should be used uniformly to prevent collisions. For example, evenly distributed over all paging channels and all of the slot g channels to avoid overloading of a single channel.

ntageous for both the BS and the MS to be able to independently esources from information known to both. For example, from h BS and MS, the MS should be able to reproduce the base sta- annel.

oice among a number of resources is made by using a hash func- allows a uniform distribution through a method that is reproduc- ne BS by using (a) the number of resources and (b) a parameter known by both the BS and MS as inputs.

parameter and N = the number of resources, with the input of a hash function $h(K)$ will be an integer value between 0 and $N-1$,

$$0 \le h(K) \le N-1 \tag{9.1}$$

llowing hash function, R as

$$() = \left\lfloor N \times \frac{(40,503 \times K) mod 2^{16}}{2^{16}} \right\rfloor \tag{9.2}$$

rmined from the HASH_KEY parameter, a binary number gener- it binary electronic serial number (ESN) (see Figure 9.1) or the f binary encoded international mobile subscriber identity (IMSI) 2).

$$\text{HASH_KEY} = L + 216\,H \tag{9.3}$$

ne 16 least significant bits of the HASH_KEY
he 16 most significant bits of the HASH_KEY

$$K = L \oplus H \oplus DECORR \tag{9.4}$$

odifier intended to decorate the different hash function selections L' denotes the 12 least significant bits of HASH_KEY, then Table parameters used in the IS-95 hash function.

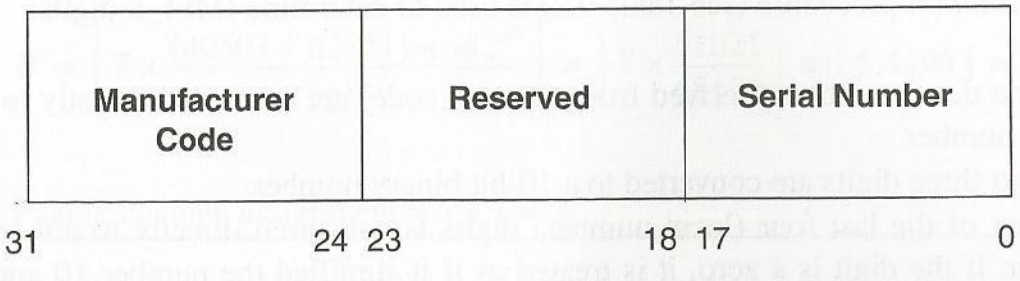
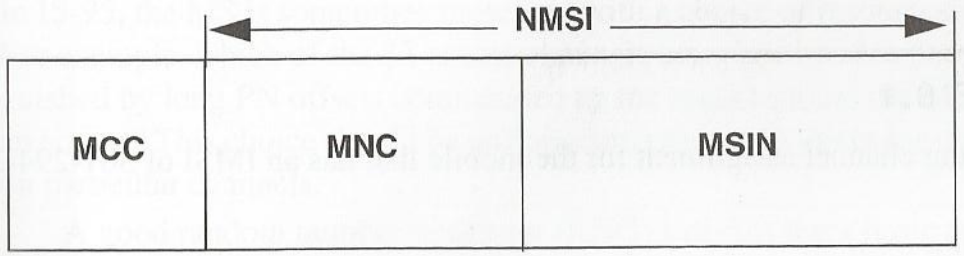


Figure 9.1 Electronic Serial Number (ESN)



MCC: Mobile Country Code (3 digits)
MNC: Mobile Network Code
MSIN: Mobile Station Identification Number
NMSI: National Mobile Station Identification (up to 12 digits)

Figure 9.2 International Mobile Subscriber Identity (IMSI)

Table 9.1 IS-95 Hash Function Parameters

Application	*N*	*DECORR*	Return Value
CDMA channel # (central frequency)	Number of channels (up to 10) in list sent to MS	0	$R+1$
Paging channel	Number of channels (up to 7) list sent to MS	$2 \times L'$	$R+1$
Paging slot #	2048	$6 \times L'$	R
Access channel randomization	2^M, $M \le 512$ is in broadcast message	$14 \times L'$	R

Table 9.2 Initial Rotation of IMSI Digit Values

d_i	0	1	2	3	4	5	6	7	8	9
d'_i	9	0	1	2	3	4	5	6	7	8