Salt.

GSMA Roaming Database
IR.21 Data

Salt.

RAEX IR.21 Information

Creation date:	2023-02-09
Creation time:	11:24:59+01:00
File type:	IR.21
Sender TADIG:	LIEVE
Publish Comment:	MMS removed, new GT's added
TADIG-GEN schema version:	2.4
RAEX-IR.21 schema version:	15.0

Salt.

ORGANISATION INFORMATION

Section ID: 1 (Mandatory)

Organisation name:	Salt (Liechtenstein) AG
Country initials:	LIE

History of changes

TADIG Code	Section ID	Section	Date	Description
LIEVE	9	Test Numbers Information	2023-02-09	text added
LIEVE	13	Network Elements Information	2023-02-09	new GT's added
LIEVE	16	Packet Data Service Information	2023-02-09	MMS removed
LIEVE	4	Routing Information	2022-02-09	new network elements
LIEVE	4	Routing Information	2022-02-09	NDC 69 removed
LIEVE	13	Network Elements Information	2022-02-09	new network element
LIEVE	13	Network Elements Information	2022-02-09	new network elements
LIEVE	13	Network Elements Information	2022-02-09	new network element
LIEVE	17	IP Roaming/Networking Information	2021-09-07	DNS CR1 and ZH1 removed
LIEVE	13	Network Elements Information	2021-02-23	New HLR nodes
LIEVE	17	IP Roaming/Networking Information	2020-12-21	DNS updated
LIEVE	16	Packet Data Service Information	2020-12-03	DNS IP change for APN INETERNET-OFL
LIEVE	17	IP Roaming/Networking Information	2020-12-03	DNS server removed
LIEVE	13	Network Elements Information	2020-10-16	SMS C update
LIEVE	16	Packet Data Service Information	2020-07-16	APN operator identifiers - updated
LIEVE	5	International SCCP Gateway	2020-07-10	Updated SCCP section
LIEVE	20	LTE Roaming Information	2020-07-02	LTE Roaming Information
LIEVE	16	Packet Data Service Information	2020-02-04	Wap not supported anymore
LIEVE	16	Packet Data Service Information	2020-02-04	Wap not supported anymore
LIEVE	17	IP Roaming/Networking Information	2020-02-04	Additional IP Ranges
LIEVE	17	IP Roaming/Networking Information	2020-02-04	Additional Authoritative DNS servers
LIEVE	4	Routing Information	2019-09-27	update number ranges
LIEVE	4	Routing Information	2019-09-27	number range update
LIEVE	4	Routing Information	2019-09-27	NPRN (Number Portability Routing Number) 423 97030 added
LIEVE	9	Test Numbers Information	2019-09-27	update
LIEVE	13	Network Elements Information	2019-09-27	SGNS IP ranges have been indicated. No need to change anything in current implementation.
LIEVE	16	Packet Data Service Information	2019-09-27	Update of APN Type
LIEVE	17	IP Roaming/Networking Information	2019-09-27	New range 213.55.141.0/24
LIEVE	4	Routing Information	2016-08-10	add SMS-C GT
LIEVE	16	Packet Data Service Information	2015-04-29	Change of Company Name
LIEVE	5	International SCCP Gateway	2015-04-28	Change of Company Name
LIEVE	5	International SCCP Gateway	2015-04-28	Change of Company Name
LIEVE	21	Contact Information	2015-04-28	Change of Company Name.
LIEVE	13	Network Elements Information	2013-10-22	new HLR with new GT +4237800004
LIEVE	16	Packet Data Service Information	2013-10-22	new Data

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NETWORK

TADIG code: LIEVE
Section ID: 2 (Mandatory, Repeating)

TADIG code:	LIEVE
Network name:	Salt (Liechtenstein) AG
Network type:	Terrestrial
Technology:	**Frequency list:**
2G-GSM frequencies:	Unsupported
3G-UTRA/FDD frequencies:	1 - IMT 2.1 GHz, 8 - 900 MHz
3G-UTRA/TDD frequencies:	Unsupported
4G-E-UTRAN frequencies:	3 - DCS 1800, 1 - IMT 2.1 GHz, 7 - 2.6 GHz
4G-E-UTRAN-MIoT-LTE-M frequencies:	Unsupported
4G-E-UTRAN-MIoT-NB-IoT frequencies:	Unsupported
MIoT-NB-IoT deployment modes:	Unsupported
5G NR frequencies:	Unsupported
Presentation of country initials and MNN:	Liechtenstein
Abbreviated MNN:	Salt.

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NETWORK INFORMATION

TADIG code: LIEVE
Section ID: 3 (Mandatory)

The following information refer to the network identified by TADIG code LIEVE

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ROUTING INFORMATION

TADIG code: LIEVE
Section ID: 4 (Mandatory)
Effective date of change: 2022-03-01

CCITT E.164 Number series	Country Code (CC)	National Destination Code (NDC)	SN Range Start	SN Range Stop	Primary International DPC	Secondary International DPC	MVNO Number	Location
MSISDN number ranges (s)								
	423	78	00000	99999				
Network Nodes Global Title Number Range(s)								
	423	78	00000	00199				
	423	78	07672	07672				
	423	97030						
MSRN Number Range(s)								
	423	78	00200	00999				

E. 212 Number series	Mobile Country Code (MCC)	Mobile Network Code (MNC)
	295	02

E. 214 Mobile Global Title (MGT)	Country Code of MGT (CC)	Network Code of MGT (NC)
	423	78

Does Number Portability apply ?	Yes

Is 15 Digit MSISDN Supported ?	No

USIM SIM Header	8942302

E. 164 Number Ranges due to Number Portability	CC	NDC	SN Range Start	SN Range Stop
	423	77	00000	99999
	423	78	00000	99999
	423	79	00000	99999

Additional Information
Voice Mail Access: Forwarding to Voice Mail and reviewing of Messages +4237801001 Short Codes: No Short Codes are used by Salt Liechtenstein customers

History of changes

Date	Description
2022-02-09	new network elements
2022-02-09	NDC 69 removed
2019-09-27	update number ranges
2019-09-27	number range update
2019-09-27	NPRN (Number Portability Routing Number) 423 97030 added
2016-08-10	add SMS-C GT

Salt.

INTERNATIONAL SCCP GATEWAY

TADIG code: LIEVE
Section ID: 5 (Optional)
Effective date of change: 2020-07-10

International SCCP carrier list	
SCCP carrier name:	ORANGE (IBNF)
Connectivity information:	Primary
MNO TADIG code list:	LIEVE

DPC info:	
Signature:	Paris TK-1
Type:	SCCP/STP
International DPC:	2.202.3
Comments:	

DPC info:	
Signature:	Reims TK-2
Type:	SCCP/STP
International DPC:	2.202.4
Comments:	

DPC info:	
Signature:	Paris TK-1
Type:	SCCP/STP
International DPC:	6.254.15
Comments:	

DPC info:	
Signature:	Reims TK-2
Type:	SCCP/STP
International DPC:	6.254.16
Comments:	

SCCP carrier name:	Belgacom International Carrier Services
Connectivity information:	Primary
Comments:	BICS is our preferred SCCP carrier
MNO TADIG code list:	

DPC info:	
Signature:	GENEVE – GB9
Type:	SCCP/STP
International DPC:	2.56.6
Comments:	

DPC info:	
Signature:	ZURIC – ZB9
Type:	SCCP/STP
International DPC:	2.56.7
Comments:	

History of changes

Salt.

Date	Description
2020-07-10	Updated SCCP section
2015-04-28	Change of Company Name
2015-04-28	Change of Company Name

SCCP Protocol available at PMN for connection for International SS7 Roaming
TADIG code: LIEVE
Section ID: 7 (Optional)
Effective date of change: 2000-01-01

SCCP Protocol available at PMN	Availability (Yes / No)
ETSI (ITU):	Yes
ANSI:	No

History of changes

SCCP Protocol available at PMN for connection for International SS7 Roaming

Salt.

SUBSCRIBER IDENTITY AUTHENTICATION

TADIG code: LIEVE
Section ID: 8 (Optional)
Effective date of change: 2000-01-01

Authentications	Performed (Yes / No)
Authentication performed for Roaming subscribers at the commencement of GSM service	Yes
Authentication performed for roaming subscribers in case of GPRS	Yes
A5 Cipher Algorithm version in use	A5/1

History of changes

Salt.

Test Numbers Information

TADIG code: LIEVE
Section ID: 9 (Optional)
Effective date of change: 2023-02-09

Number Type	Test Number	Location	Comments
AAC	+4237809994		announcement
SMSIW	+4237809994		

History of changes

Date	Description
2023-02-09	text added
2019-09-27	update

Salt.

MOBILE APPLICATION PART (MAP)

TADIG code: LIEVE
Section ID: 10 (Optional)
Effective date of change: 2000-01-01

Interworking specifically for roaming				
Application context name	**Current version in**			**Comments**
	Inbound roaming		**Outbound roaming**	
	MSC/VLR	**SGSN**	**Outbound roaming**	
networkLocUp	MAPv3	N/A	MAPv3	
roamingNumberEnquiry	MAPv3	N/A	MAPv3	
InfoRetrieval	MAPv3	MAPv3	MAPv3	
subscribeDataMngt	MAPv3	MAPv3	MAPv3	
networkFunctionalSs	MAPv2	N/A	MAPv2	
mwdMngt	MAPv2	MAPv3	MAPv3	
shortMsgMT-Relay (called shortMsgRelay in v1)	MAPv2	MAPv3	MAPv2	
shortMsgMO-Relay (called shortMsgRelay in v1)	MAPv3	MAPv3	MAPv2	
ss-InvocationNotification	-	N/A	-	
subscriberInfoEnquiry	MAPv3	MAPv3	MAPv3	
gprsLocationUpdate	N/A	MAPv3	MAPv3	
locationCancellation	MAPv3	MAPv3	MAPv3	
msPurging	MAPv3	MAPv3	MAPv3	
reset	MAPv2	MAPv2	MAPv2	
networksUnstructuredSs	MAPv2	N/A	MAPv2	
reporting	MAPv3	N/A	MAPv3	
callCompletion	MAPv3	N/A	MAPv3	
istAlerting	-	N/A	-	
service Termination	-	N/A	-	
locationSvcGateway	N/A	N/A	-	
mm-EventReporting	-	N/A	-	
authenticationFaillureReport	MAPv3	-	-	
imsiRetrieval	MAPv2	N/A	MAPv2	
gprsNotifyContext	N/A	-	-	
gprsLocationInfoRetrieval	N/A	-	-	
faillureReport	N/A	-	-	
secureTransportHandling	-	-	-	

History of changes

Salt.

NETWORK ELEMENTS INFORMATION

TADIG code: LIEVE
Section ID: 13 (Optional)
Effective date of change: 2023-02-09

Node type	Node ID	GT address / Address range	IP address / Address range	IPv6 address / Address range	Vendor info	SW / HW version	UTC offset
HLR	NT-HLR	423 7800004			NSN		+01:00
SGSN-2G+3G	SGSN ZH	41 789310111			n/a		+01:00
SGSN-2G+3G	SGSN LA	41 789310110			n/a		+01:00
SMSC	SMSC	423 7807672			n/a		+01:00
SMSC	SMOS11	41 789310074			n/a		+01:00
SMSC	SMOS21	41 789310075			n/a		+01:00
SMSC	SMOS31	41 789310076			n/a		+01:00
SMSC	SMOS	41 789310099			n/a		+01:00
SMSC	SMSC-M2	41 789310120			n/a		+01:00
SMSC	SMSC-M3	41 789310121			n/a		+01:00
SMSC	SMSC-L	41 789310130			n/a		+01:00
SMSC	SMSCVN1	41 789310150			n/a		+01:00
SMSC	SMSCVN1	41 789310150			n/a		+01:00
SMSC	SMSCVN2	41 789310152			n/a		+01:00
SMSC	SMOS41	41 789310171			n/a		+01:00
SMSC	SMOS51	41 789310172			n/a		+01:00
MSC/VLR-2G+3G	MSSFL	423 7800003			NSN		+01:00
SMSC	MVAS1	41 789310173					+00:00
SMSC	MVAS2	41 789310174					+00:00
SMSC	MVNE-SMSC	41 789310154					+00:00
SMSC	SMSC C1	41 789310191					+00:00
SMSC	SMSC C2	41 789310192					+00:00
SMSC	SMSC C3	41 789310193					+00:00
SMSC	SMSC C4	41 789310194					+00:00
SGSN	SGSN CR	41 789310003	213.55.204.64/27				+00:00
SGSN	SGSN ZH	41 789310020	213.55.205.64/27				+00:00
SMSC	smsc21	41 789310176					+00:00
SMSC	smsc11	41 789310177					+00:00
SMSC	smsc22	41 789310178					+00:00
SMSC	smsc12	41 789310179					+00:00
SMSC	sms vr	41 789310165					+00:00
HLR	NT-HLR	423 7800013					+00:00
HLR	HLRFE12	423 7800011					+00:00
HLR	HLRFE22	423 7800012					+00:00
MSS/VLR	CR1MSSFL121	423 7800001			Nokia		+01:00
MSS/VLR	IX1MSSFL221	423 7800002			Nokia		+01:00
SGSN	cr1cmm111	423 7800023			Nokia		+01:00
SGSN	cr1cmm112	423 7800024			Nokia		+01:00
SGSN	ix1cmm211	423 7800025			Nokia		+01:00
SGSN	ix1cmm212	423 7800026			Nokia		+01:00
SGSN	dc3cmm311	423 7800027			Nokia		+01:00
SGSN	dc3cmm312	423 7800028			Nokia		+01:00
IP-SMGW	cr1ntasfl122	423 7800007			Nokia		+01:00
IP-SMGW	ix1ntasfl222	423 7800008			Nokia		+01:00
MME	cr1cmm111	41 789310023					+01:00
MME	cr1cmm112	41 789310024					+01:00
MME	ix1cmm211	41 789310025					+01:00
MME	ix1cmm212	41 789310026					+01:00

History of changes

Date	Description
2023-02-09	new GT's added
2022-02-09	new network element
2022-02-09	new network elements
2022-02-09	new network element
2021-02-23	New HLR nodes

Date	Description
2020-10-16	SMS C update
2019-09-27	SGNS IP ranges have been indicated. No need to change anything in current implementation.
2013-10-22	new HLR with new GT +4237800004

2020-10-16	SMS C update

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USSD Information
TADIG code: LIEVE
Section ID: 14 (Optional)
Effective date of change: 2000-01-01

USSD capability available	Yes
Supported phase	Phase 2

History of changes

Salt.

Packet Data Services Information
TADIG code: LIEVE
Section ID: 16 (Conditional)
Effective date of change: 2023-02-09

List of APN Operator Identifiers

APN Operator Identifier	Description	Example
mnc002.mcc295.gprs		
mnc002.mcc295.3gppnetwork.org		

List of APN's available for testing and troubleshooting

APN WEB List

APN Credential			APN Type	ISP DNS IP address (primary)	ISP DNS IP address (secondary)
APN	Username	Password			
internet-ofl	leave blank	leave blank	H-APN	213.55.128.100	213.55.128.129

APN WAP List

APN Credential			APN Type	WAP Gateway	WAP Server URL	WAP Port ver 1	WAP Port ver 2
APN	Username	Password		IP address			

APN MMS List

APN Credential			WAP Gateway IP address for MMS	Messaging Server URL
APN	Username	Password		

IPv6 Connectivity Information

	IPv6 PDP Supported	IPv4v6 PDP Supported
SGSN Support	No	No
GGSN Support	No	No

List of 2G/3G QOS profiles

Profile name:	Salt
Traffic class:	Interactive
ARP:	1
Evolved ARP support:	Yes
Evolved ARP priority level:	1
Evolved APR preemption vulnerability list:	
Evolved APR preemption capability list:	

GTP Version

SGSN	GTPv1
GGSN	GTPv1

List of Data Service supported

2G Data Services	Multislot Class Capability
GPRS	4
EDGE	4

3G Data Services	UE 3G Category
HSDPA	4
3GPS	3
HSUPA	4

Multiple PDP Context Support

Number of Primary PDP Context	Not supported

History of changes

Date	Description
2023-02-09	MMS removed
2020-12-03	DNS IP change for APN INETERNET-OFL

Salt.

Date	Description
2020-07-16	APN operator identifiers - updated
2020-02-04	Wap not supported anymore
2020-02-04	Wap not supported anymore
2019-09-27	Update of APN Type
2015-04-29	Change of Company Name
2013-10-22	new Data

Salt.

IP - Roaming and IP - Interworking Information
TADIG code: LIEVE
Section ID: 17 (Conditional)
Effective date of change: 2021-09-07

List of All IP address ranges used by PMN for connection to inter - PMN IP backbone	IP Address Range
	213.55.134.0/24
	213.55.135.0/24
	213.55.203.0/24
	213.55.204.0/24
	213.55.205.0/24
	213.55.198.0/24
	213.55.141.0/24
	213.55.129.0/24
	213.55.142.0/24

ULI Additional MCC/MNC List	MCC	MNC
	295	02

List of Autonomous System Number (ASN):	ASN
	64570

List of Autonomous System Number (ASN4B):	ASN4B

List of PMN authoritative DNS server IP addresses and names		
IP address	IPv6 address	DNS Name
213.55.129.1		dns-core-cr1.mnc002.mcc295.gprs
213.55.129.1		dns-core-cr1.epc.mnc002.mcc295.3gppnetwork.org
213.55.129.129		dns-core-in1.mnc002.mcc295.gprs
213.55.129.129		dns-core-in1.epc.mnc002.mcc295.3gppnetwork.org

List of GRX Providers	GRX Provider
	FTLD BICS

History of changes

Date	Description
2021-09-07	DNS CR1 and ZH1 removed
2020-12-21	DNS updated
2020-12-03	DNS server removed
2020-02-04	Additional IP Ranges
2020-02-04	Additional Authoritative DNS servers
2019-09-27	New range 213.55.141.0/24

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LTE Roaming Information
TADIG code: LIEVE
Section ID: 20 (Optional)
Effective date of change: 2020-07-02

IPX Provider Name	IPX DA Realm Used	Diameter Architecture
BICS (must be used as Primary)		

Primary IP address of DA	Secondary IP address of DA	

IPX Provider Name	IPX DA Realm Used	Diameter Architecture
Orange		

Primary IP address of DA	Secondary IP address of DA	

Roaming Interconnection

EPC Realms For Roaming	
	epc.mnc002.mcc295.3gppnetwork.org

FQDN Diameter Edge Agent

FQDN	Primary IP Address DEA FQDN	Secondary IP Address DEA FQDN
crdranode01.dra.epc.mnc002.mcc295.3gppnetwork.org	213.55.204.4	213.55.204.20
zhdranode01.dra.epc.mnc003.mcc228.3gppnetwork.org	213.55.205.4	213.55.205.20

S6a Supported without IWF	S6a MAP IWF supported to HSS	S6a MAP IWF supported to MME
true	false	false

S6d used for legacy SGSN	S9 used for PCC
false	false

SMS ITW

SMS delivery over IP	SMS over NAS (SGs) via SS7	SMS over NAS (SGd) via Diameter
false	true	false

Voice ITW

CSFB

Roaming CS Fallback

Not Supported

		HPMN	VPMN
LTE Roaming Agreement Only	LTE Only Roaming Supported	No	No
2G/3G Roaming Agreement Only	Scenario 2 Supported	Yes	Yes
	Scenario 3 Supported	No	Yes
2G/3G/LTE Roaming Agreement	Scenario 1 Supported	Yes	Yes
	Scenario 2 Supported	No	Yes
	Scenario 3 Supported	Yes	No
	Scenario 4 Supported	No	No
	Scenario 5 Supported	No	No
	Scenario 6 Supported	No	No

List of LTE QOS profiles

Profile name:	lte_qos1
QCI Value List:	7
QOS ARP List:	1
ARP Preemption Vulnerability List:	0
ARP Preemption Capability List:	0

IPv6 Connectivity Information		
	IPv6 PDP Supported	IPv4v6 PDP Supported
MME Support	Yes	No
SGW Support	Yes	No
PGW Support	No	No

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5G early drop support		As HPMN	AS VPMN
5G NSA (non-standalone access) supported		No	No
DNS PGW NAPTR includes +nc-nr		No	No
NSA options for EN-DC			
ARD set to support of NR as secondary RAT		No	
Restrict NR access if HSS is not set to support NR as secondary RAT			No

History of changes

Date	Description
2020-07-02	LTE Roaming Information

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CONTACT INFORMATION

TADIG code: LIEVE
Section ID: 21 (Optional, Repeating)
Effective date of change: 2023-02-01

List of Roaming Troubleshooting Contact Information				
Roaming Troubleshooting Contact Information				
Location		Balzers		
Office Time Zone in UTC		+01:00		
Office Hours	**Week Day (s)**	**Start Time**		**End Time**
	Mon Tue Wed Thu Fri	07:00:00		17:00:00
Main Contact for Troubleshooting (Office Hours)				
Team Name	**Tel.**	**Mobile**	**Fax**	**Email**
Roaming Department	+4233880917			roaming@salt.li
Escalation Contact for Troubleshooting				
Person Name	**Tel.**	**Mobile**	**Fax**	**Email**
Marco Scheidecker	+4233880917			roaming@salt.li
24 x 7 Troubleshooting (contact out of Office Hours)				
Team Name	**Tel.**	**Mobile**	**Fax**	**Email**
Roaming Department	+4233880917			roaming@salt.li
Roaming Troubleshooting Ticketing System Information				
Ticket system web address				
Ticket system email address				
Additional Contacts				
SCCP Inquires and ordering of SS7 Routes				

SCCP Inquires and ordering of SS7 Routes

Person Name	Tel.	Mobile	Fax
Marco Scheidecker	+4233880917		
JobTitle		**Email**	
Roaming Manager		roaming@salt.li	

Roaming Coordinator

Person Name	Tel.	Mobile	Fax
Marco Scheidecker	+4233880917		
JobTitle		**Email**	
Roaming Manager		roaming@salt.li	

IREG Tests

Person Name	Tel.	Mobile	Fax
Axel Bolldorf	+4233880917		
JobTitle		**Email**	
		roaming@salt.li	

TADIG Tests

Person Name	Tel.	Mobile	Fax
Axel Bolldorf	+4233880917		
JobTitle		**Email**	
		roaming@salt.li	

CAMEL Tests

Person Name	Tel.	Mobile	Fax
Axel Bolldorf	+4233880917		
JobTitle		**Email**	
		roaming@salt.li	

GPRS Tests

Person Name	Tel.	Mobile	Fax
Axel Bolldorf	+4233880917		
JobTitle		**Email**	
		roaming@salt.li	

Contact Person(s) in PMN for GRX connectivity

Person Name	Tel.	Mobile	Fax
Marco Scheidecker	+4233880917		
JobTitle		**Email**	
Roaming Manager		roaming@salt.li	

Contact Person(s) in PMN for GRX Provider

Person Name	Tel.	Mobile	Fax
Marco Scheidecker	+4233880917		
JobTitle		**Email**	

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	Roaming Manager		roaming@salt.li	

Contact person(s) for IW MMS

	Person Name	Tel.	Mobile	Fax
	Marco Scheidecker	+4233880917		
	JobTitle		Email	
	Roaming Manager		roaming@salt.li	

Contact Person(s) for WLAN

	Person Name	Tel.	Mobile	Fax
	Marco Scheidecker	+4233880917		
	JobTitle		Email	
	Roaming Manager		roaming@salt.li	

Other contact(s)

	Person Name	Tel.	Mobile	Fax
	Marco Scheidecker	+4233880917		
	JobTitle		Email	
	Roaming Manager		roaming@salt.li	

IR21 Distribution Email Address	Email
	roaming@salt.li

History of changes

Date	Description
2015-04-28	Change of Company Name.

Salt.

SECTIONS NOT IN USE

TADIG Code	Section ID	Section Name
LIEVE	6	Domestic SCCP Gateway
LIEVE	11	MAP Optimal Routing Section
LIEVE	12	MAP Inter Operator SMS Enhancement
LIEVE	15	CAMEL Information
LIEVE	18	MMS Interworking Information
LIEVE	19	WLAN Information
LIEVE	22	Hosted Networks
LIEVE	23	M2M Roaming Information
LIEVE	24	MVNO Information
LIEVE	26	VoLTE Roaming Information Section
LIEVE	27	LPWA Roaming Information Section