



CBRS Alliance Identifier Administration Guidelines for Shared HNI

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1. Introduction

This document describes how unique LTE network and device identifiers necessary to properly manage CBRS systems deployed by using Shared HNI(s) can be obtained. The document describes these identifiers, and provides the administrative guidelines necessary to obtain them from the CBRS Alliance:

- CBRS-NID – Network ID
- CBRS MMEGI – MME Group ID portion of GUMMEI
- CBRS Macro eNB ID portion of ECGI

2. Documentation Conventions

- #d. A number followed by the letter ‘d’ indicates a number of decimal digits.
- #b. A number followed by the letter ‘b’ indicates a number of bits.
- #h. A number followed by the letter ‘h’ indicates a number of hexadecimal digits (‘0’-‘9’, ‘A’-‘F’).

3. References

- [1] CBRS Alliance. *Identifier Guidelines for Shared HNI Technical Report*. CBRSA-TR-0100. https://www.cbirsalliance.org/wp-content/uploads/2018/12/GBRSA-TR-0100-V1.0.0_Published-November-272c-2018-1.pdf
- [2] iconectiv. CBRS Forms. <http://imsiadmin.com/forms>

4. Glossary

Term	Definition
Assignee	An entity that has applied for or has received one or more CBRS identifiers from the CBRS Identifier Administrator
CBRS	3.5 GHz Band Citizens Broadband Radio Service
CBRSA	See CBRS Alliance
CBRS Alliance	See: https://www.cbirsalliance.org
CBRS Identifier Administrator	The organization appointed by the CBRS Alliance to manage identifiers under their control
CBRS-NID	CBRS Network ID. 27 bit number
CBRS Operator (“operator”)	An operator of a system within the US 3.5GHz CBRS band that uses CBRS Alliance Specifications and LTE to provide service
ECGI	EUTRAN Cell Global Identifier. Intended to globally and uniquely identify an eNodeB/Cell. Composed of SHNI + Macro eNB ID + Code
GUMMEI	Globally Unique MME Identifier. Composed of SHNI+MMEGI+MMEC

IBN	IMSI Block Number. 4 BCD Digits
IMSI	International Mobile Subscription Identity. Composed of MCC + MNC + MSIN
LTE	Long Term Evolution. The 3GPP 4G wireless interface.
Macro eNB ID	Portion of ECGI that identifies a group of cells and is assigned by the CBRS Alliance.
MCC	Mobile Country Code
MME	Mobility Management Entity
MMEC	MME Code
MMEGI	MME Group ID
MNC	Mobile Network Code
MSIN	Mobile Subscriber Identity. In the case of a Shared HNI, composed of IBN + UIN
SHNI	Shared HNI, composed of MCC and MNC. Assigned to the CBRS industry by the US IMSI Administrator.
TAC	Tracking Area Code
TAI	Tracking Area ID
UIN	User Identity Number. 5 BCD Digits. Allows one CBRS operator to assign 100,000 globally unique IMSI to their subscribers.
USIM	Universal Subscription Identity Module. A ‘smart card’ for 4G services.
US IMSI Administrator (“IMSI Admin”)	The organization appointed by ATIS IOC to assign and manage IMSI codes within the USA. See: http://imsiadmin.com

5. CBRS Identifiers

This section describes the LTE identifiers that are important for CBRS systems, and which part of the identifiers are managed by the US IMSI Administrator, by the CBRS Alliance, or by the CBRS Operator.

Identifier	Assigned by...			Identifies	Quantity
	IMSI Admin	CBRS-A	CBRS operator		
IMSI	MCC+MNC (SHNI) + IBN	—	UIN	Subscription	10,000 IBN x 100,000 UIN per SHNI
CBRS-NID	—	CBRS-NID	—	Network	2 ²⁷ per SHNI ¹
GUMMEI	SHNI	MMEGI	MMEC	MME	2 ¹⁶ MMEGI x 2 ⁸ MMEC per SHNI
ECGI	SHNI	Macro eNB ID	Cell Identity	Cell or sector (eNodeB)	2 ²⁰ Macro eNB ID x 2 ⁸ Cell Identity per SHNI
TAI/TAC	SHNI	—	TAC	Tracking area	65534 per region of overlap

Table 1: CBRS Identifiers

Portions of identifiers that need to be managed are described in the following sections:

5.1. Shared HNI/SHNI

An SHNI is composed of a 3 digit MCC (Mobile Country Code) and 3 digit MNC (Mobile Network Code). Value **315-010** has been assigned by the US IMSI Administrator for shared use for all CBRS spectrum users implementing networks that require IMSI (e.g. LTE or 5G-NR). It is also known as the Shared HNI. SHNI is the prefix for IMSI, GUMMEI, ECGI and TAI.

5.2. IBN – IMSI Block Number

The IMSI Block Number is assigned within an SHNI by the US IMSI Administrator to a CBRS operator. This leaves 5 digits, known as the UIN (User Identification Number) to be assigned by the CBRS operator to generate IMSI codes to uniquely

¹ It may not be possible to re-use the same CBRS-NID in multiple SHNI, in which case this would be a global quantity.

identify subscriptions (e.g. programmed into a USIM). The resulting 15 digit IMSI format is SHNI (6d) + IBN (4d) + UIN (5d).

The IBN may also be used to produce six globally unique Tracking Area Codes (TAC, see below). It is recommended that operators obtain an IBN for this purpose, even if they do not intend to assign IMSIs.

IBN codes are obtained from the US IMSI Administrator. [2]

5.3. CBRS-NID – CBRS Network ID

The Network ID is a 27-bit number assigned to a single CBRS network by the CBRS Alliance. The Network ID allows a mobile receiving an SHNI broadcast as a system identity, to identify the network uniquely.

5.4. MMEGI – MME Group ID (part of GUMMEI)

The MME Group ID identifies a group of MMEs (Mobile Management Entities) within an SHNI. This will be assigned by the CBRS Alliance and will leave 8 bits (MMEC) to be assigned by the operator. The full GUMMEI format is SHNI (6d/24b) + MMEGI (4h/16b) + MMEC (2h/8b).

5.5. Macro eNB ID (part of ECGI)

The Macro eNB ID within the ECGI identifies a group of cells within an SHNI. This will be assigned by the CBRS Alliance and will leave 8 bits to be assigned by the operator to identify individual cells. The full ECGI format is SHNI (6d/24b) + Macro eNB ID (5h/20b) + Cell Identity (2h/8b).

5.6. TAC – Tracking Area Code (part of TAI)

The Tracking Area Code is assigned by the operator, not by the CBRS Alliance, and should be locally unique (i.e. not used by any other nearby network broadcasting an SHNI). The full TAI format is SHNI (6d/24b) + TAC (4h/16b). The CBRS Alliance does recommend the following method to define 6 TAC codes that will produce TAI codes that will not conflict with any other CBRS network using the same method:

1. The first TAC is the 16 bit binary code for the numeric value of the network's assigned IBN.²
2. This code plus 10,000.
3. This code plus 20,000.
4. This code plus 30,000.
5. This code plus 40,000.
6. This code plus 50,000.

² Note that the IBN is usually encoded as BCD, in which case 9999 would be binary 1001 1001 1001 1001. However, the TAC should be encoded as a binary integer, so 9999 would be binary 0010 0111 0000 1111.

6. Assignee Rights and Responsibilities

These requirements apply to Assignees of CBRS-NID, CBRS MMEGI and CBRS Macro eNB ID codes. The Assignee shall:

- 6.1. Certify that they are authorized to operate a network transmitting in the CBRS frequency band within the United States.
- 6.2. Certify that are, or soon will be, using 3GPP LTE protocols using 3GPP or CBRS-A specifications.
- 6.3. Establish an online “CBRSA Account” and maintain contact information for at least 3 staff members.
- 6.4. Pay any fees associated with identifier assignment and annual maintenance.
- 6.5. Promptly report any changes associated with identifier assignments, including company address, contact personnel, contact information, and company name.
- 6.6. Use only assigned values for the identifiers.
- 6.7. Return any unused codes.
- 6.8. Accept that assignment of a code does not imply ownership of the numbering resource.

7. CBRS Alliance Rights and Responsibilities

- 7.1. Appoint a CBRS Identifier Administrator.
- 7.2. Maintain the CBRS Identifier Guidelines for Shared HNI and post them on the CBRS Alliance website.
- 7.3. Provide 60 days notice before any change of guidelines, except in case of an emergency.
- 7.4. Respond to any appeals of CBRS Identifier Administrator decisions.

8. CBRS Identifier Administrator Rights and Responsibilities

- 8.1. Provide a web-accessible interface to establish an account, request identifier assignments, maintain contact information, and view current identifier assignments.
- 8.2. Provide online customer service (e.g. email, web form or phone) for any actions that cannot be completed through the web interface (such as merging or splitting companies or returning codes).
- 8.3. Provide reasons for denial of any assignment request.

- 8.4. Provide minimal subsets of assignment data in a machine-readable form to various industry segments (e.g. test equipment manufacturers, E911 providers, SAS operators).
- 8.5. Provide information to law enforcement upon presentation of a valid warrant.

9. Identifier Guidelines

9.1. SHNI/Shared HNI

- 9.1.1. The first SHNI has been assigned by the US IMSI Administrator: 315-010.
- 9.1.2. Additional SHNI codes may be assigned in the future.
- 9.1.3. SHNI is not assigned by the CBRS Alliance.

9.2. IBN – IMSI Block Number

- 9.2.1. The IBN is assigned by the US IMSI administrator, not by the CBRS Alliance.
- 9.2.2. An operator may report their IBN(s) to the CBRS Alliance, plus associated routing information, which will be useful in the provision of roaming services.
- 9.2.3. The operator is responsible for the accuracy of IBN information stored by the CBRS Alliance.

9.3. CBRS-NID – Network ID

- 9.3.1. Within an SHNI a CBRS-NID code will be uniquely assigned to a single CBRS account.
- 9.3.2. An operator can decide whether to use one CBRS-NID for each CBRS network site, or to use one CBRS-NID across multiple sites. Note that if ownership of a site (e.g. campus, mall, office building) can be transferred independently from other sites, it is beneficial to use a separate CBRS-NID.
- 9.3.3. The operator is responsible for any applicable fees, for each CBRS-NID and other identifiers assigned.

9.4. MMEGI – MME Group ID

- 9.4.1. When a new CBRSA account is established, a single MMEGI will be assigned, that can identify up to 256 MMEs.
- 9.4.2. A CBRSA account can request additional MMEGI.
- 9.4.3. Multiple CBRS networks connected to the same CBRSA Account can share a single MMEGI.

9.4.4. Multiple CBRS networks connected to the same CBRSA Account can share a single GUMMEI if they share a single MME.

9.4.5. The MCC+MNC portion of the GUMMEI must correspond with the SHNI broadcast by the network.

9.5. ECGI Macro eNB ID

9.5.1. A CBRSA Account should not request assignment of Macro eNB IDs beyond what they anticipate utilizing in the next year.

9.5.2. The MCC+MNC portion of the ECGI must correspond with the SHNI broadcast by the network.

10. Auditing

10.1. The CBRS Identifier Administrator will normally allow self-certification of information provided to it from CBRS account holders.

10.2. The CBRS Identifier Administrator can request documentation, particularly when a request for assignments is particularly large, requests occur unusually frequently, or if some information about the request cannot be validated.

10.3. The CBRS Identifier Administrator can withhold processing identifier assignments until audit requests are satisfactorily answered.

11. Fees for Identifiers

Contact the CBRS Identifier Administrator.

12. Contact Information for CBRS Identifier Administrator

Email: admin@cbrsalliance.org

Web: <https://cbrsalliance.org>

Annex A. Revision History

Version	Date	Description
1.0	tbd	Initial version