

USIM
(K)

SN

HE
(K)

$MAC = f1_K(SQN|RAND|AMF)$
 $XRES = f2_K(RAND)$
 $CK = f3_K(RAND)$
 $IK = f4_K(RAND)$
 $AK = f5_K(RAND)$
 $AUTN = (SQN \oplus AK)|AMF|MAC$

RAND, AUTN

RAND, XRES, (CK, IK), AUTN

$AK = f5_K(RAND)$
 $SQN = (SQN \oplus AK) \oplus AK$
 $XMAC = f1_K(SQN|RAND|AMF)$
 $XMAC = MAC ?$
 $SQN \text{ Okay ?}$
 $RES = f2_K(RAND)$
 $CK = f3_K(RAND)$
 $IK = f4_K(RAND)$

RES

RES = XRES ?

encrypted with $f8_{CK}()$

integrity protected with $f9_{IK}()$