

**INTERNATIONAL MOBILE SUBSCRIBER IDENTITY
(I M S I) ASSIGNMENT AND MANAGEMENT
GUIDELINES FOR
SHARED HNI FOR CBRS RANGE**

TABLE OF CONTENTS

| | | |
|-------------|---|-----------|
| 1.0 | PURPOSE AND SCOPE | 3 |
| 2.0 | REFERENCES | 3 |
| 3.0 | GLOSSARY | 4 |
| 4.0 | IMSI FORMAT, FUNCTION, AND MANAGEMENT FOR CBRS | 4 |
| 5.0 | ASSUMPTIONS AND CONSTRAINTS | 5 |
| 6.0 | ASSIGNMENT PRINCIPLES | 7 |
| 7.0 | CRITERIA FOR IBN ASSIGNMENT | 8 |
| 8.0 | RESPONSIBILITIES OF IBN APPLICANTS AND ASSIGNEES | 9 |
| 9.0 | RESPONSIBILITIES OF THE IMSI-A | 10 |
| 10.0 | IBN RETURN AND RECLAMATION PROCEDURES | 12 |
| 11.0 | RELIEF PLANNING | 13 |
| 12.0 | MAINTENANCE OF GUIDELINES | 13 |
| 13.0 | APPEALS PROCESS | 13 |
| 14.0 | SHARED HNI CBRS RANGE DESIGNATIONS | 14 |

1.0 PURPOSE AND SCOPE

This document contains the guidelines and procedures for the assignment and use of International Mobile Subscriber Identities (IMSI) for a Shared HNI for Citizens Broadband Radio Service (CBRS) operation currently defined by the FCC in the spectrum range 3550-3700 MHz.

In 2018, the need for IMSIs for use in the Citizens Broadband Radio Service (CBRS) Spectrum was identified. CBRS is licensed, but shared (i.e., not license for exclusive use) and thus may have a broad range of users (operators) and use cases (malls, enterprise, stadiums, apartment buildings, etc.). Because the spectrum is not exclusive use, spectrum users do not directly attain FCC licenses; instead, the users acquire base stations certified as compliant with the FCC rules (FCC Title 47, Code of Federal Regulations, Part 96). The base stations must then register with a Spectrum Access System (SAS), which verifies the base station is certified and operates in compliance within the FCC rules.

With such broad and low-cost access to the shared licensed spectrum, the IOC was concerned with HNI demand from a significant number of smaller CBRS Spectrum users (operators). Thus, the IOC derived a scheme for allocating blocks of IMSIs for the CBRS Spectrum users. This will conserve HNI allocations, which aligns with the charter of the IOC.

These guidelines address allocation of an HNI and IMSIs for systems that utilize IOC-approved Radio Technologies using the shared CBRS Spectrum.

2.0 REFERENCES

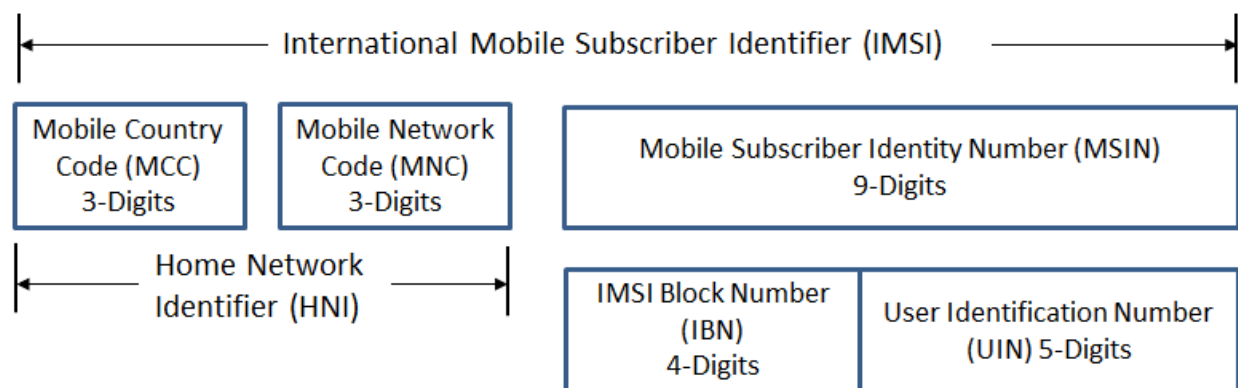
- 2.1 *ITU-T Recommendation E.212, The International Identification Plan For Public Networks and Subscriptions*; available at: <https://www.itu.int/rec/T-REC-E.212/en>.
- 2.2 *IMSI Oversight Council (IOC) IMSI Assignment and Management Guidelines and Procedures*; available at <https://www.atis.org/committees-forums/ioc/>.
- 2.3 FCC Title 47, Code of Federal Regulations, Part 96, available at: <http://www.ecfr.gov/cgi-bin/text-idx?node=pt47.5.96&rgn=div5>.

3.0 GLOSSARY

| Term | Definition |
|-----------------------------|---|
| ATIS | Alliance for Telecommunications Industry Solutions |
| CBRS | Citizens Broadband Radio Service |
| CBRS Range or CBRS Spectrum | Spectrum defined in the 3550-3700 MHz range per FCC Title 47, Code of Federal Regulations, Part 96 |
| Code Holder Fee | Annual code holder fees assessed on HNI and IBN assignees will fund the functions necessary for the IOC to perform its responsibilities (e.g., administrative, web site). |
| HNI | Home Network Identifier; first 5-6 digits of the IMSI, composed of the MCC and MNC |
| IBN | 4-digit IMSI Block Number |
| IMSI | International Mobile Subscription Identity; 15-digit number defined by ITU-T E.212 |
| IMSI-A | IMSI Administrator |
| IOC | ATIS IMSI Oversight Council |
| MCC | 3-digit Mobile Country Code |
| MNC | 2- or 3-digit Mobile Network Code |
| MSIN | 9-digit Mobile Subscription Identification Number |
| SAS | Spectrum Access System |
| Shared HNI | A Home Network Identifier that is shared among multiple operators (i.e., multiple operators in the CBRS Spectrum). |
| UIN | 5-digit User Identification Number |

4.0 IMSI FORMAT, FUNCTION, AND MANAGEMENT FOR CBRS

- 4.1 The IMSI format and function are based on ITU-T Recommendation E.212.
- 4.2 Each IMSI uniquely identifies the mobile terminal/user, IMSI Block Number (IBN), (which is related to the CBRS Network Operator) and the home country of the network and of the mobile terminal/user.
- 4.3 The overall IMSI format remains the same. However; for the purposes of utilization of defining an HNI for the CBRS range, the MSIN is divided into two components as reflected below:



- 4.4 The function of the MCC and MNC, as the Home Network Identifier (HNI), will be used to identify a shared CBRS HNI in the CBRS range.
- 4.5 The first set of four digits of the MSIN will be used as the IMSI Block Number (IBN) The remaining five digits of the MSIN will be used for the User Identification Number (UIN). This scheme will allow for 10,000 Blocks of 100,000 IMSIs to be allocated.
- 4.6 All IBN assignments are available at the IMSI-A website; www.imsiadmin.com.
- 4.7 The IMSI Oversight Council (IOC), a committee of the Alliance for Telecommunications Industry Solutions (ATIS), manages the IMSI resource in the United States and oversees the performance of the IMSI. The management of the resources includes such functions as Assignment Guidelines maintenance, ensuring the adequacy of the resource inventory, and ensuring the appropriate function and use of the resource. Annex B, Section B-6 of the IOC *IMSI Assignment and Management Guidelines and Procedures* contains the IOC Operational Procedures.

5.0 ASSUMPTIONS AND CONSTRAINTS

These guidelines are based on the following assumptions and constraints:

- 5.1 These guidelines and procedures should provide the greatest latitude to those providing services in the CBRS range, while permitting the effective and efficient management of a finite resource.
- 5.2 CBRS range applicants may not qualify under the existing IMSI assignment guidelines. Therefore, these guidelines have been established to allow the assignment of Shared HNI resources to applicants in the CBRS range. The guidelines and procedures as set forth in this document, remain in effect until there is either industry consensus or regulatory policy direction to change them.
- 5.3 These guidelines do not describe the method by which IMSIs are transmitted across and processed by public networks. Network interworking arrangements are contained in other standards, documents, or business agreements.

- 5.4 There are authorized IBN application and code holder fees. Each application must have an accompanying application fee payment or the application will be returned. The IBN application fee funds the Administration function. Additionally, each IBN assignee will be separately assessed an annual code holder fee.

6.0 ASSIGNMENT PRINCIPLES

The assignment principles defined below allow network operators the greatest possible latitude in providing public mobility service.

- 6.1 IBNs are to be assigned and used by networks offering services in the CBRS range that intend to use a protocol identified in this document as requiring the use of IMSIs.
- 6.2 After approving a Shared HNI Application, the IMSI-A will assign one IBN.
- 6.3 Each 6-digit HNI + 4-digit IBN, as part of the 15-digit IMSI, is to be assigned to a single CBRS operator. A single CBRS operator may be assigned multiple IBNs; however, only one IBN will be assigned per application.
- 6.4 The remaining 5 digits will be the UINs allocated by assignees to their subscribers. An IMSI is unique to a single mobile subscription, but a mobile terminal or subscriber may have multiple IMSIs.
- 6.5 IBNs shall be assigned to permit the most effective and efficient use of a finite resource in order to maximize the existing allocated resource inventory and to defer, as long as practical, the need to request additional HNI resources.
- 6.6 IMSIs are a public resource. The assignment of any portion of an IMSI (i.e., HNI, IBN, UIN or MSIN) does not imply ownership of the resource by either the entity to which it is assigned or by the entity performing the administrative function.
- 6.7 Should an assignee transfer control of the assigned IBN, then the use of the assigned IBN is transferable. Reference *Form J - Request for Change in Information for an IBN Assignment for a Shared HNI* and *Form K - Confirmation of Change in Information for an IBN Assignment for a Shared HNI*, for transfer of an IBN.
- 6.8 The IMSI-A will:
 - Assign IBNs in a fair, timely, and impartial manner to any applicant that meets the criteria for assignment.
 - Assign IBNs on a first come, first served basis from the available pool of unassigned IBNs.
 - Make all assignments based on the criteria in these guidelines.
 - Treat sensitive information received from applicants as proprietary and confidential, and not to be shared with those outside the IMSI-A.
- 6.9 Information that is requested of applicants in support of an IBN application shall be uniform and kept to a minimum.

- 6.10 An entity which is denied an IBN assignment or extension under these guidelines has the right to appeal that decision.
- 6.11 This version of these guidelines has no effect on HNI assignments made under the *IMSI Assignment and Management Guidelines and Procedures* prior to this versions' approval, unless changes are explicitly made retroactive. Use of all assigned resources shall be consistent with these guidelines.
- 6.12 A working IBN returned to the IMSI-A for reassignment will remain dormant for a period of not less than 180 days, from the date of return to the IBN pool, before reassignment. An IBN recovered in accordance with reclamation procedures will not be reassigned until confirmation is received from the IOC. If an IBN is returned and was never working in the current assignee's network, the IBN is immediately reassignable (i.e., no dormancy is required).
- 6.13 There is an administrative fee associated with an application for an IBN.

7.0 CRITERIA FOR IBN ASSIGNMENT

The assignment criteria in the following paragraphs should be considered by a potential IBN applicant before submitting an application and will be used by the IMSI-A in reviewing and processing an application:

- 7.1 The applicant/assignee of an IBN must have and provide evidence of intent to provide service. This evidence is detailed in *Form G - Application for an IBN Assignment for a Shared HNI*.
- 7.2 The applicant must certify that the IBN will use protocols identified on *Form G – Application for an IBN Assignment for a Shared HNI*, as requiring the use of IMSIs.
- 7.3 An IBN will be provisionally allocated by the IMSI-A upon receipt and approval of a completed *Form G – Application for an IBN Assignment for a Shared HNI*. The payment of the application fee must accompany the application or the application will be returned. An application for additional IBN assignments will only be processed if the annual code holder fees of the applicant/assignee are paid to date.
- 7.4 Designated IBNs that are provisionally approved will be finally approved by the IMSI-A upon receipt and approval of a completed *Form I – Deployment Confirmation for an IBN Assignment for a Shared HNI*. This form should be submitted within 15 months after initial allocation. The applicant may request an extension during this period. If granted, the extension cannot exceed 90 days. If *Form I - Deployment Confirmation for an IBN Assignment for a Shared HNI* is not received within the time provided, the allocated block will be returned to inventory.

7.5 Every IBN will be associated with exactly one of the following states:

- Unassigned (never assigned to an operator)
- Available for reassignment (assigned but returned or reclaimed)
- Being Assigned (*Form G Application for an IBN Assignment for a Shared HNI* received and approved, but not *Form I - Deployment Confirmation for an IBN Assignment for a Shared HNI*)
- Assigned (*Form I - Deployment Confirmation for an IBN Assignment for a Shared HNI* received and approved)
- Being Reclaimed (no longer assigned, but not yet reclaimed)

8.0 RESPONSIBILITIES OF IBN APPLICANTS AND ASSIGNEES

Entities requesting IBN assignments and entities already assigned one or more IBNs shall comply with the following:

8.1 Applicants and assignees must meet all conditions specified in these guidelines. Official copies of the guidelines may be obtained from the ATIS IOC website; <https://www.atis.org/committees-forums/ioc/>.

8.2 Applicants must apply online at [IMSIadmin.com/forms](https://imsiadmin.com/forms) to the IMSI-A by completing *Form G - Application for an IBN Assignment for a Shared HNI*.

8.3 IBN assignees shall:

8.3.1 Assign and efficiently manage the remaining digits of the UINs (last 5 digits of the MSIN) associated with the assigned IBN. Maintain up-to-date and accurate assignment records that match MSINs to mobile terminals/users. These records may be required for audit purposes.

8.3.2 Inform the IMSI-A of changes in the information associated with an IBN assignment by using *Form J – Request for Change in Information for an IBN Assignment for a Shared HNI*. Changes may occur because of the transfer of an IBN, through merger or acquisition, to a different network. The initial assignee of the IBN involved in a transfer occurring through merger, acquisition or other means must immediately inform the IMSI-A when such a change becomes effective. Timely reporting of changes to information enables the IMSI-A to maintain accurate assignment records.

8.3.3 Participate in the UIN audit process, when requested.

8.3.4 Deploy any IBN, assigned either directly by the IMSI-A or obtained through merger or acquisition, within the time period specified. Inform the IMSI-A of IBN deployment by submitting *Form I – Deployment Confirmation for an IBN Assignment for a Shared HNI*.

- 8.3.5 Apply to the IMSI-A for an extension if the deployment requirement cannot be met and the IBN is still required.
- 8.3.6 Return to the IMSI-A, using *Form L – Return of an IBN for a Shared HNI*:
- Any IBN no longer needed for the provision of services,
 - Any IBN not deployed within the time period specified, including extensions, or
 - Any IBN not used in conformance with these assignment guidelines, including failure to submit proper application and code holder fees.

9.0 RESPONSIBILITIES OF THE IMSI-A

The role of the IMSI-A is to manage the entire IMSI resource and to directly administer the IBN segment of the IMSI. In this context, the IMSI-A shall:

- 9.1 Provide to the industry general and specific information on the structure and proper use and management of IMSIs.
- 9.2 Provide copies of these guidelines and forms to IBN applicants and assignees, and assist them in completing the required forms.
- 9.3 Review and process IBN applications as follows:
- 9.3.1 Review the application to determine if all requested information is provided and credible. If not, return the application to the applicant requesting that any deficiency be corrected.
- 9.3.2 Inform applicants of the status of their requests using *Form H– Disposition of an IBN Assignment for a Shared HNI Application*. There are three possible dispositions: approved, denied, or additional information required. Notify the applicant in writing of the disposition within ten working days from receipt of *Form G - Application for an IBN Assignment for a Shared HNI*. The response will include:
- If assigned, the specific IBN being assigned,
 - If denied, the reasons for denial and instructions on how and where to appeal the decision,
 - If additional information is required, the specific information required.
- 9.4 Use the following IBN assignment procedures:
- 9.4.1 The IMSI-A shall generally assign IBNs in numerical sequence.

- 9.4.2 There may be technical considerations or limitations on the part of the applicant that require a specific assignment or preclude them being able to use the next consecutive IBN assignment.
- 9.4.3 When reassigning an IBN that has been returned or reclaimed, the IMSI-A will ensure that the IBN has remained dormant for the required period and confirm with the IOC that the IBN is no longer in use.
- 9.5 Maintain accurate and current IBN application and assignment records. Update the records as required to respond to requests for changes in assignment information reported by code assignees. Respond to these requests within ten working days using *Form K – Confirmation of Change in Information for an IBN Assignment for a Shared HNI*.
- 9.6 Publish, at least monthly, via the agreed medium, a list of assigned IBNs. The list will include the IBN number and the IBN assignee company name. Track the number of IBNs assigned and the assignment rate and report this data regularly to the ATIS IOC.
- 9.7 Investigate any IBN that has not been deployed within the required time frame, and issue extensions if appropriate. The IMSI-A will forward a letter to each IBN Assignee that has not reported the deployment of an assigned code within the allowed time (Section 7.4). The letter will request the implementation status of the assigned IBN using *Form I – Deployment Confirmation for an IBN Assignment for a Shared HNI*, and state that if deployment confirmation, or an extension request, is not received within 30 days the IBN is subject to reclamation/reassignment. Notify the IOC if an assignee fails to deploy an assigned code within the allotted extensions.
- 9.8 Reclaim assigned IBNs (Section 10), as needed.
- 9.9 At the determination of the IOC, the IMSI-A may be requested to perform assignment audits. This requirement is not considered to be the ongoing responsibility of the IMSI-A unless agreed to by the IOC. The IMSI-A may recommend to the IOC that a specific audit be performed. See Annex A of the IOC *IMSI Assignment and Management Guidelines and Procedures* for the auditing process, where the UIN assignments of the IBN would be audited instead of the IMSI assignments. This Annex is not an integral part of these guidelines. If/when the IOC directs the conduct of an audit, a method of remuneration for the IMSI-A's time and effort will be jointly determined by the IOC and the IMSI-A.
- 9.10 Inform the United States telecommunications industry, via the agreed method, of any revisions to these guidelines.

10.0 IBN RETURN AND RECLAMATION PROCEDURES

10.1 Assignee responsibilities:

- Assignees will return IBNs that are no longer required, not deployed, or not used in conformance with these assignment guidelines.
- Assignees will cooperate with the IMSI-A in carrying out its reclamation and auditing responsibilities.

10.2 IMSI-A responsibilities:

- The IMSI-A will contact any IBN assignee identified as not having returned to the IMSI-A, for reassignment, any IBNs no longer required, not deployed, or not used in conformance with these assignment guidelines, including non-payment of the annual code holder fee(s).
- The IMSI-A will first seek clarification from the assignee regarding any alleged non-use or misuse. If the assignee provides an explanation satisfactory to the IMSI-A, and in conformance with these assignment guidelines, the IBN will remain assigned. If no satisfactory explanation is provided, the IMSI-A will request a letter from the assignee returning the assigned IBN for reassignment. The IMSI-A will utilize all available resources to contact the assignee. If that contact does not resolve the non-conformance, a registered letter will be sent to the assignee at their address of record requesting that they contact the IMSI-A within thirty days regarding the alleged IBN non-use or misuse.
- If the letter is returned as non-delivered or the assignee refuses to return the IBN or to comply with the guidelines, the IMSI-A will advise the IOC. The IOC will direct the IMSI-A as to whether the IBN will be reclaimed and made available for reassignment following the required dormant period.

10.3 If the IMSI-A refers to the IOC an unresolved IBN assignment the IOC will:

- Accept all referrals of alleged non-use or misuse of IBNs from the IMSI-A or any other entity,
- Investigate the referral,
- Review referrals in the context of these assignment guidelines,
- Attempt to resolve the referral, and
- Direct the IMSI-A regarding the action, if any, to be taken. If the action to be taken is not in conformance with the existing guidelines, the IOC will initiate the guidelines revision process, or

- Refer the case to the appropriate regulatory body for resolution if the IOC cannot reach consensus on a resolution, or
- Refer the case to the appropriate regulatory body if the IBN assignee will not comply with the consensus resolution developed by the forum.

11.0 RELIEF PLANNING

- 11.1 When 90% of the IBNs within a Shared HNI have been assigned, or when the IMSI-A estimates that the supply of IBNs will last less than one year, the IMSI-A will inform the IOC.
- 11.2 When the IMSI-A informs the IOC that the IBNs within a Shared HNI are approaching exhaust, the IOC will:
- Conduct an audit of current IBN assignments within the Shared HNI to ensure that efficient IMSI utilization is in effect, and, if not,
 - Recommend additional procedures to be initiated to effect more efficient IMSI utilization, or if efficient utilization is in effect,
 - If required, allocate another HNI for use as a Shared HNI.

12.0 MAINTENANCE OF GUIDELINES

It may be necessary to modify the guidelines periodically to meet changing and unforeseen circumstances. The need for guidelines modification may be identified by the IMSI-A, any entity in the telecommunications sector or the IOC. When a need for modification is identified by an entity other than the IOC, the identifying entity will submit the modification issue to the IOC. The IOC will coordinate the modification process. Questions or concerns regarding the maintenance of the guidelines may be directed to the IMSI-A or IOC.

13.0 APPEALS PROCESS

Should any disagreements arise between the IMSI-A and IBN applicants or assignees in the context of the administration and management of IBNs and the application of these guidelines, the IMSI-A and applicants/assignees will make reasonable, good faith efforts to resolve such disagreements among themselves, consistent with the guidelines, prior to pursuing any appeal. Appeals may include, but are not limited to, one or more of the following options:

- IBN applicants/assignees will have the opportunity to resubmit the matter to the IMSI-A for reconsideration with or without additional input.

- Guideline, interpretation and clarification questions may be referred to the IOC for resolution. Unless otherwise mutually agreed to by the parties, these questions will be submitted in a generic manner protecting the identity of the appellant.
- The applicant/assignee may pursue the disagreement with the appropriate governmental/regulatory body.

Reports on any resolution resulting from the above options, the content of which will be mutually agreed upon by the involved parties, will be kept on file by the IMSI-A and IOC. At minimum, the report will contain the final disposition of the appeal; e.g., whether or not an IBN was assigned.

14.0 SHARED HNI CBRS RANGE DESIGNATIONS

The following Shared HNI has been assigned for the CBRS range:

- 315-010 – Shared HNI for CBRS Range

Under the 315-010 Shared HNI, the following IBNs have been designated:

- 0000 – Unassignable
- 9999 – Test Purposes