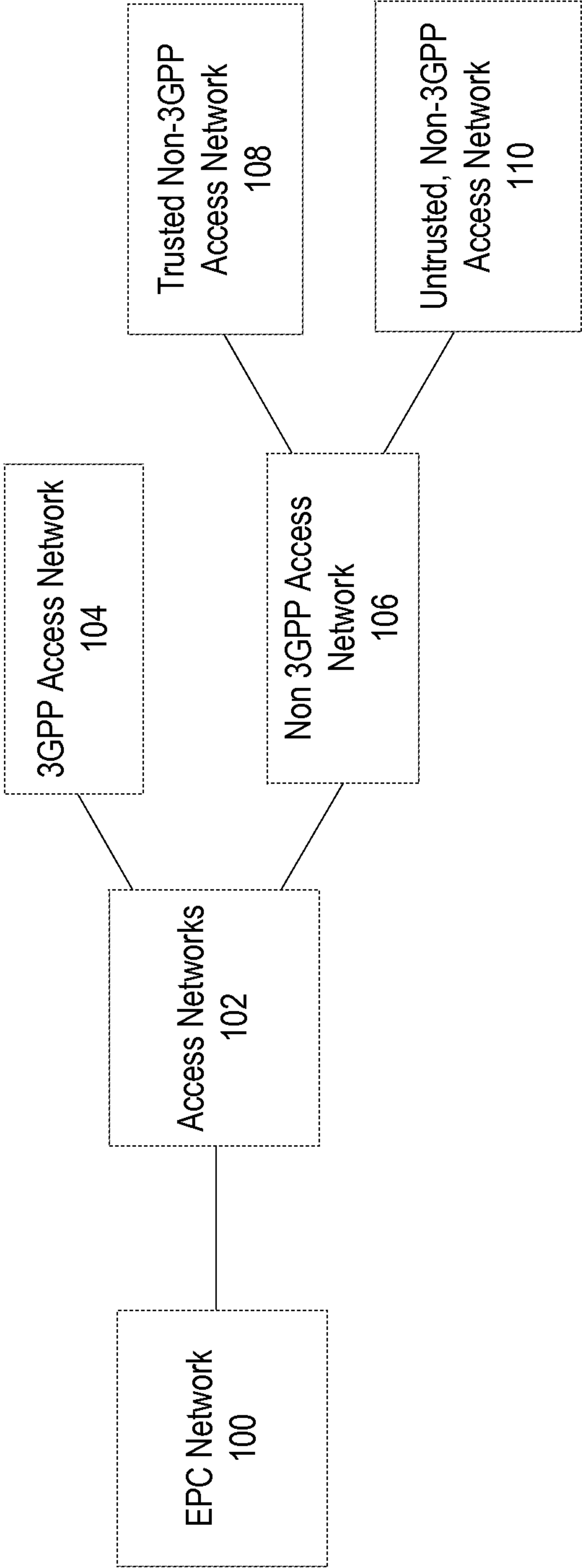
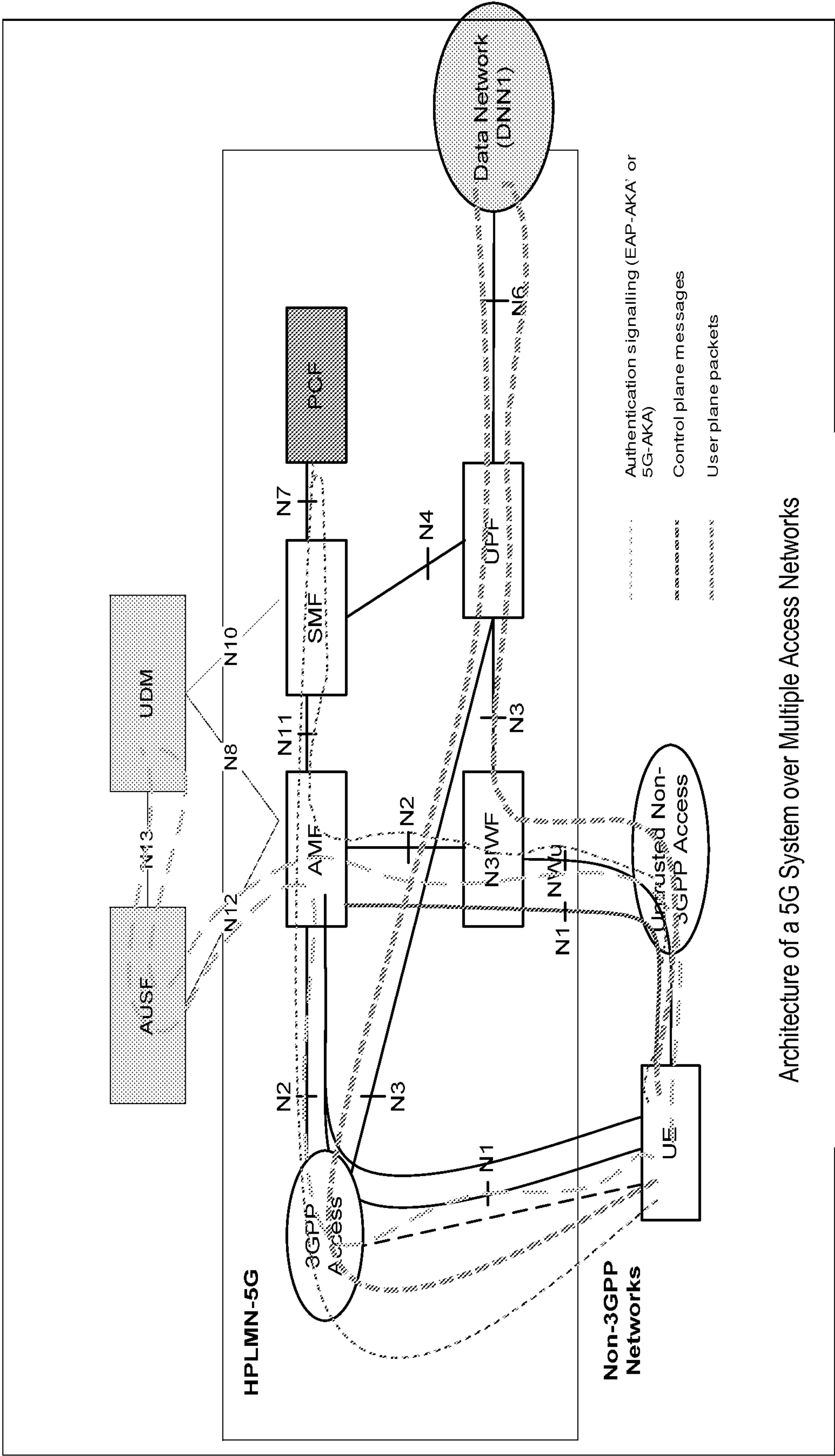




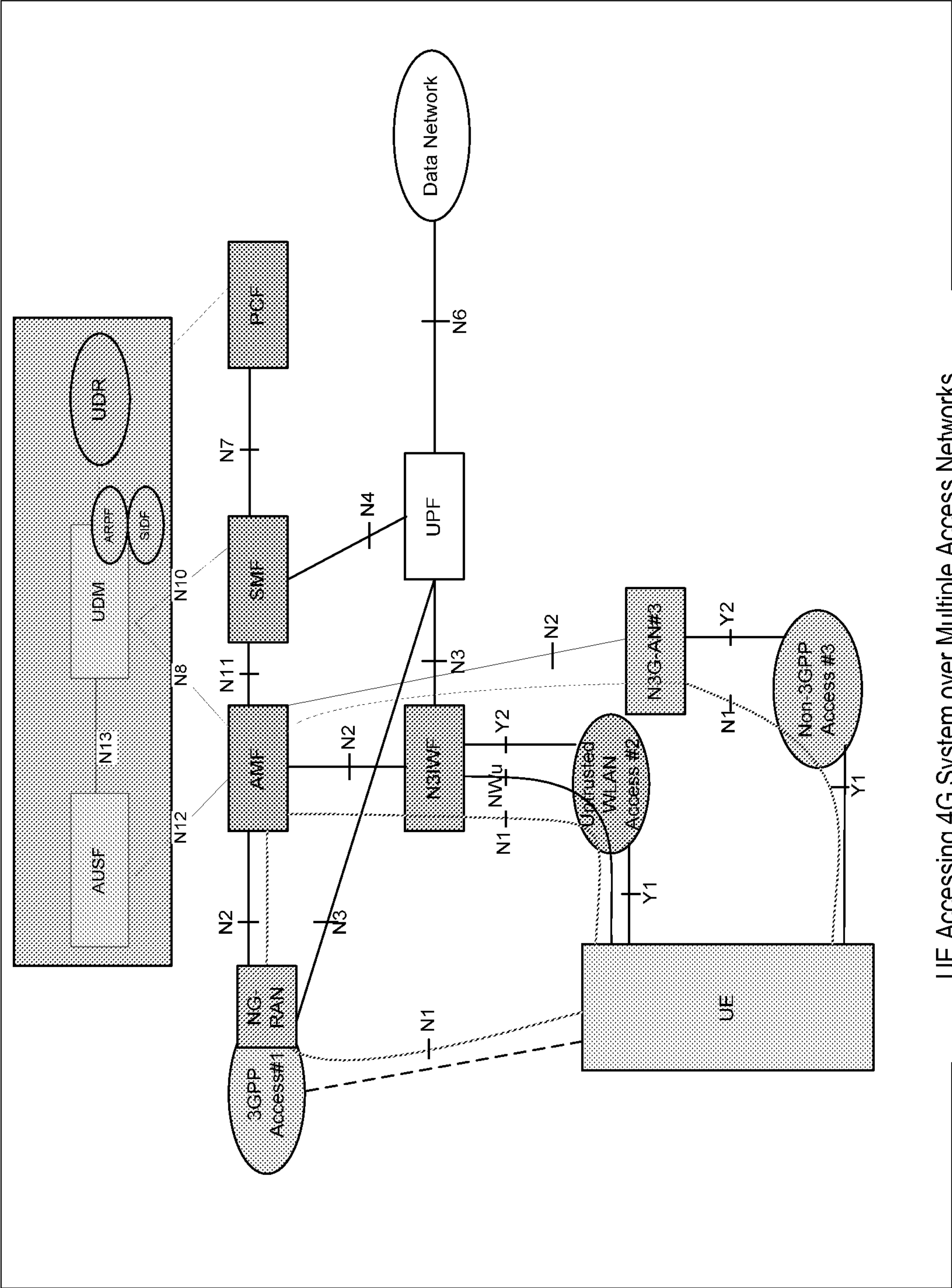
Non-3GPP Access Networks (N3AN)

FIG. 1



Architecture of a 5G System over Multiple Access Networks

FIG. 2



UE Accessing 4G System over Multiple Access Networks

FIG. 3

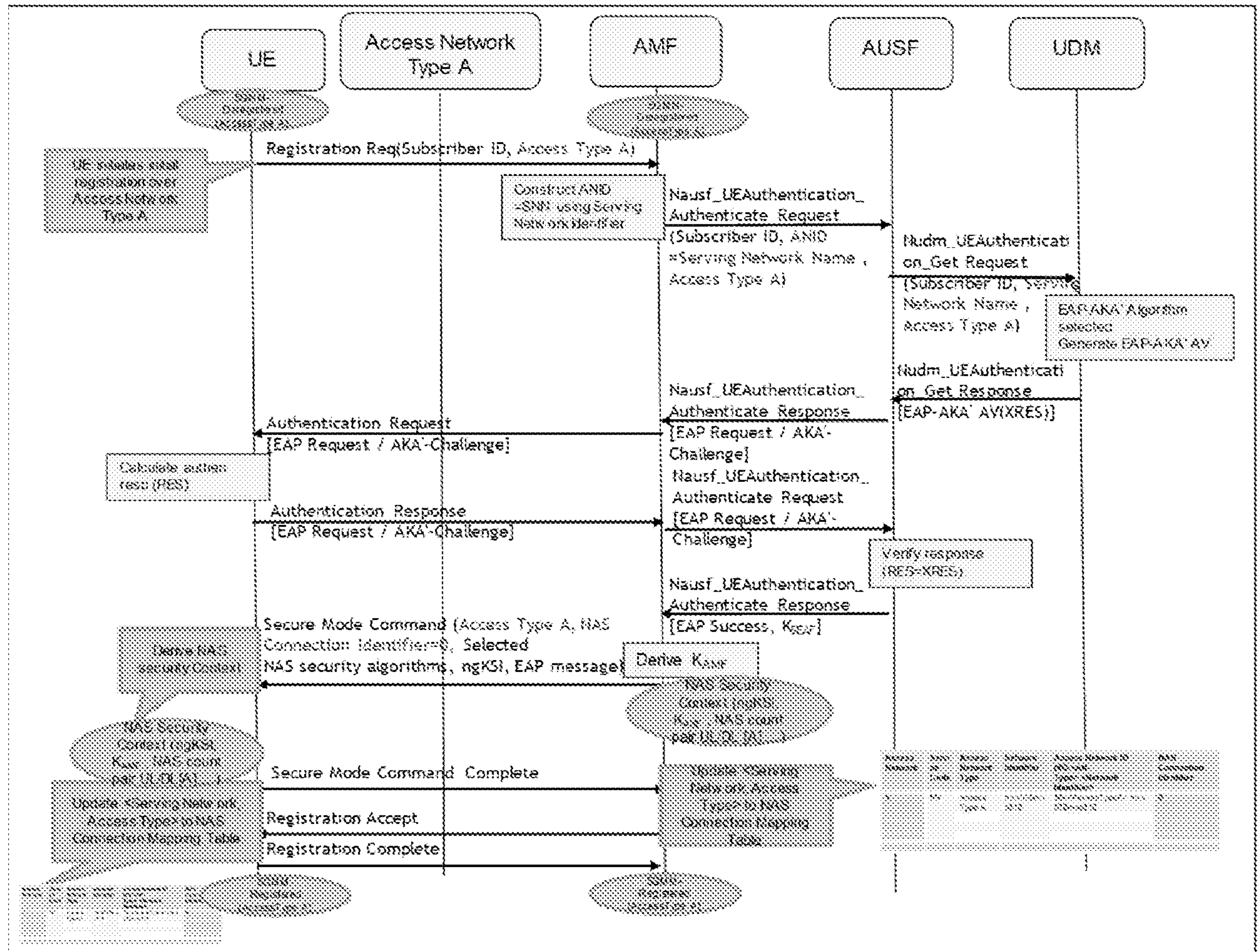


FIG. 4

Access Network	Service Code	Access Network Type	Network Identifier	Access Network ID (5G:<AN-Type>:<Network Identifier>)	NAS Connection Identifier
1	5G	Access Type A	mnc070mcc310	5G:<AccessTypeA>;mnc070mcc310	0

The Serving Network and Access Type to NAS connections Mapping Table
after UE Initial registration over Access Type A

FIG. 5

REGISTRATION REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	...				
	Registration request message identity	Message type 9.7	M	V	1
	5GS registration type	5GS registration type 9.10.3.7	M	LV	2
	ngKSI	NAS key set identifier 9.10.3.29	M	V	1/2
	<u>Access Type</u>	<u>Access Type</u>	<u>M</u>	<u>V</u>	<u>1/2</u>
	5GS mobile identity	5GS mobile identity 9.10.3.4	M	LV	5-TBD
	...	...	...	...	...

FIG. 6

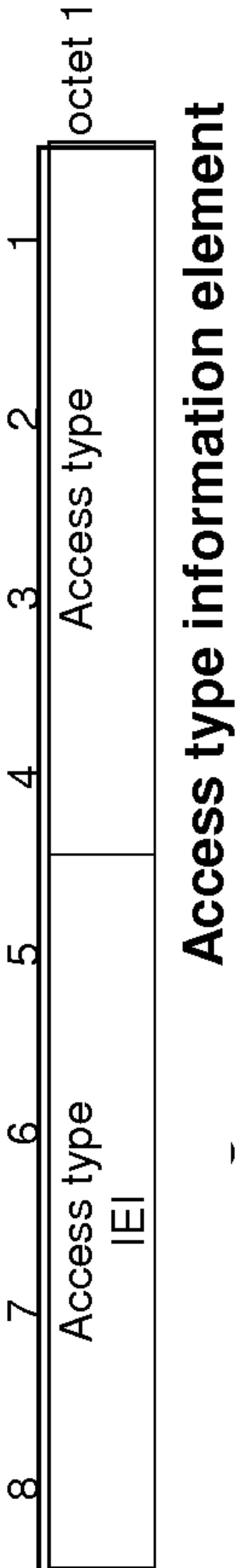
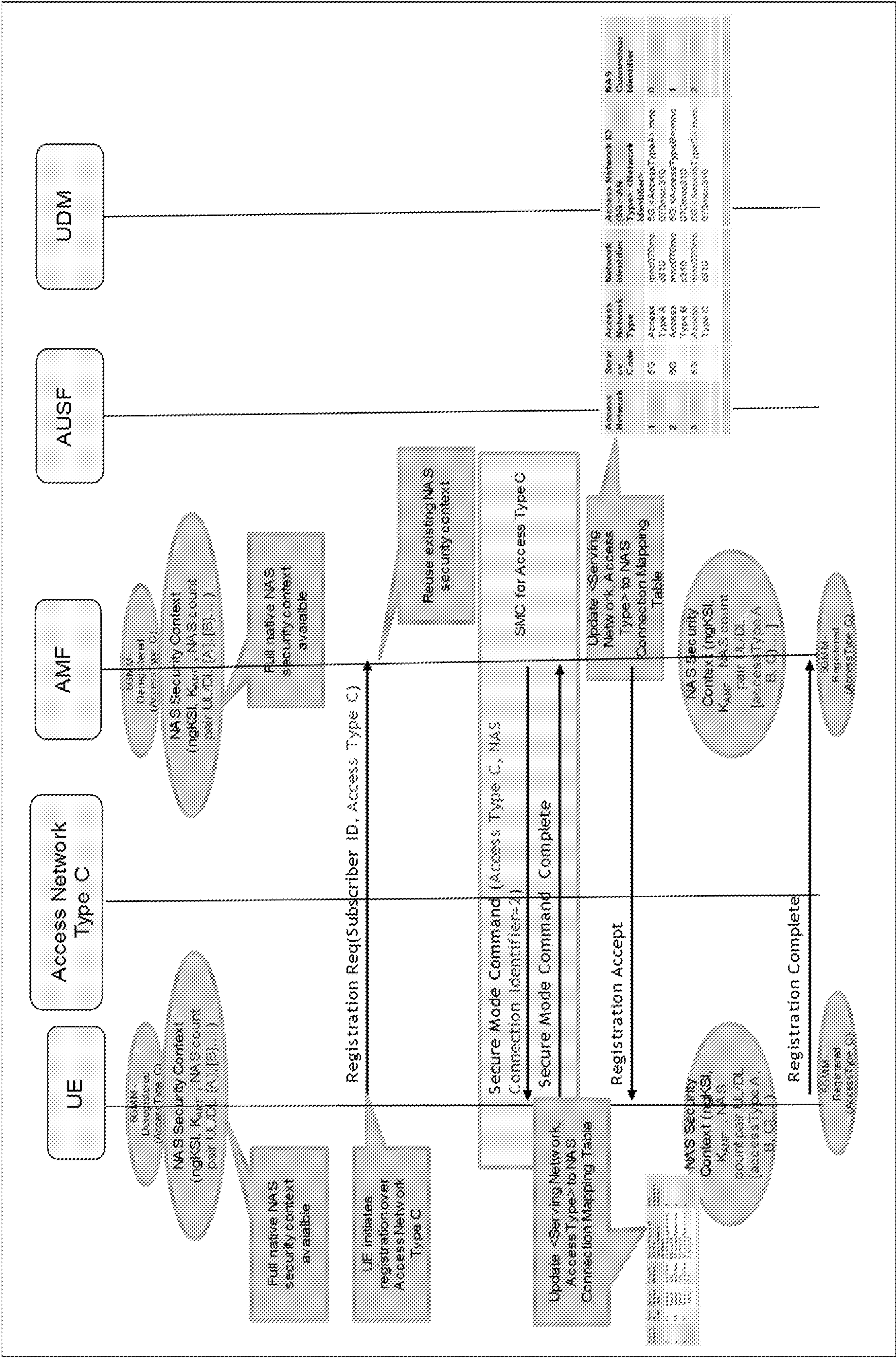


FIG. 7

Access type information element

Access type value (octet 1, bit 1 to bit 2)				
Bits				
4	3	2	1	
0	0	0	1	3GPP access
0	0	1	0	untrusted non-3GPP access
0	0	1	1	trusted non-3GPP access
0	1	0	0	untrusted WLAN access
0	1	0	1	trusted WLAN access
0	1	1	0	MuLteFire access
All other values are reserved.				

FIG. 8



UE initiates registration over new Access Type C – reuse existing NAS security context

FIG. 9

The Serving Network and Access Type to NAS connections mapping After subsequent registration over Access Type C

Access Network	Service Code	Access Network Type	Network Identifier	Access Network ID (5G:<AN-Type>:<Network Identifier>)	NAS Connection Identifier
1	5G	Access Type A	mnc070mcc310	5G:<AccessTypeA>:mnc070mcc310	0
2	5G	Access Type B	mnc070mcc310	5G:<AccessTypeB>:mnc070mcc310	1
3	5G	Access Type C	mnc070mcc310	5G:<AccessTypeC>:mnc070mcc310	2

FIG. 10

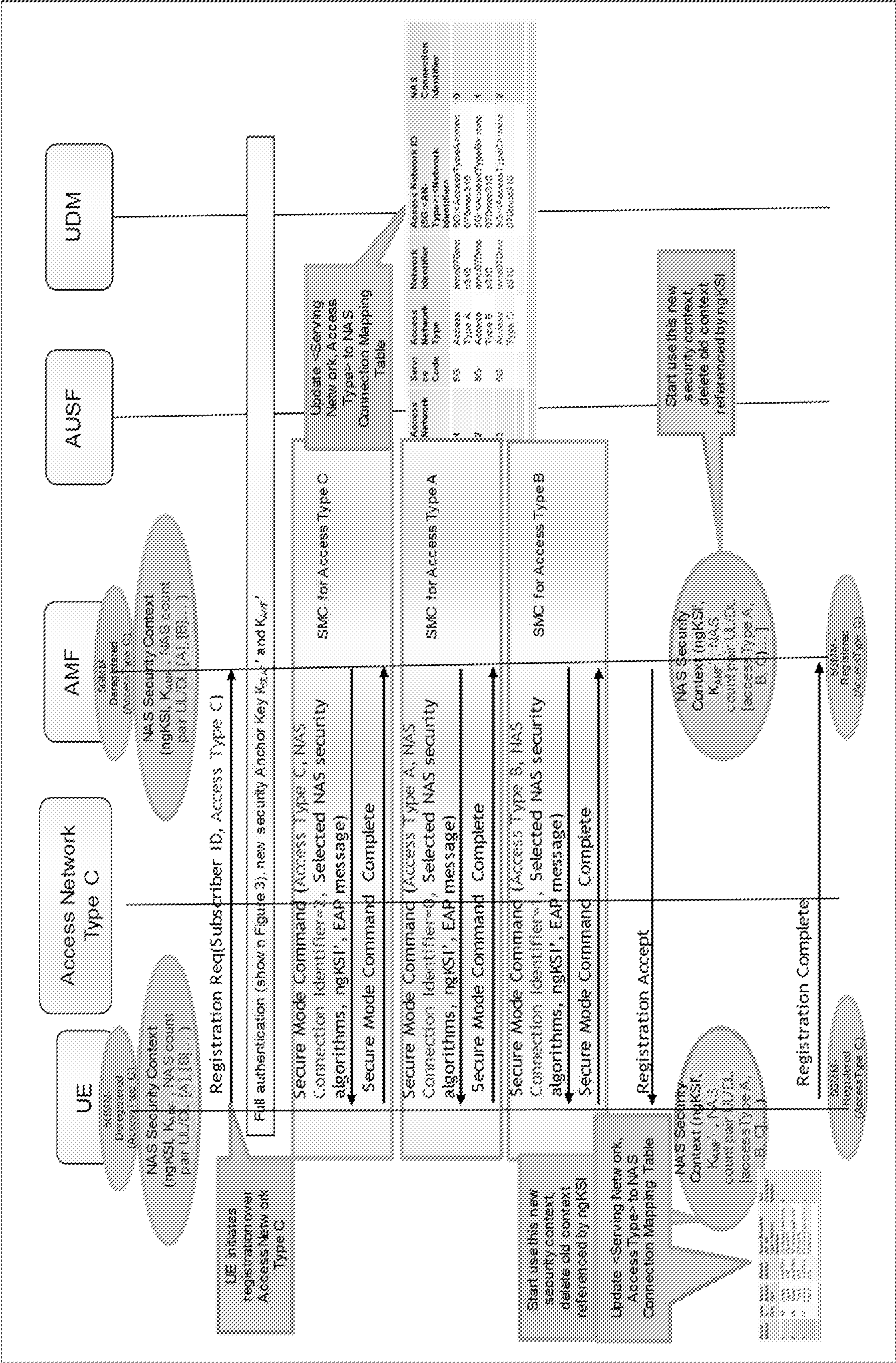


FIG. 11
UE initiates registration over new Access Type C – new authentication initiated

The Serving Network and Access Type to NAS connections mapping After subsequent registration over Access Type C

Access Network	Service Code	Access Network Type	Network Identifier	Access Network ID (5G:<AN-Type>:<Network Identifier>)	NAS Connection Identifier
1	5G	Access Type A	mnc070mcc310	5G:<AccessTypeA>:mnc070mcc310	0
2	5G	Access Type B	mnc070mcc310	5G:<AccessTypeB>:mnc070mcc310	1
3	5G	Access Type C	mnc070mcc310	5G:<AccessTypeC>:mnc070mcc310	2

FIG. 12

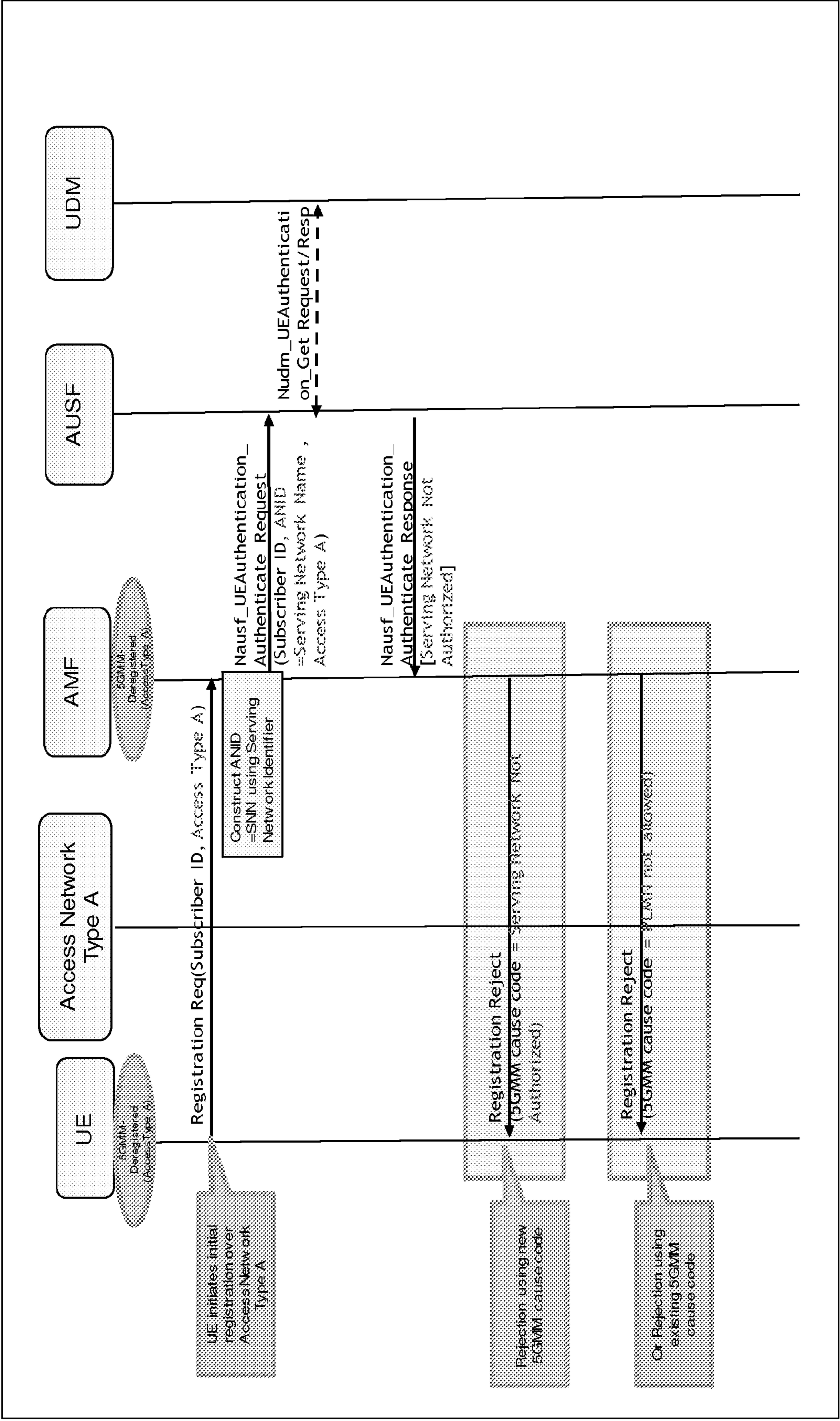
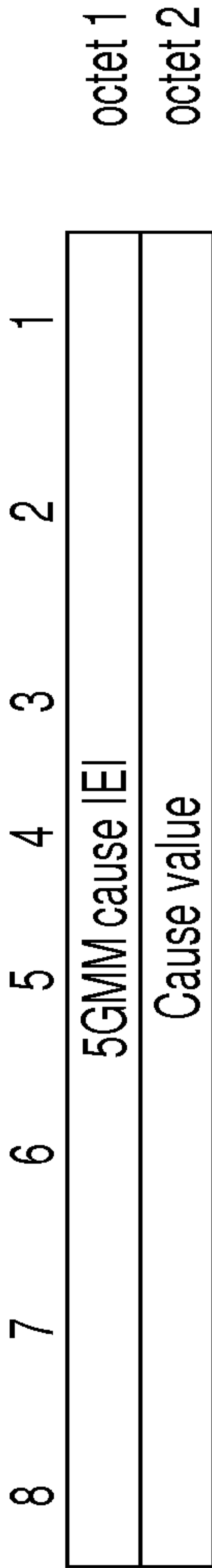


FIG. 13
Serving network authorization failure



5GMM cause information element

FIG. 14

5GMM cause information element

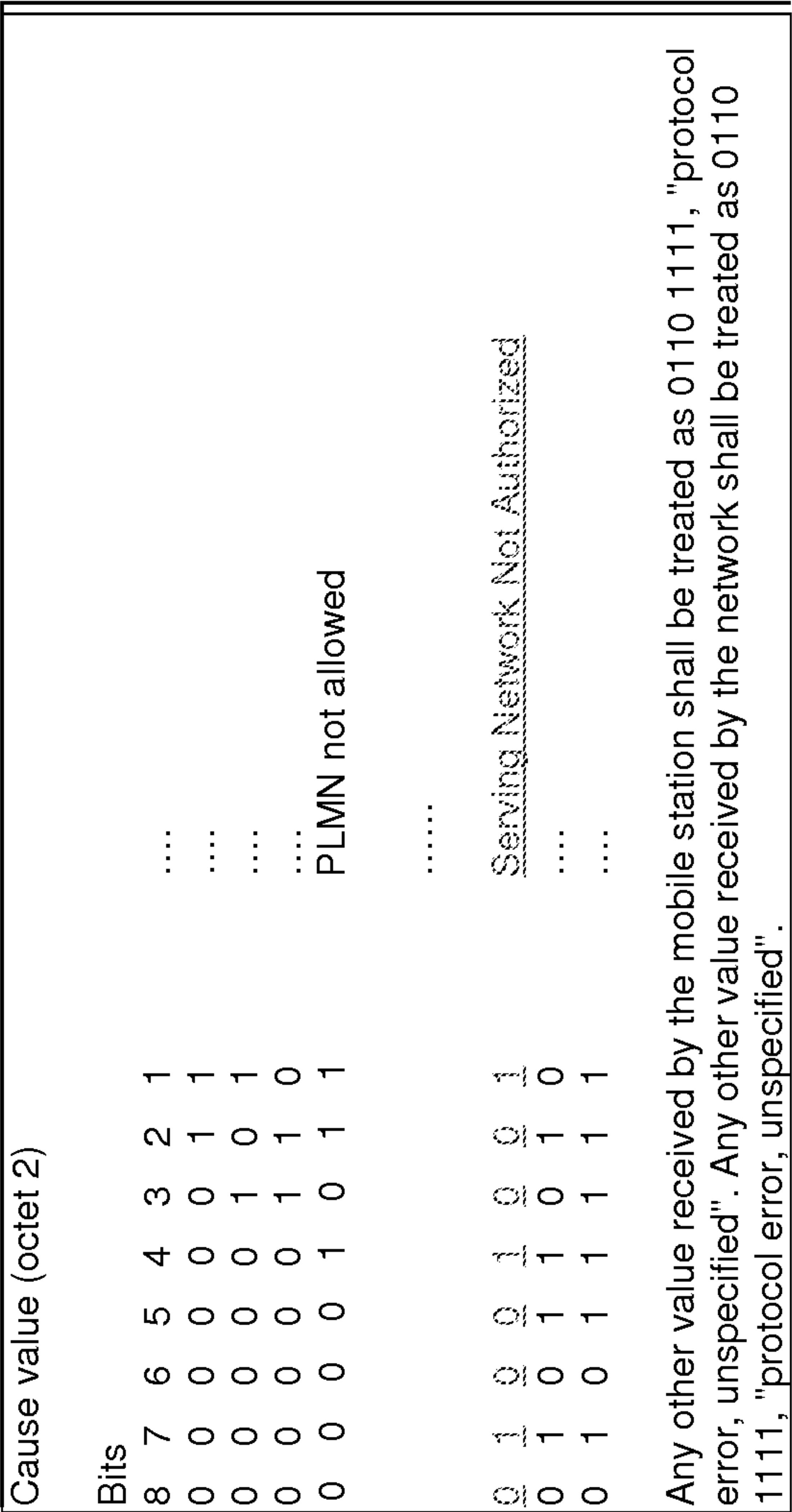


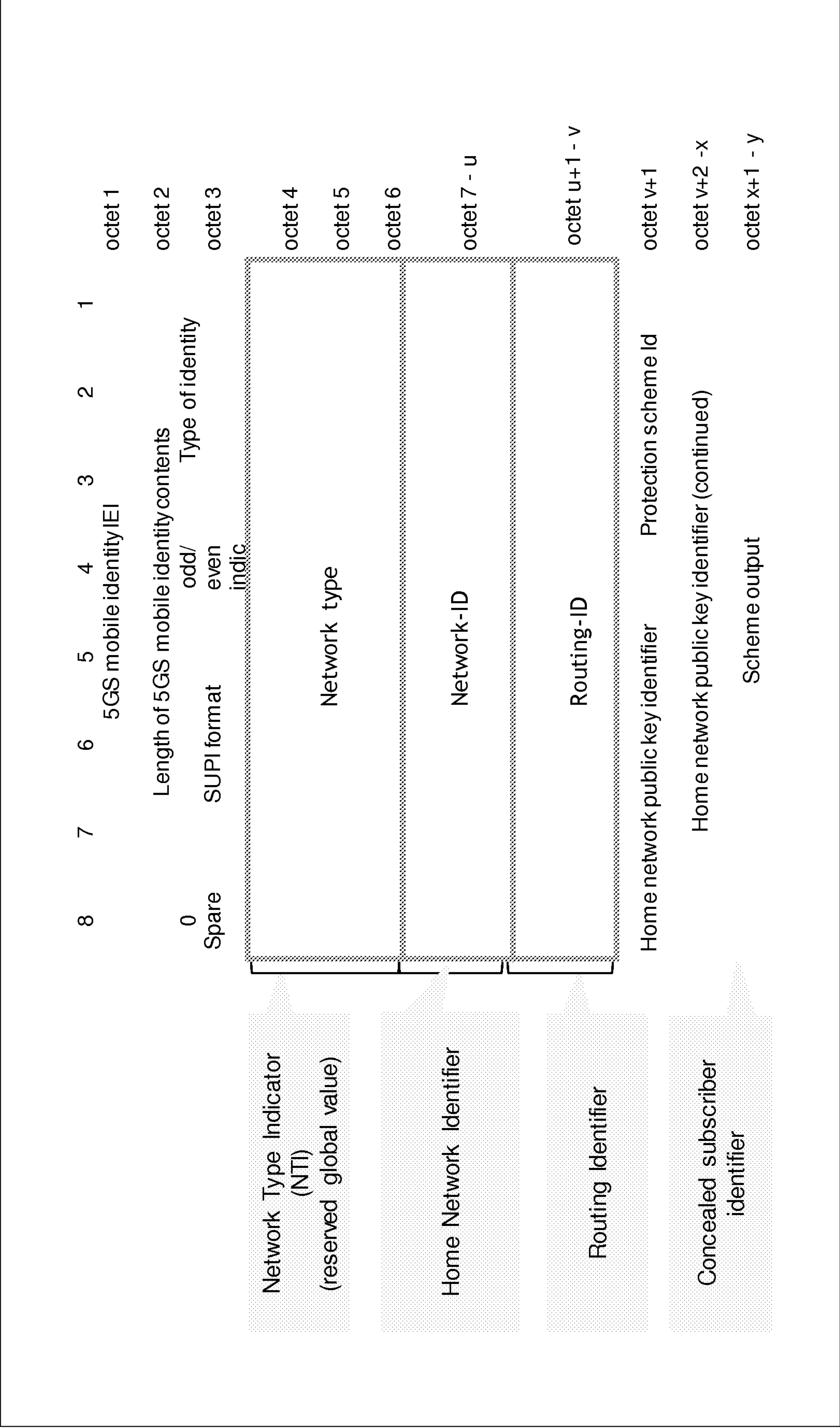
FIG. 15

SUPI format (octet 3, bit 5-7)			
Bits	7	6	5
	0	0	0
	0	0	1
	0	1	0
	0	1	1
All other values are interpreted as IMSI by this version of the protocol.			

FIG. 16
A new field "SUCI Format"

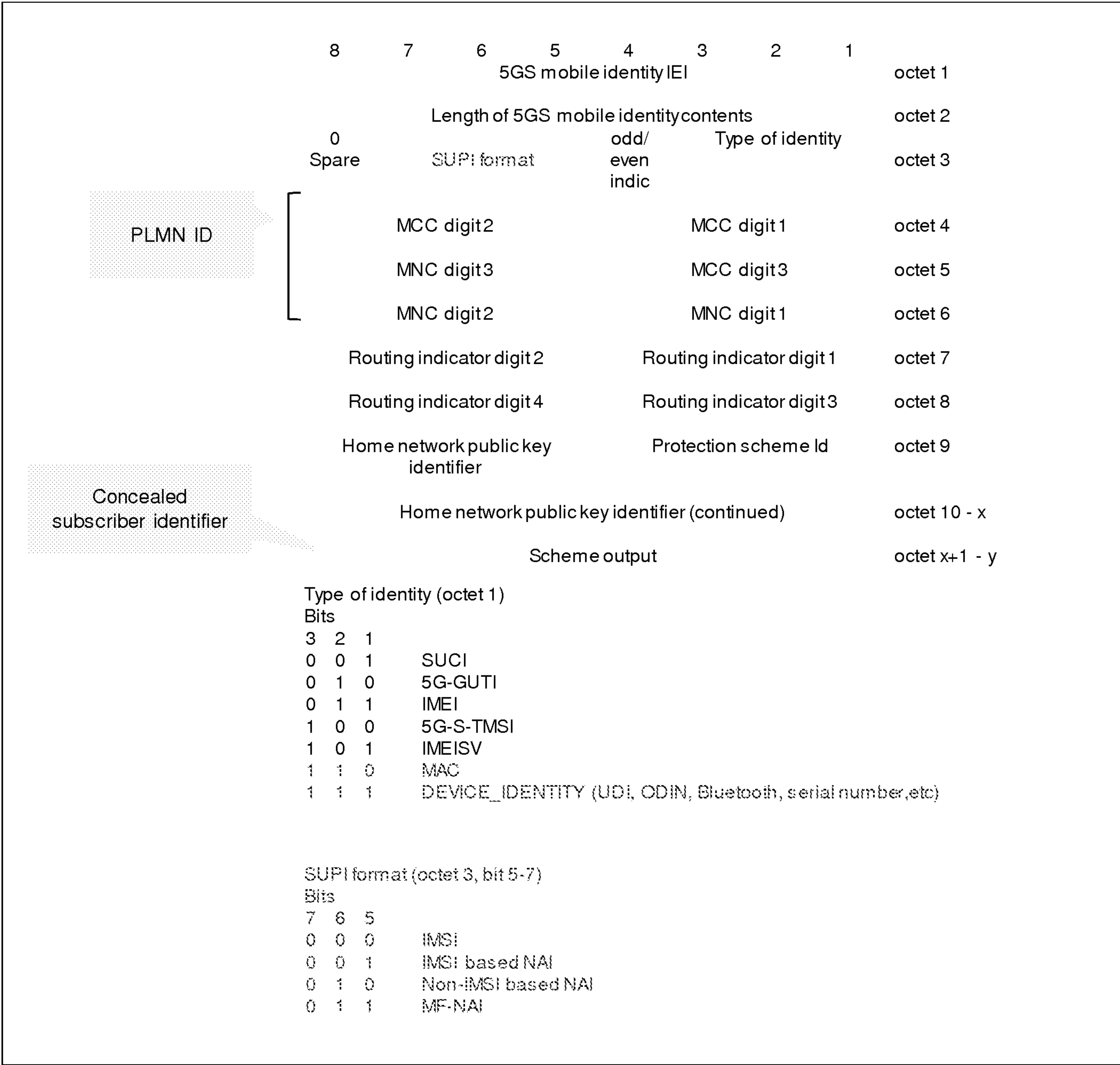
Type of identity (octet 1)			
Bits	3	2	1
	0	0	1
	0	1	0
	0	1	1
	1	0	0
	1	0	1
	1	1	0
	1	1	1

FIG. 17
Subscriber identity type can include MAC address, UDI, ODIN, Bluetooth, serial number:



Generic SUCI subscriber identity format

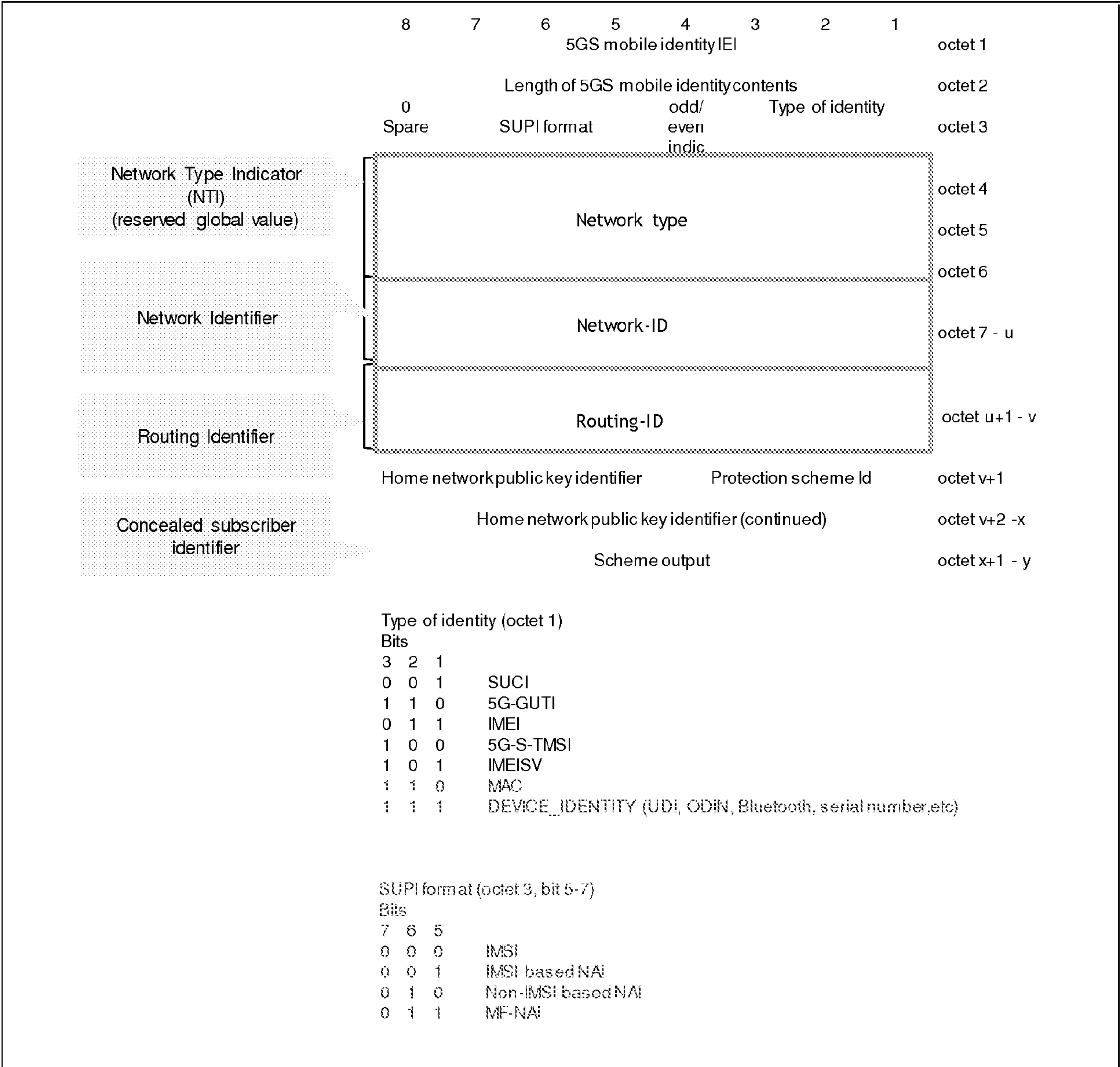
FIG. 18



5GS mobile identity information element for type of identity "SUCI" and SUPI format is "IMSI" or "IMSI based NAI"

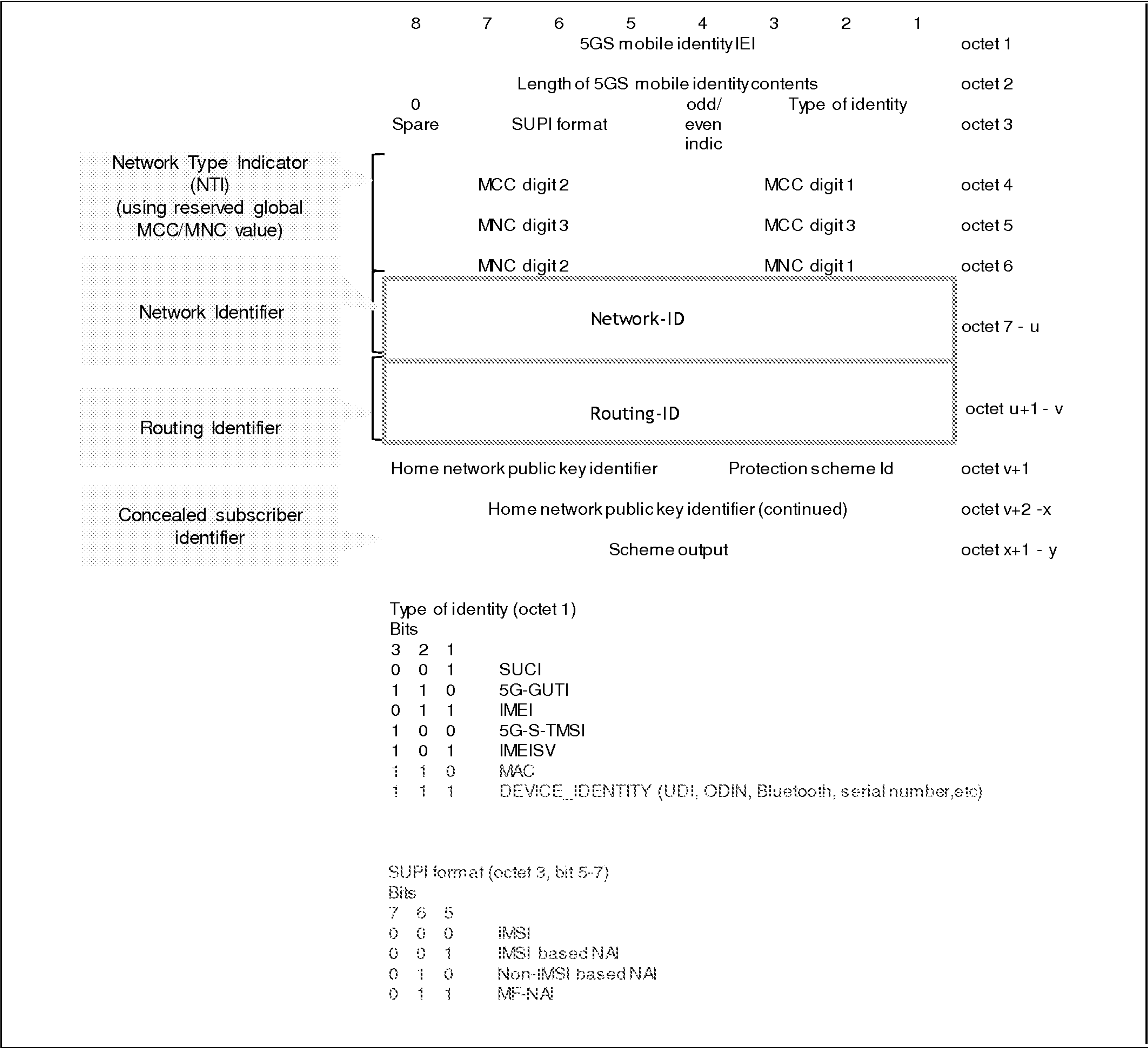
FIG. 19

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5GS mobile identity information element for type of identity "SUCI" and SUPI format is "Non-IMSI based NAI"

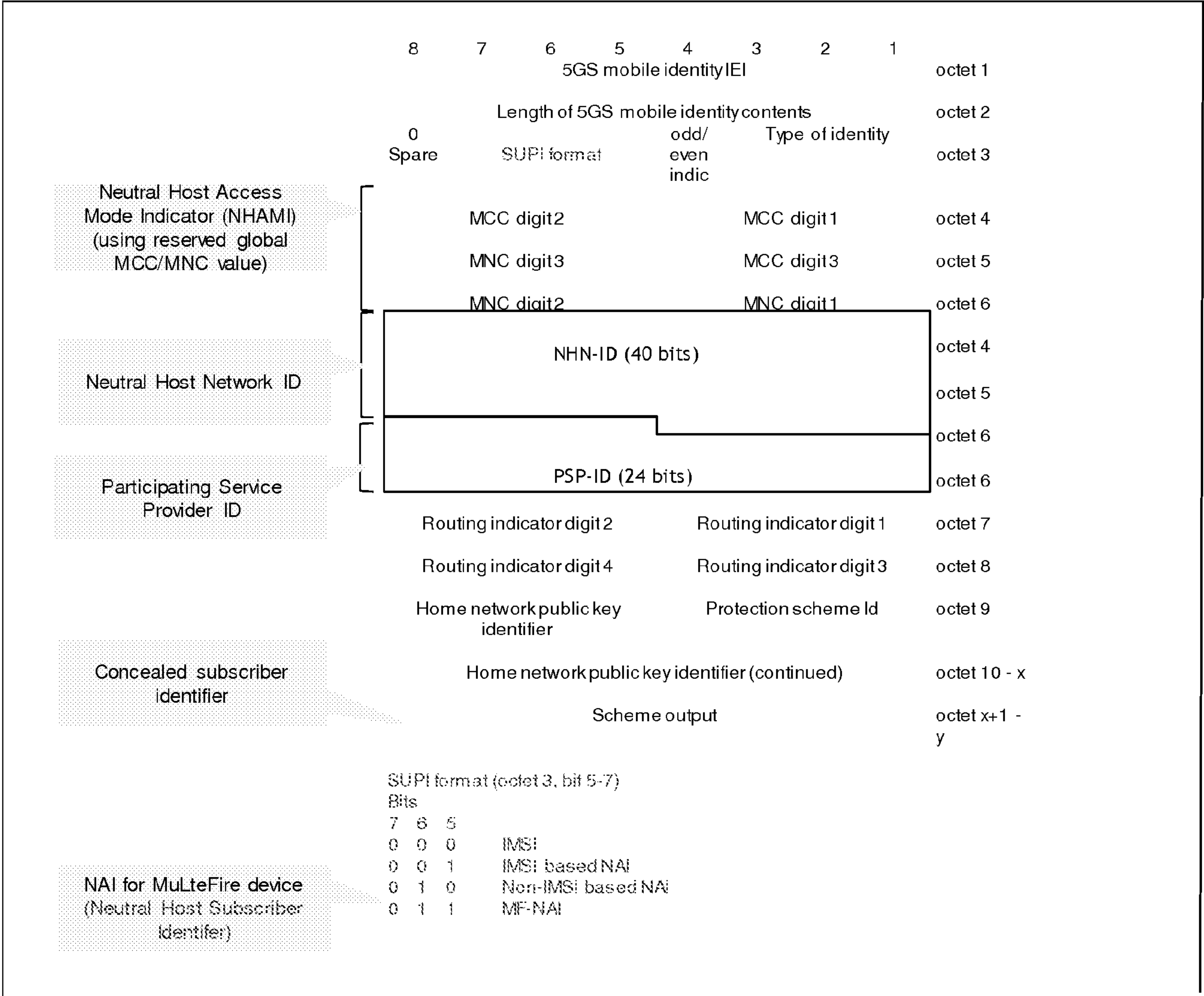
FIG. 20



5GS mobile identity information element for type of identity "SUCI" and SUPI format is "Non-IMSI based NAI" and NTI is PLMN ID

FIG. 21

20/23
20/23



5GS mobile identity information element for type of identity "SUCI" and SUPI format is "MF-NAI"

FIG. 22

SUCI identifier coding

Identity digit (octet 3 bits 5 to 8, octet 4 etc.)

For the IMEI, Identity digit field is coded using BCD coding. If the number of identity digits is even then bits 5 to 8 of the last octet shall be filled with an end mark coded as "1111". The format of the IMEI is described in 3GPP TS 23.003 [4].

For the IMEISV, Identity digit field is coded using BCD coding. Bits 5 to 8 of the last octet shall be filled with an end mark coded as "1111". The format of the IMEISV is described in 3GPP TS 23.003 [4].

For the SUCI, bit 5 of octet 3 is the SUPI format and coded as shown below. Bits 6 to 8 of octet 3 are spare, octet 4 through 6 contain the MCC and MNC values as specified below, and bit 8 of octet 7 is the most significant bit and bit 1 of the last octet the least significant bit for the subsequent fields. The required fields for the SUCI are as defined in 3GPP TS 23.003 [4].

SUPI format (octet 3, bit 5-7)

Bit				
7	6	5		
0	0	0		IMSI
0	0	1		IMSI based NAI
0	1	0		Non-IMSI based NAI
0	1	1		MF-NAI

Other values are spare

MCC, Mobile country code (octet 4, octet 5 bits 1 to 4)

The MCC field is coded as in ITU-T Recommendation E.212 [42], annex A.

MNC, Mobile network code (octet 5 bits 5 to 8, octet 6)

The coding of this field is the responsibility of each administration but BCD coding shall be used. The MNC shall consist of 2 or 3 digits. If a network operator decides to use only two digits in the MNC, bits 5 to 8 of octet 5 shall be coded as "1111".

The contents of the MCC and MNC digits are coded as octets 6 to 8 of the Temporary mobile group identity IE in figure 10.5.154 of 3GPP TS 24.008 [12].

Routing indicator (octet 7-8)

Routing Indicator shall consist of 1 to 4 digits. The coding of this field is the responsibility of home network operator but BCD coding shall be used. If a network operator decides to assign less than 4 digits to Routing Indicator, the remaining digits shall be coded as "1111" and inserted at the left side to fill the 4 digits coding of Routing Indicator.

Protection scheme identifier (octet 9 bits 1 to 4)

Bits					
4	3	2	1		
0	0	0	0		Null scheme
0	0	0	1		ECIES scheme profile A
0	0	1	0		ECIES scheme profile B
0	0	1	1		
				to	Reserved
1	0	1	1		
1	1	0	0		
				to	Operator-specific protection scheme
1	1	1	1		

Home network public key identifier (octet 9 bits 5 to 8, octet 10 to x)

The Home network public key identifier field is coded as defined in 3GPP TS 23.003 [4].

Scheme output (octet x+1 to y)

The Scheme output field is coded as defined in 3GPP TS 23.003 [4].

FIG. 23

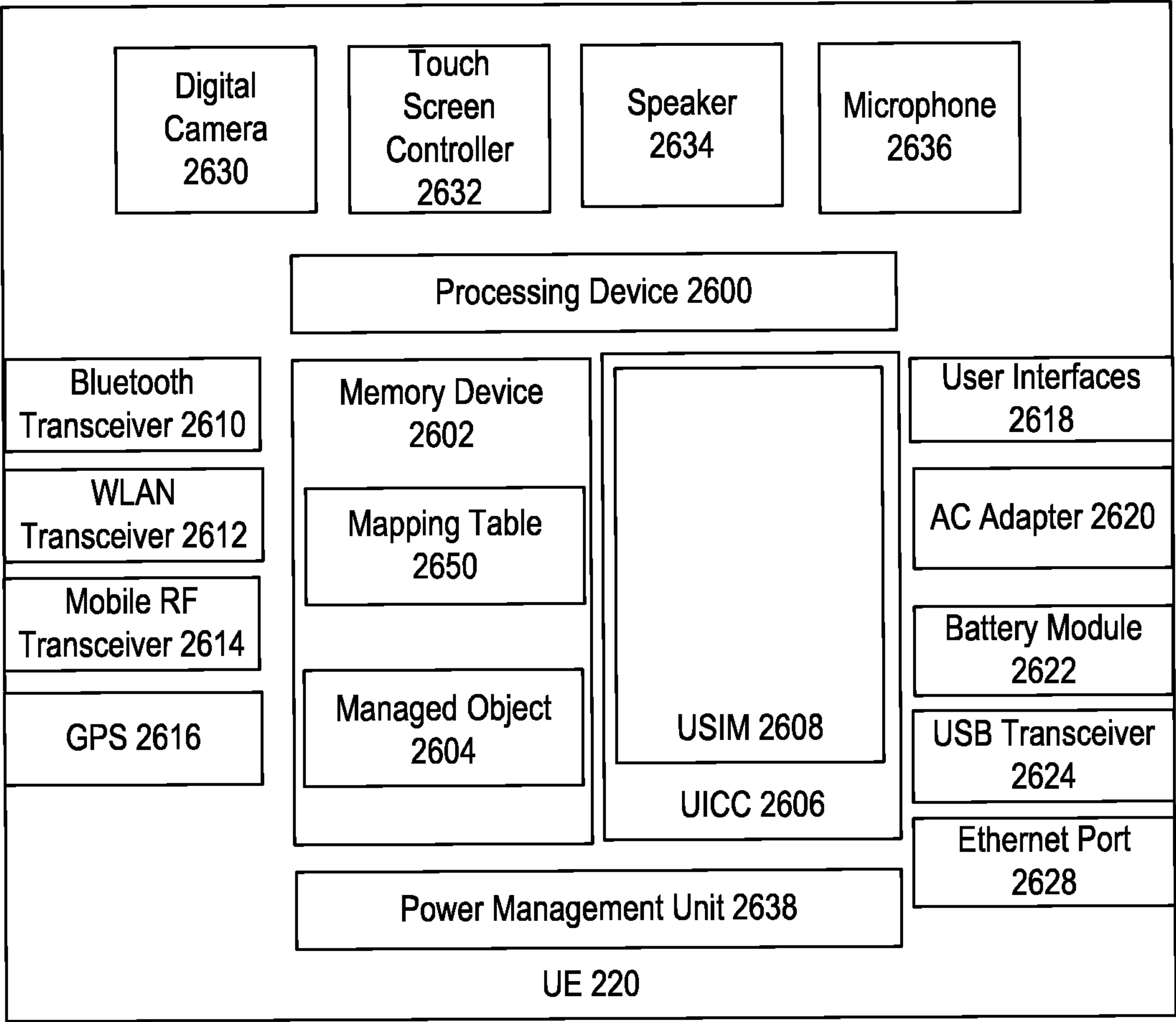


FIG. 24

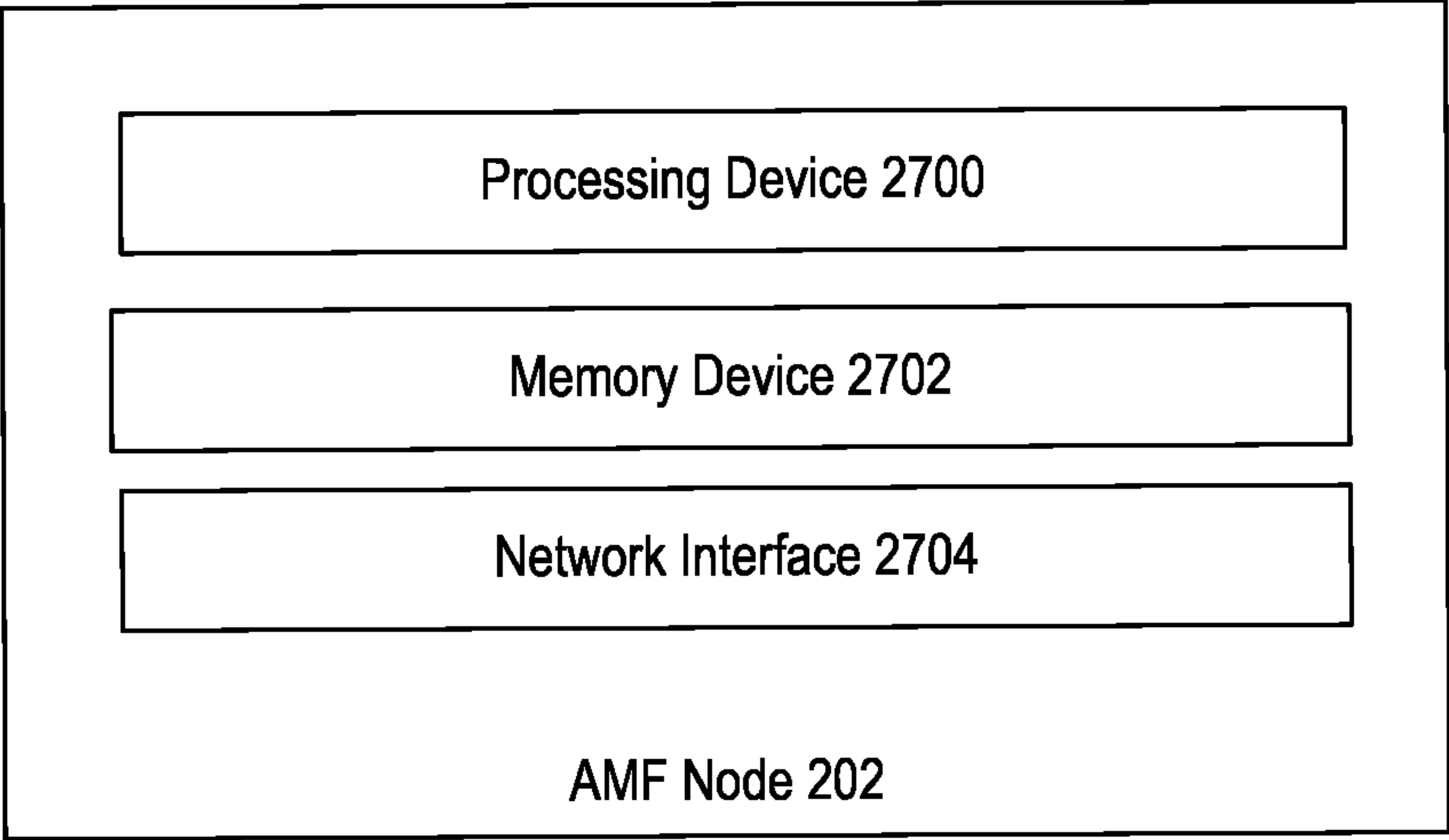


FIG. 25

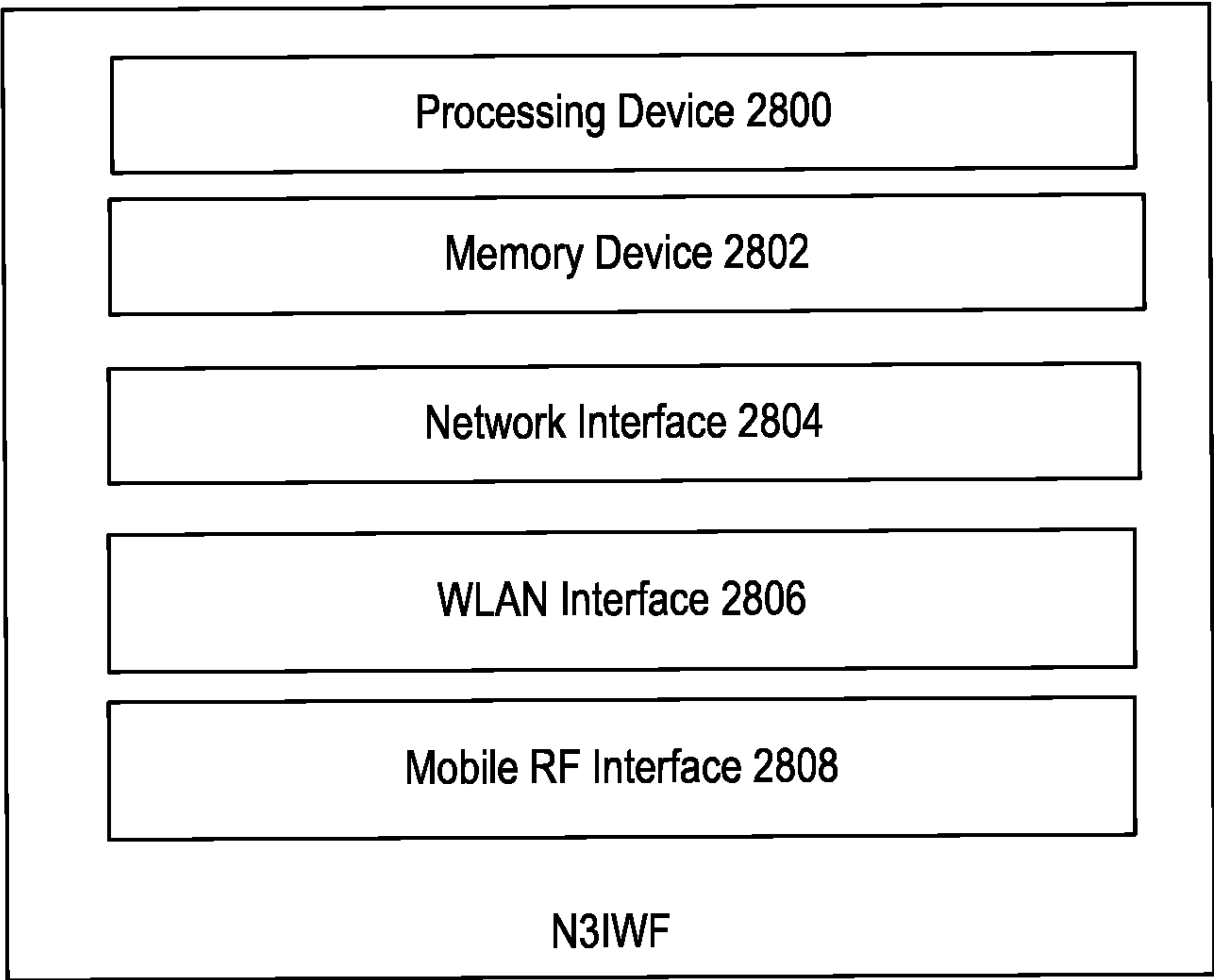


FIG. 26