheme	Not Supported
Using 8-bit Latin 9 coding scheme	Not Supported
Store and Forward	
Individually Addressed	Not Supported
Group Addressed	Not Supported
Multipart SDS	
Multipart SDS	Not Supported
DGNA - Remotely Fully Witnessed Testing	
Support for individually addressed DGNA	PASSED Complete 15_pass_of_15
Support for individually addressed DGNA assignment without attachment	PASSED Complete 3_pass_of_3
Support for individually addressed DGNA assignment with attachment as selected group	PASSED Complete 3_pass_of_3
Support for individually addressed DGNA assignment with attachment as scanned group	PASSED Complete 3_pass_of_3
Support for individually addressed DGNA assignment with rejected attachment	PASSED Complete 1_pass_of_1
Support for individually addressed assignment for pre-programmed group	PASSED Complete 6_pass_of_6
Support for assigning multiple DGNA groups	Not Supported
Support for assigning multiple pre-programmed groups	Not Supported
Support for removing multiple DGNA groups	PASSED Complete 1_pass_of_1
Support for retaining DGNA groups over a power cycle	PASSED Complete 2_pass_of_2
Support for group addressed DGNA	
Support for group addressed DGNA assignment	Not Supported

Management of 'group assignment lifetime'	Not Supported
Support for group addressed DGNA deassignment	Not Supported
Tolerance of unsupported DGNA functions	
MS tolerance of unsupported individual addressed DGNA signalling	Not Supported
MS tolerance of unsupported group addressed DGNA signalling	Not Supported
Auth - Remotely Fully Witnessed Testing	
SwMI Initiated (non-mutual) Authentication	PASSED Complete 3_pass_of_3
Attach with authentication	PASSED Complete 1_pass_of_1
Roaming with authentication	PASSED Complete 1_pass_of_1
SwMI rejects MS during authentication	PASSED Complete 1_pass_of_1
MS rejects SwMI during authentication	Not Supported
SwMI Initiated Authentication made Mutual by MS	PASSED Complete 2_pass_of_2
Attach with authentication	PASSED Complete 1_pass_of_1
Roaming with authentication	PASSED Complete 1_pass_of_1
TEI Query	
TEI Query Operation	Not Supported
AL - Remotely Fully Witnessed Testing	
Ambience Listening	PASSED Complete 2_pass_of_2
SS-AL Call Setup	PASSED Complete 1_pass_of_1
MS initiated SS-AL disconnection	PASSED Complete 1_pass_of_1
No Indication to affected user	PASSED Complete 2_pass_of_2
Interaction with Transmit Inhibit	
AL can override TxI	Not Supported
AL cannot override TxI	Not Supported
AIE - Remotely Fully Witnessed Testing	

Security Class 2 Air Interface Encryption	PASSED Complete 12_pass_of_12
Location Updating and AI Signalling Protection	PASSED Complete 3_pass_of_3
TM-SCK provisioning during location updating	Not Supported
Communications between parties using encryption	PASSED Complete 2_pass_of_2
Communications between clear and encrypted parties	PASSED Complete 3_pass_of_3
Communications between encrypted parties on a channel designated to operate in clear	PASSED Complete 2_pass_of_2
OTAR of TM-SCK	Not Supported
Change of TM-SCK	PASSED Complete 2_pass_of_2
Packet Data with Class 2 Air Interface Encryption	Not Supported
Tolerance of SwMI not supporting SCK-OTAR	Not Supported
Security Class 3 Air Interface Encryption	PASSED Complete 12_pass_of_12
Clear Location Updating and AI Signalling Protection	PASSED Complete 3_pass_of_3
Encrypted Location Updating and AI Signalling Protection	PASSED Complete 2_pass_of_2
DCK Forwarding at MS request	Not Supported
DCK Forwarding by SwMI (without MS request)	Not Supported
DCK Retrieval	PASSED Complete 2_pass_of_2
CCK provisioning during location updating	PASSED Complete 3_pass_of_3
Communications between parties using encryption	PASSED Complete 2_pass_of_2
Communications between clear and encrypted parties	PASSED Complete 3_pass_of_3
Communications between encrypted parties on a channel designated to operate in clear	PASSED Complete 2_pass_of_2
OTAR of CCK	Not Supported
Change of CCK	Not Supported
Packet Data with Class 3 Air Interface Encryption	Not Supported
Security Class 3G Air Interface Encryption	
GCK Key Association setting	Not Supported
Communications between parties using encryption	Not Supported

Communications between clear and encrypted parties	Not Supported
OTAR of GCK	Not Supported
Change of GCK	Not Supported
Management of CMG and GSKO	
OTAR and change of CMG and GSKO	Not Supported
Key Status demand	
SCK Key Status demand	Not Supported
GCK Key Status demand	Not Supported
GSKO Key Status demand	Not Supported
Change of Security Class for Fallback operation	
Seamless change to Security Class 2 for BS Fallback operation	Not Supported
Non-seamless change to Security Class 2 for BS Fallback operation	Not Supported
Provisioning of TM-SCK for fallback to Security Class 2 operation	Not Supported
Change to Security Class 1 for BS Fallback operation	Not Supported
Change of Security Class (other than for Fallback operation)	
Change between Security Class 3 and Security Class 3G	Not Supported
Change between Security Class 2 and Security Class 3	Not Supported
Change from Security Class 3G to Security Class 2	Not Supported
Key Management for Secure Direct Mode Operation	
OTAR of DM-SCK	Not Supported
Change of DM-SCK	Not Supported
SI - Remotely Fully Witnessed Testing	
MS initiated Service Interaction	PASSED Complete 3_pass_of_3
MS initiated Circuit Mode Call during another Circuit Mode Call	PASSED Complete 3_pass_of_3
MS initiated Circuit Mode Call during Packet Mode Transfer	Not Supported
MS initiated Packet Mode Transfer during Circuit Mode Call	Not Supported
SwMI initiated Service Interaction	PASSED Complete 8_pass_of_8
SwMI initiated Circuit Mode Call during another Circuit Mode Call	PASSED Complete 8_pass_of_8

SwMI initiated Circuit Mode Call during Packet Mode Transfer	Not Supported
SwMI initiated Packet Mode Transfer during Circuit Mode Call	Not Supported
Call Waiting	
Call Waiting in Individual Call	Not Supported
Call Waiting in Group Call	Not Supported
ED - Remotely Fully Witnessed Testing	
Enable and temporary disable of an MS	PASSED Complete 16_pass_of_16
Enable and temporary disable of an MS without authentication	PASSED Complete 6_pass_of_6
Enable and temporary disable of an MS with authentication	PASSED Complete 6_pass_of_6
Registration of a temporary disabled MS	PASSED Complete 2_pass_of_2
Rejection of applicable invalid enable/disable requests	PASSED Complete 1_pass_of_1
Removable SIMs do not affect the subscriber or equipment that has been enabled/disabled	Not Supported
Disabling of an MS during a call or while on the PDCH	PASSED Complete 1_pass_of_1
Permanent disable of an MS	PASSED Complete 4_pass_of_4
Permanent disable of an MS with authentication	PASSED Complete 3_pass_of_3
Permanently Disabled MS cannot send air interface signalling	PASSED Complete 1_pass_of_1
TKD - Remotely Fully Witnessed Testing	
Delivery of Authentication Data	PASSED Complete 2_pass_of_2
Authentication Key Delivery	PASSED Complete 1_pass_of_1
ITSI Delivery	PASSED Complete 1_pass_of_1
Delivery of SCK	PASSED Complete 2_pass_of_2
SCK Delivery to SCK delivery	Not Supported

SCK Delivery to SwMI	PASSED Complete 1_pass_of_1
SCK Delivery to SCK loading	PASSED Complete 1_pass_of_1
Delivery method	PASSED Complete 3_pass_of_3
Plain text on physical media	PASSED Complete 3_pass_of_3
Encrypted text on physical media	Not Supported
Electronic transfer	Not Supported
LIP - Remotely Fully Witnessed Testing	
Location Information Protocol	PASSED Complete 10_pass_of_10
LIP over SDS	PASSED Complete 5_pass_of_5
LIP over Packet Data	Not Supported
Time based reporting	PASSED Complete 2_pass_of_2
Distance based reporting - NOT TESTABLE	Not Supported
Reporting using Short reports	PASSED Complete 1_pass_of_1
Reporting using Long reports	PASSED Complete 2_pass_of_2
Reporting Enable & Disable	PASSED Complete 1_pass_of_1
User control of Reporting	Not Supported
Temporary reporting control	Not Supported
Trigger modification	Not Supported
Control of Basic Location Parameters	Not Supported
Immediate Location Reporting	PASSED Complete 1_pass_of_1
Reporting Lifetimes	Not Supported
Error Reporting using Long Reports	PASSED Complete 1_pass_of_1
Error Reporting using Short Reports	PASSED Complete 1_pass_of_1
Positioning on Individual Call Setup	Not Supported

CF - Remotely Fully Witnessed Testing	
Call Forwarding Unconditional	PASSED Complete 3_pass_of_3
Call Forwarding Unconditional Individual Call	PASSED Complete 1_pass_of_1
Call Forwarding Unconditional SDS	PASSED Complete 1_pass_of_1
Call Forwarding Unconditional Status	PASSED Complete 1_pass_of_1
Call Forwarding Conditional	PASSED Complete 3_pass_of_3
Call Forwarding Conditional Individual Call	PASSED Complete 3_pass_of_3
Call Forwarding Information Displayed	
Call Forwarding Information Displayed	Not Supported
Management of Call Forwarding	
Change of Call Forwarding Activation Status by Served User	Not Supported
Setting of Call Forwarding Parameters by Served User	Not Supported